BNL -46172
INFORMAL REPORT



# AN ORGANIZATIONAL CULTURAL ASSESSMENT OF SANDIA NATIONAL LABORATORIES

by

Sonja B. Haber and Deborah A. Crouch

May 1991



DEPARTMENT OF NUCLEAR ENERGY
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UPTON, NEW YORK 11973

UNITED STATES DEPARTMENT OF ENERGY
CONTRACT NO. DE-AC02-76-CH00016

BNL-46172
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DE91 013799

# AN ORGANIZATIONAL CULTURAL ASSESSMENT OF SANDIA NATIONAL LABORATORIES

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**May 1991**

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## EXECUTIVE SUMMARY

An Organizational Cultural Assessment (OCA) was performed at the Sandia National Laboratories (SNL) by administering an Organizational Culture Survey (OCS) that queried employees on the subjects of organizational culture, various aspects of communications, employee commitment, work group cohesion, coordination of work, environmental concerns, hazardous nature of work, safety and overall job satisfaction. Many of these subjects are assessed in the OCS through highly developed and validated scales that have been administered in many different types of organizations. Some of the issues, especially the questions on environmental, safety, and health concerns, are newly developed and are still being modified. The purpose of the OCS is to measure in a quantitative and objective way the notion of "culture;" that is, the values, attitudes, and beliefs of the individuals working within the organization. In addition, through the OCS, a broad sample of individuals can be reached that would probably not be interviewed or observed during the course of a typical assessment. The OCS also provides a descriptive profile of the organization at one point in time that can then be compared to a profile taken at a different point in time to assess changes in the culture of the organization.

The OCS administration at SNL was the fifth to occur at a Department of Energy facility. Approximately twenty percent of a targeted population of employees at SNL was randomly selected to complete the survey. The targeted population at SNL were those groups being assessed by the Tiger Team. The sample was randomly selected from each Vice Presidency (VP) group, the largest organizational unit at SNL (see Table EX.1). The OCS was administered at SNL in large groups. Times were assigned to groups of employees based on the beginning letter of their last names. Of the 1,765 employees who were randomly selected, 1,398 completed the survey, yielding a response rate of 79.2 percent. The distribution of response was varied across VP Groups, with a low response rate of 59.0 percent in the 0000 VP Group to a high response rate of 83.2 percent in the 2000 VP Group. All data from the OCS is presented in group summaries, by VP Group, Directorate, Employee Category, and Supervisory Level. Statistically significant differences between groups are identified and discussed.

Table EX.1. Identification of Vice Presidency Groups

| Number | Title |
|---|---|
| 0000 | Other |
| 1000 | Research |
| 2000 | Component Development |
| 3000 | Support Staff |
| 5000 | Defense Programs |
| 6000 | Energy Programs |
| 7000 | Technical Support |
| 9000 | Exploratory Systems |

The dominant organizational cultural profile which emerges from the results of the OCA at SNL is one of a constructive cultural style. The highest overall mean scores were on the scales which indicated a humanistic, affiliative, achievement-oriented and creative set of values about the SNL

working environment. However, the higher than average mean scores on the aggressive/defensive cultural style were of additional interest. This indicates a strong competitive and perfectionistic set of values as well.

While the overall mean scores for the SNL sample on the communication scales were high, indicating satisfaction with the communication process, mean scores on the scales that measure perceived accuracy and trust in communication were lower. Some of these differences were especially apparent when the data were analyzed by employee category and supervisory level.

Commitment to one's organization as measured in the SNL sample is strong and employees generally describe their values to be similar to the values of their organization. Employees' sense of cohesiveness within their immediate work groups is even stronger than their organizational commitment. In an organization as large and diverse as SNL, this is not a surprising result. The overall mean score for job satisfaction in the SNL sample was high, and no statistically significant differences were obtained between any of the groups analyzed on this scale.

The overall perceived hazardous nature of work is moderate in the SNL sample and differences between groups within the sample are dependent upon work function. Despite the differential perception of the hazardous nature of work, the overall attention to behaviors related to safety is high, with few differences between groups on this scale. The perception of either onsite or offsite environmental consequences as a function of poor performance within work group, was low in the SNL sample. Some differences were obtained on these questions, also primarily dependent upon work function.

Differences between organizational units at the VP Group level were small, with the exception of the 3000 VP Group which exhibited a consistently different profile from the other VP groups on several scales. In particular, the 3000 VP Group scored higher on the scales measuring need for approval, conventionalism, dependency and avoidance behavior, and lower on the communication scales dealing with perceived accuracy of communication and desire for interaction. The 6000 and 9000 VP Groups exhibited profiles which emphasized values directly opposite of the 3000 VP Group.

An interesting result were the small number of differences between directorate level organizations within a given VP group. Directorates represent the next highest organizational unit and each VP group contains anywhere from 2 to 6 directorates. Statistically significant differences were obtained in 4 of the 7 VP groups analyzed, however, these differences were primarily associated with the Hazard Scale and were attributable to work function differences. It was only in the 3000 VP Group that the differences between directorates extended into other scales including the cultural and communication scales. It should be noted, however, that the 3000 VP Group is an eclectic group with very diverse directorates.

Among employee categories, the Graded Employee Category exhibited a profile consistently different from the other employee categories. The Graded Employee Category scored lower on the Humanistic/Encouraging Scale and higher on the Approval, Conventional, Dependent, and Avoidance Scales than the other employee categories. Graded employees also had lower mean scores on the Achievement, Commitment, Desire for Interaction, and Communication-Accuracy Scales. The perceived hazardous nature of work was higher among graded employees, as was the perceived potential for both onsite and offsite environmental consequences as a function of poor work performance.

Differences between supervisory levels within the SNL sample are similar to those frequently reported in the literature. Among supervisory levels, the Section and Division Supervisors did not differ significantly from the Non-Manager category on most scales. These individuals represent first-line supervisors and in a multi-layered supervisory organization do not appear that different from non-supervisory personnel.

In summary, the SNL population, as represented by the OCS sample, exhibits a positive organizational profile. Differences between organizational groups were largely dependent upon work function, and were virtually non-existent within VP groups. The pattern exhibited by the 3000 VP Group is worth noting because of the consistent discrepancy from the other groups. The Graded Employee Category results must also be highlighted and should be carefully analyzed.

CONTENTS

CONTENTS (Continued)

CONTENTS (Continued)

CONTENTS (Continued)

## LIST OF FIGURES

## LIST OF FIGURES (Continued)

## LIST OF FIGURES (Continued)

## LIST OF TABLES

## ACRONYMS

### General

| | |
|---|---|
| OCA | Organizational Cultural Assessment |
| OCI | Organizational Culture Inventory |
| OCS | Organizational Culture Survey |
| SNL | Sandia National Laboratories |
| STD | Standard |

### VP Groups

| | |
|---|---|
| 0000 | Other |
| 1000 | Research |
| 2000 | Component Development |
| 3000 | Support Staff |
| 5000 | Defense Programs |
| 6000 | Energy Programs |
| 7000 | Technical Support |
| 9000 | Exploratory Systems |

### Directorates Within VP Groups

| | |
|---|---|
| 2100 | Semiconductor Components |
| 2300 | Electronic Subsystems |
| 2500 | Components |
| 2600 | Computing |
| 2900 | Design Engineering |
| 3100 | Information and Communication Services |
| 3200 | Environment, Safety, and Health |
| 3300 | Medical |
| 3400 | Security and Facility Support Systems |
| 3500 | Human Resources |
| 3700 | Purchasing and Materials Management |
| 7200 | Systems Evaluation |
| 7400 | Materials Process Engineering and Fabrication |
| 7500 | Development Testing |
| 7800 | Facilities Organization |
| 9100 | Exploratory Systems Development |
| 9200 | Monitoring Systems |
| 9300 | Radiation Effects and Testing |

### Employee Categories

| | |
|---|---|
| DMTS | Distinguished Member of Technical Staff |
| D&S | Distinguished Member of Technical Staff and Senior Member of Technical Staff |
| GRD | Graded |
| MA | Management Assistant |
| MAS | Management Assistant and Staff Secretary |

**Employee Categories** (Continued)

| | |
|---|---|
| MLS | Member of Laboratory Staff |
| MTS | Member of Technical Staff |
| SAT | Staff Assistant/Technical |
| SMTS | Senior Member of Technical Staff |
| STA | Senior Technical Assistant |
| STS | Staff Assistant/Technical, Technical Assistant, and Senior Technical Assistant |
| TA | Technical Assistant |

**Supervisory Levels**

| | |
|---|---|
| DIR | Director and Above |
| DPM | Department Manager |
| NMG | NonManager |
| SDS | Section and Division Supervisor |

**Survey Scales**

| | |
|---|---|
| C1 | Humanistic-Encouraging |
| C2 | Affiliative |
| C3 | Approval |
| C4 | Conventional |
| C5 | Dependent |
| C6 | Avoidance |
| C7 | Oppositional |
| C8 | Power |
| C9 | Competition |
| C10 | Perfectionistic |
| C11 | Achievement |
| C12 | Self-Actualizing |

| | |
|---|---|
| ACCURACY (CMA) | Perceived Accuracy of Communications |
| AWARENESS (EMA) | Employee Awareness of Workplace Hazards |
| COHESION (COH) | Cohesion of Work Group |
| COMMITMT (COT) | Organizational Commitment |
| COORD (COD) | Coordination |
| EMPHASIS (MGE) | Management Emphasis of Environmental Issues |
| HAZARD (HAZ) | Perceived Hazardous Nature of Work |
| INTERACT (CMI) | Desirability of Interaction with Others |
| JOBSAT (JOB) | Overall Job Satisfaction |
| OFFSITE (OFF) | Consequence to Offsite Environment |
| ONSITE (ONS) | Consequence to Onsite Environment |
| SAFETY (SAF) | Attention to Safety |
| SATISFAC (CMS) | Satisfaction with Communications |
| TRUST (CMT) | Trust in Communications |

## ACKNOWLEDGEMENT

The authors wish to thank the Department of Energy (DOE) staff that have been supportive and facilitative of this work, Mark Gilbertson, Frank Tooper, and Larry Weiner, as well as Sandia National Laboratories (SNL) for their cooperation in this effort, in particular, Jay Vinson for his help in arranging the logistics and details of the survey administration.

We also extend our appreciation to the efforts of our Brookhaven National Laboratory colleagues, David Stock, for his statistical assistance and expertise, Kathleen Nasta, for her help in preparing this manuscript, and Jeanne Danko, Susan Monteleone, and Donna Storan, for their "paste de excellence." In addition, the review, comments, and insights provided by James Higgins were also very much appreciated.

# 1. INTRODUCTION

An Organizational Cultural Assessment (OCA) was performed at the Sandia National Laboratories (SNL) by administering an Organizational Culture Survey (OCS) that queried employees on the subjects of organizational culture, various aspects of communication, employee commitment, work group cohesion, coordination of work, environmental concerns, perceived hazardous nature of work, safety, and overall job satisfaction. A description of each of the scales used to assess these subjects is discussed below.

The primary purpose of administering the survey was to attempt to measure, in a more quantitative and objective way the notion of "organizational culture," that is, the values, attitudes, and beliefs of the individuals working within the organization. In particular, those aspects of the working environment which are believed to be important influences on the operations of a facility and on the safety issues relevant to the organization were assessed.

In addition, by conducting a survey, a broad sampling of the individuals in the organization can be obtained. This is especially important when the survey is utilized in conjunction with an assessment or inspection team which typically has only a limited amount of resources to address many issues. The OCS provides a broad, but more comprehensive picture of the organization by querying a much larger number of individuals than could be reached through the assessment team alone.

Finally, the OCS provides a descriptive profile of the organization at one point in time. This profile can then be used as a baseline point against which comparisons of other points in time can be made. Such comparisons may prove valuable and would help to assess changes in the organizational culture. Comparisons of the profiles can also be made across similar facilities.

## 2. METHODOLOGY

Sandia National Laboratories (SNL) is the largest DOE facility, to date, to have an Organizational Cultural Assessment. It was not feasible to administer the Organizational Culture Survey (OCS) to all approximately 7,800 employees of SNL involved in the Tiger Team's assessment. Instead, it was determined that a minimum sample of 1,000 individuals was needed for statistical adequacy. In order to meet this criterion, it was necessary to "oversample" from the population. In other words, a larger sample was targeted to ensure that at least the necessary minimum number of employees completed the survey. In order to conduct statistical analyses between groups within the SNL organization, e.g., between Vice Presidency (VP) Groups, it was determined that a minimum of twenty percent, or 200 employees per group, whichever was greater, was needed. This was the criterion applied to obtain a random sample of SNL employees.

For those individuals in organizational units which are represented by a number less than 1,000 (and thus do not fall under a VP), these groups were combined for purposes of random sampling and were grouped as Organizational Number 0000. This group, 0000, also included all the VPs. This combination was necessary as the groups were otherwise much too small for analysis. Individuals from organizational numbers 3000 and 4000 were combined into one group of 3000 for purposes of random sampling, since the 4000 group was too small. The total number of SNL employees who were randomly selected to complete the survey was 1,765.

Prior to the survey administration, a memorandum from the VP of Group 0003 was circulated to all employees of SNL. This memorandum informed employees of the OCA and that a group of employees were being randomly selected to participate. A second memorandum was circulated to those employees targeted for the random sample. This memorandum encouraged employees to complete the survey and contained the times at which various groups of employees were to take the survey. The surveys were administered on April 2 and 3, 1991, in large groups. Included with the survey was a cover letter explaining the purpose for the survey administration. A demographics sheet attached to the survey requested information pertaining to the VP Group and Directorate in which the respondent was located, the number of years they had been working at SNL, their employee category, and supervisory and educational levels.

Two people familiar with the survey were at SNL during the survey administration in order to distribute the surveys, give brief instructions, and to answer any questions which employees may have had while taking the questionnaire. The surveys were taken from SNL for computer entry and analysis. A total of 1,398 usable surveys were completed, for a response rate of 79.2 percent.

Overall means, standard errors, and standard deviations were computed for each scale assessed in the OCS. A one-way analysis of variance was also performed on each OCS scale using the scale score as the dependent variable and separate analyses using VP Groups, Directorates within VP Groups, employee category, and supervisory level as the independent variables. In order to control the false positive rate (Type I error rate), the Bonferroni correction was applied to all the analyses of variance performed for each independent variable. Since there were 26 one-way anovas for each independent variable, the significance level for each anova was reduced to .05/26 = .0019. Where the analysis of variance showed a significant difference among the group means at the .0019 level, a Tukey HSD (Honestly Significant Difference) (Hays, 1988) procedure was applied to identify those means that were statistically significantly different from each other. Consequently, the results that are reported as statistically significantly different represent a very conservative approach in the interpretation of the data analysis performed.

Included in this report are the overall results for SNL on each of the scales used in the OCS. In addition, any statistically significant differences between VP Groups, Directorates, Employee Categories, and Supervisory Levels are also presented.

## 3. ORGANIZATIONAL DESCRIPTION

The Sandia National Laboratories (SNL) identifies its largest organizational units as VP Groups. Table 3.1 contains the VP groups as used in the analysis of the survey results throughout this report. The VP groups will be referred to by their corresponding organizational number. Also presented in this table are the response rates for each VP group. The response rate is computed by dividing the number of surveys returned by the number of employees randomly sampled from that VP Group.

Table 3.1 Response Rates for VP Groups for SNL

| VP Group | No. Responses | No. Employees Sampled | Response Rate |
|---|---|---|---|
| 0000[1] OTHER | 59 | 100 | 59.0 |
| 1000 RESEARCH | 154 | 200 | 77.0 |
| 2000 COMPONENT DEVELOPMENT | 228 | 274 | 83.2 |
| 3000[2] SUPPORT STAFF | 216 | 270 | 80.0 |
| 5000 DEFENSE PROGRAMS | 159 | 200 | 79.5 |
| 6000 ENERGY PROGRAMS | 159 | 200 | 79.5 |
| 7000 TECHNICAL SUPPORT | 215 | 321 | 67.0 |
| 9000 EXPLORATORY SYSTEMS | 148 | 200 | 74.0 |
| UNKNOWN | 60 | --- | --- |
| **TOTAL:** | **1398** | **1765** | **79.2** |

Notes:

[1] This group (0000) consists of random sampling from organization numbers 1, 3, 5, 20, 30, 100, 400, and all VPs. This is also the only group which was exempted from the minimum criterion of 200 or 20% because of its smaller size.

[2] This group consists of random sampling of individuals from the 3000 and 4000 organizational groups.

SNL employees were also given six employee categories on the demographic sheet in which to categorize themselves. Table 3.2 presents these employee categories, and their abbreviations as used in this report. Also presented are the response rates for each employee category. The greater than 100 percent response rate for the Member of Technical Staff (MTS) category is probably because MTS managers identified themselves in this group, instead of in the DMTS and SMTS group from where they were randomly targeted.

Table 3.2. Response rates by Employee Category for SNL

| Employee Category | No. Responses | No. Employees Selected | Response Rate |
|---|---|---|---|
| Distinguished Member of Technical Staff and Senior Member of Technical Staff - DMTS and SMTS (D&S) | 433 | 615 | 70.4 |
| Member of Technical Staff - MTS (MTS) | 160 | 153 | 104.6 |
| Member of Laboratory Staff - MLS (MLS) | 106 | 151 | 70.2 |
| Staff Assistant/Technical - SAT, Technical Assistant - TA, and Senior Technical Assistant - STA (STS) | 269 | 346 | 77.7 |
| Management Assistant - MA and Staff Secretary (MAS) | 114 | 146 | 78.1 |
| Graded (GRD)[1] | 232 | 354 | 65.5 |
| Unknown | 84 | --- | --- |

Note: [1] Graded Employees are members of the following unions: Office and Professional Employees International Union, Metal Trades Council, and International Guards Union Association.

The Organizational Culture Survey (OCS) demographics questions used at SNL also provided four categories of supervisory levels by which an employee could identify him/herself. Table 3.3 presents the supervisory levels, and their abbreviations as used in this report. Also presented in this table are the response rates for each supervisory level. The greater than 100 percent response rate for the Section and Division Supervisors may be simply a function of changes in employee classification after the numbers were obtained for the OCA data analysis.

Table 3.4 presents information on the number of years the respondents had been at SNL. Just under fifty percent (48.6%) of SNL employees who responded to the survey have been employed at SNL for ten years or less.

Table 3.3. Response Rates by Supervisory Levels for SNL

| Supervisory Level | No. Responses | No. Employees Selected | Response Rate |
|---|---|---|---|
| Director and Above (DIR) | 19 | 19 | 100.0 |
| Department Manager (DPM) | 26 | 36 | 72.2 |
| Section and Division Supervisor (SDS) | 146 | 134 | 109.0 |
| Non-Manager (NMG) | 1103 | 1576 | 70.0 |
| Unknown | 104 | --- | --- |

Table 3.4. Number of Years at SNL

| Years at SNL | No. Responses | Percent Sample |
|---|---|---|
| 0 to 5 | 348 | 24.9 |
| 6 to 10 | 332 | 23.7 |
| 11 to 15 | 270 | 19.3 |
| 16 to 20 | 73 | 5.2 |
| 21 to 25 | 117 | 8.4 |
| 26 to 30 | 103 | 7.4 |
| 31 to 35 | 83 | 5.9 |
| 36 to 40 | 27 | 1.9 |
| > 40 | 9 | .6 |
| Unknown | 36 | 2.6 |

Table 3.5 depicts the percent of the total sample by educational level. Of the people who responded to the survey, approximately 42 percent had a graduate degree. The majority of respondents had a 4-year college degree or higher.

Table 3.6 presents the modal educational level and mean number of years at SNL for the survey respondents in each VP Group. The VP Group in which respondents to the survey had the longest tenure is the 5000 Group, 15.7 years. Survey respondents from the 1000 VP Group had the shortest tenure, 10.9 years. Every VP Group except the 3000 VP Group had a modal educational level of a Graduate Degree. Within the 3000 VP Group, the modal educational level was Some College. In addition, the employees who chose not to indicate which VP Group they belonged to also had a modal educational level of Some College.

Table 3.5. Educational Levels at SNL

| Educational Level | No. Responses | Percent Sample |
|---|---|---|
| Some High School | 14 | 1.0 |
| High School Degree | 68 | 5.1 |
| Some Technical School | 78 | 5.8 |
| 2-Year Technical Degree | 130 | 9.7 |
| Some College | 168 | 12.5 |
| 2-Year College Degree | 98 | 7.3 |
| 4-Year College Degree | 135 | 10.0 |
| Some Graduate Work | 87 | 6.5 |
| Graduate Degree | 566 | 42.1 |
| Unknown | 54 | 4.0 |

Table 3.6 Modal Educational Level and Mean Number of Years at SNL for Each VP Group

| VP Group | Years at SNL | Educational Level |
|---|---|---|
| 0000 | 13.1 | 9 |
| 1000 | 10.9 | 9 |
| 2000 | 13.1 | 9 |
| 3000 | 11.8 | 5 |
| 5000 | 15.7 | 9 |
| 6000 | 12.5 | 9 |
| 7000 | 14.8 | 9 |
| 9000 | 14.8 | 9 |
| Unknown | 12.4 | 5 |

Note:

Educational Level 5 = Some College; 6 = 2-Year College Degree; 7 = 4-Year College Degree; 8 = Some Graduate Work; 9 = Graduate Degree.

# 4. ORGANIZATIONAL CULTURE SURVEY SCALES AND RESULTS

The Organizational Culture Survey (OCS) administered at Sandia National Laboratories (SNL) was comprised of the Organizational Culture Inventory (OCI), consisting of 12 scales describing different organizational cultural styles, and scales assessing communication processes, commitment to the organization, cohesiveness to work group, coordination of work, overall job satisfaction, perceived hazardous nature of work, attention to safety, and questions concerning environmental issues. The results from each of these scales are discussed in the sections that follow. Each section presents the overall results for SNL on that scale(s), the results by Vice Presidency (VP) Group, by Directorate, by Employee Category, and by Supervisory Level.

## 4.1 Organizational Culture Inventory

### 4.1.1 Description

The philosophy of management, the mission of the organization, and the strategic choices management makes determine the culture of the organization (Cooke and Burack, 1987). The aspect of culture most immediately affected by these factors is what is valued by the organization. The extent to which these values are recognized and shared reflects the strength of the organization's culture. Organizational factors, along with these shared values, influence the operating structures of the organization, its human resource management practices, and the styles of its managers and supervisors. To the extent that these shared values and behavioral norms can be measured and evaluated, data collection of this type is important in understanding the organizational factors that influence performance.

The Organizational Culture Inventory (OCI) (Human Synergistics, 1987) is a paper-and-pencil diagnostic system for measuring the aspects of organizational culture that have the greatest impact on the activities of members and the functioning of the organization. Respondents are asked to review 120 statements which describe some of the thinking and behavioral styles that members of an organization may be expected to adopt in carrying out their work and in interacting with others. These statements measure 12 different cultural styles, some of which are indicative of a positive and supportive environment, while others are useful in identifying potentially dysfunctional environments. All of the styles measured by the OCI are related to, and result from, organizational structural variables, reward systems, managerial styles and philosophies, and other factors that can be changed, at least to some extent, by those in leadership positions.

The 12 organizational culture styles, with examples of the items used to assess each one, are described below.

**C1: HUMANISTIC-ENCOURAGING:** Organizations which are managed in a participative and person-centered way. Members are expected to be supportive, constructive, and open to influence in their dealings with one another.

- Involving subordinates in decisions;
- Showing concern for the needs of others;
- Giving positive rewards to others.

**C2: AFFILIATIVE:** Organizations which place high priority on constructive personal relations. The members are expected to be friendly, open, and sensitive to the satisfaction of their work group.

- Thinking in terms of the group satisfaction;
- Using good human relations skills;
- Motivating others with friendliness.

**C3: APPROVAL:** Organizations in which conflicts are avoided and personal relations are pleasant, at least superficially. Members feel they should agree with and gain approval of others.

- Staying on the good side of superiors;
- Making sure people accept you;
- Setting goals that please others.

**C4: CONVENTIONAL:** Organizations that are conservative, traditional, and bureaucratically controlled. Members are expected to conform, follow rules, and make a good impression.

- Always following policies and practices;
- Avoiding confrontations;
- Fitting into the "mold."

**C5: DEPENDENT:** Organizations that are hierarchically controlled and non-participative. Centralized decision-making leads members to do only what they are told and to clear all decisions with superiors.

- Accepting goals without questioning them;
- Never challenging superiors;
- Willingly obeying orders.

**C6: AVOIDANCE:** Organizations that do not reward success but punish failures. Negative rewards leads members to shift responsibility to others and avoid being blamed for mistakes.

- Taking few chances;
- Laying "low" when things get tough;
- Pushing decisions upward.

**C7: OPPOSITIONAL:** Organizations in which confrontation prevails and negativism is rewarded. Members gain status and influence by being critical and are encouraged to oppose the ideas of others.

- Pointing out flaws;
- Remaining aloof from the situation;
- Playing the role of the "loyal opposition".

**C8: POWER:** Non-participative organizations which are structured on the basis of authority in members' positions. Members expect to take charge, control subordinates, and respond to demands of superiors.

- Demanding loyalty;
- Acting forceful;
- Maintaining unquestioned authority.

**C9: COMPETITION:** Organizations where winning is valued and rewards are given for out-performing others. Members operate in a "win-lose" framework and work against their peers to be noticed.

- Always trying to be right;
- Out-performing one's peers;
- Turning the job into a contest.

**C10: PERFECTIONISTIC:** Organizations in which persistence, hard work, and perfectionism are highly valued. Members feel they must avoid all mistakes, keep track of everything, and work long hours to attain specific objectives.

- Setting unrealistically high goals;
- Viewing work as more important than anything else;
- Persisting, enduring.

**C11: ACHIEVEMENT:** Organizations that do things well and value members who set and accomplish their own goals. Members set challenging, but realistic goals, and plan and pursue them with enthusiasm.

- Exploring alternatives before acting;
- Pursuing a standard of excellence;
- Openly showing enthusiasm.

**C12: SELF-ACTUALIZING:** Organizations that value creativity, quality over quantity, tasks, and individual growth. Members are encouraged to gain satisfaction from their work, develop themselves, and take on new activities.

- Thinking in unique and independent ways;
- Communicating ideas;
- Being spontaneous.

From these twelve scales, three cultural styles are described. The first style is comprised of the Humanistic-Encouraging Scale (C1), the Affiliative Scale (C2), the Achievement Scale (C11), and the Self-Actualizing Scale (C12). These scales are considered "Constructive Styles;" in other words, organizations which score high on these four scales tend to promote behaviors which are conducive to the satisfaction of the organizational members.

The second cultural style is the "Passive/Defensive Style." This style is made up of the Approval Scale (C3), the Conventional Scale (C4), the Dependent Scale (C5), and the Avoidance Scale (C6). In organizations which score high on these scales, a culture exists which leads employees of the organization to act and react in a defensive way and at the same time, act in a way which does not pose a threat to one's own security within that organization.

A third cultural style is made up of the Oppositional Scale (C7), the Power Scale (C8), the Competitive Scale (C9), and the Perfectionistic Scale (C10). Organizations which score high on these scales often expect members to act in a way that is both forceful and which protects one's position and status. In other words, members adopt an "Aggressive/Defensive Style" in order to be successful within the organization.

### 4.1.2 Overall Profile

The overall mean scores on the OCI scales for the entire sample of SNL employees who responded to the Organizational Culture Survey (OCS) are depicted in Figure 4.1. The scales are identified by number and are described in the preceding section. The scores represent the mean score for the entire sample where the score 1 equals *not at all* and the score 5 equals *to a great extent.*

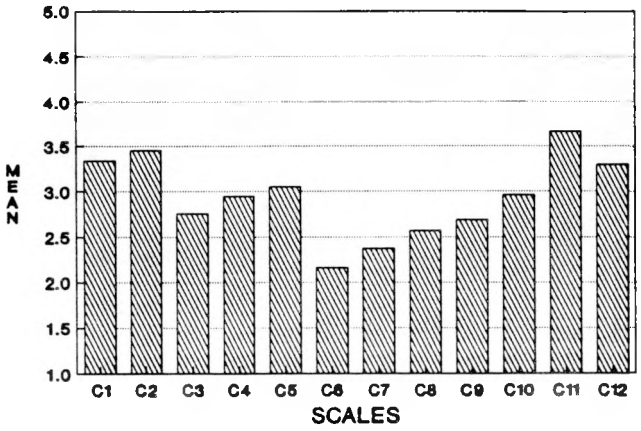


Figure 4.1. Overall means on OCI for SNL

Based on the sample of SNL employees who responded to the OCS, the dominant cultural style at SNL is the constructive style, made up of the Humanistic-Encouraging, Affiliative, Achievement, and Self-Actualizing (C1, C2, C11, and C12) Scales, with the highest mean score occurring on the Achievement Scale. This indicates that people are supportive of one another, achievement-oriented, and are encouraged to demonstrate creativity and to develop themselves. However, the organization also tends towards the passive defensive style, especially as evidenced by the mean scores on the Approval, Conventional, and Dependent (C3, C4, and C5) scales. The Sandia sample indicated that it is also somewhat aggressive in achieving its goals as demonstrated by the scores on the Competition (C9) and Perfectionism (C10) scales.

### 4.1.3 Differences Between VP Groups on the OCI

This section will concentrate on describing the most statistically significant differences obtained between VP Groups in the SNL sample. While other statistical differences may exist, they will not be discussed here. For those interested in all significant differences between VP Groups on all scales, the data are presented in Appendix A.

On the first scale of the OCI, Humanistic-Encouraging (C1), no statistically significant differences between VP Groups were obtained. Appendix A presents the mean values for each VP Group on this scale.

As depicted in Figure 4.2, the 1000 VP Group scored statistically significantly lower on the Affiliative Scale (C2) than the 3000 VP Group. No other statistically significant differences were obtained for this scale.

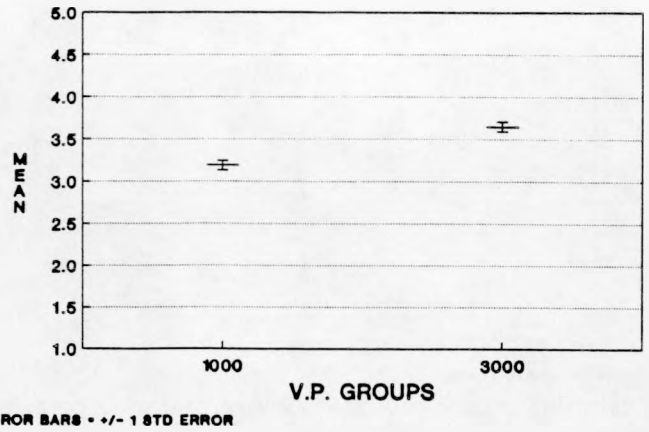


Figure 4.2. Significant differences between VP groups on the affiliative scale

Statistically significant differences between VP groups on the Approval Scale (C3) are shown in Figure 4.3. The 3000 VP Group scored significantly higher on this scale than did the 1000, 6000, and 9000 VP Groups. The 9000 VP Group had the lowest mean value on this scale. Other statistically significant differences between VP Groups are presented in Appendix A.

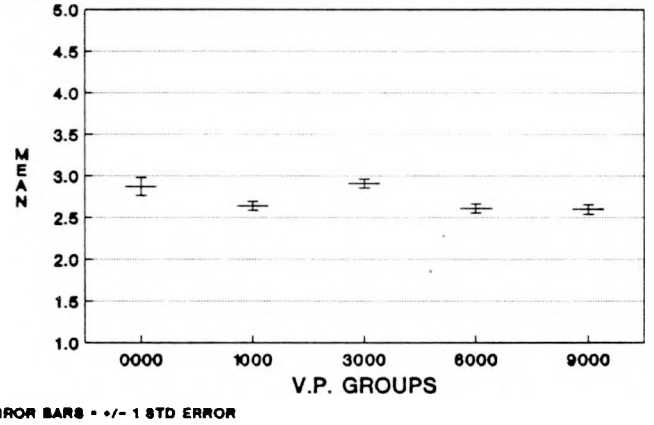


Figure 4.3. Significant differences between VP groups on the approval scale

Statistically significant differences between VP Groups on the Conventional Scale (C4) are depicted in Figure 4.4. The 3000 VP Group had the highest mean value on this scale and scored statistically significantly higher than the 5000, 6000, and 9000 VP Groups. The 9000 VP Group had the lowest mean value on this scale. No other statistically significant differences were obtained.

On the Dependent Scale (C5) (Figure 4.5), the 3000 VP Group had the highest mean value and scored statistically significantly higher on this scale than the 1000, 5000, 6000, and 9000 VP Groups. The 9000 VP Group had the lowest mean value on this scale. No other statistically significant differences were found.

Significant differences between VP Groups on the Avoidance (C6) Scale are presented in Figure 4.6. On this scale, the 9000 VP Group had the lowest mean value and was statistically significantly different from the 3000 and 7000 VP Groups. The 3000 VP Group had the highest mean value on this scale and was statistically significantly different from the 5000 and 6000, as well as the 9000, VP Groups. No other statistically significant differences between VP Groups were found on the Avoidance Scale.

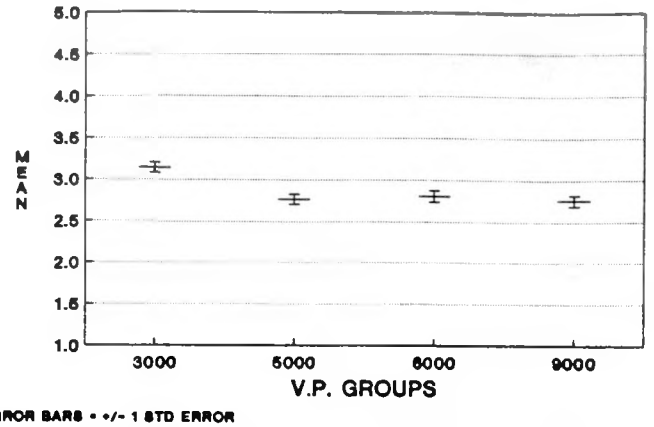


Figure 4.4. Significant differences between VP groups on the conventional scale

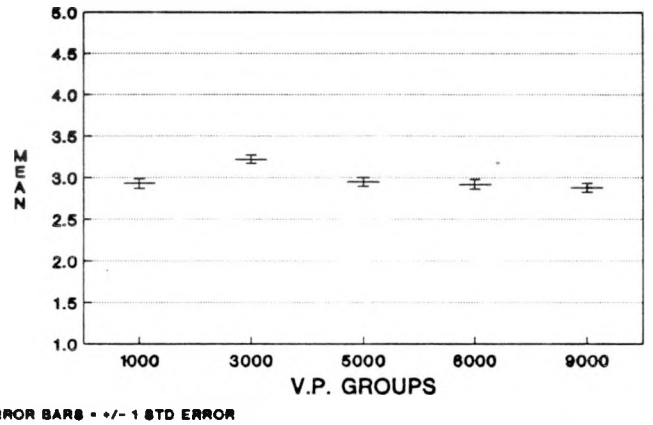


Figure 4.5. Significant differences between VP groups on the dependent scale

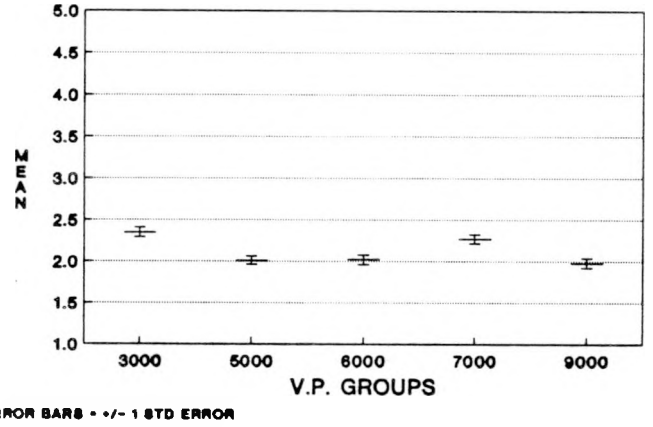


Figure 4.6. Significant differences between VP groups on the avoidance scale

No statistically significant differences were found between any of the VP Groups on the Oppositional (C7) or Power (C8) scales.

Statistically significant differences between VP Groups on the Competitive (C9) scale are depicted in Figure 4.7. The 1000 VP Group had the highest mean value and was statistically significantly

higher than the 3000, 5000, 7000, and 9000 VP Groups. The 3000 VP Group had the lowest mean value on this scale. No other statistically significant differences between VP Groups were obtained.

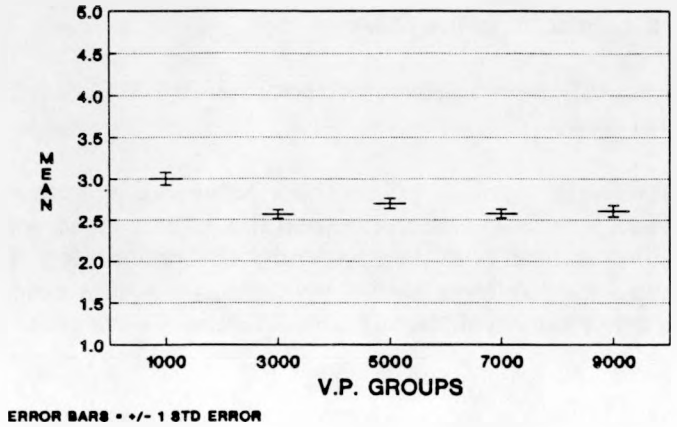


Figure 4.7. Significant differences between VP groups on the competitive scale

No statistically significant differences between VP Groups were obtained on the Perfectionistic (C10) scale.

Figure 4.8 presents statistically significant differences between VP Groups on the Achievement (C11) scale. On this scale, the 7000 VP Group had the lowest mean value and was significantly different from the 6000 and 9000 VP Groups. The 9000 VP Group had the highest mean value on this scale. No other differences between VP Groups were obtained on this scale.

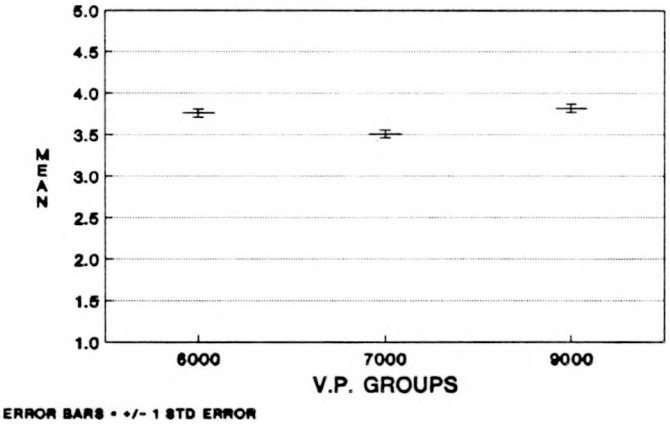


Figure 4.8. Significant differences between VP groups on the achievement scale

No statistically significant differences were obtained between VP Groups on the Self-Actualizing scale (C12).

Appendix K contains figures which compare each VP Group to the overall mean value of the SNL sample on each of the OCI scales.

### 4.1.4 Differences Between Directorates Within VP Groups on the OCI

This section discusses those statistically significant differences which were obtained between Directorates within each VP Group on the OCI scales. Only those directorates in which twenty or more individuals responded are included in these analyses. Appendices D through J present the mean values for each of the directorates on each scale in the OCA.

No statistically significant differences between directorates in VP Group 1000 or in VP Group 2000 were obtained on the OCI scales.

Figure 4.9 presents statistically significant differences between Directorates in VP Group 3000 for the Conventional (C4) Scale. The 3400 Directorate had the highest mean value on this scale and was statistically significantly different from both the 3100 and 3500 Directorates. The 3500 Directorate had the lowest mean value on this scale and was statistically significantly different from the 3700 as well as the 3400, directorates. No other statistically significant differences were obtained.

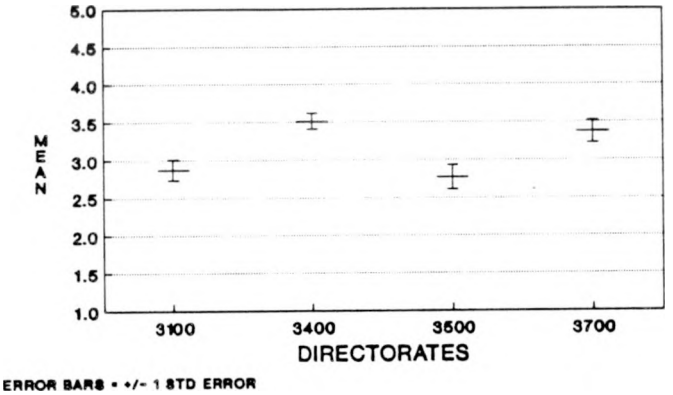


Figure 4.9. Significant differences between directorates in VP group 3000 on conventional scale

Statistically significant differences between Directorates in VP Group 3000 were also found on the Avoidance (C6) Scale (Figure 4.10). The 3500 Directorate scored statistically significantly lower on this scale than did the 3700 and 3400 Directorates, with the 3400 Directorate scoring the highest. No other statistically significant differences were found.

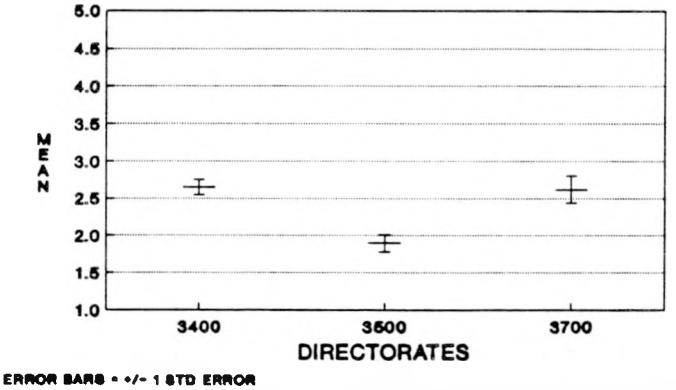


Figure 4.10. Significant differences between directorates in VP group 3000 on avoidance scale

No statistically significant differences between Directorates were obtained for any of the OCI scales in VP Groups 5000 and 6000.

In VP Group 7000, statistically significant differences were obtained between Directorates on the Humanistic-Encouraging (C1) Scale (Figure 4.11). The 7400 Directorate had the lowest mean value on this scale and was statistically significantly lower than both the 7200 and the 7800 Directorates. No other statistically significant differences between Directorates in VP Group 7000 were found for this scale.

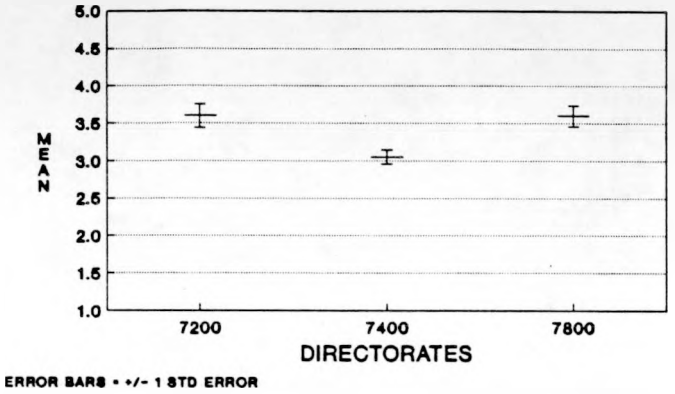


Figure 4.11. Significant differences between directorates in VP group 7000 on humanistic-encouraging scale

Figure 4.12 depicts the statistically significant differences obtained between Directorates in VP Group 7000 on the Affiliative (C2) Scale. The 7400 Directorate scored statistically significantly lower on this scale than did either the 7200 or the 7800 Directorates.

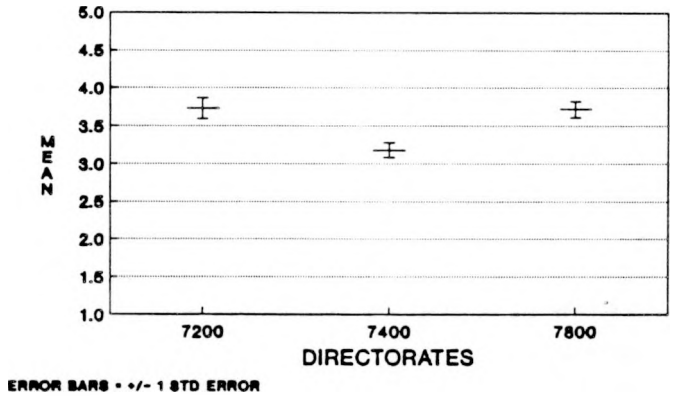


Figure 4.12. Significant differences between directorates in VP group 7000 on affiliative scale

No other statistically significant differences between Directorates in any VP Group were obtained for any of the other OCI scales not discussed here.

### 4.1.5 Differences Between Employee Categories on the OCI

This section discusses those statistically significant differences which were obtained between employee categories at SNL. Appendix B presents the mean values for each of the employee categories on each scale in the OCA.

Statistically significant differences were obtained between employee categories on the Humanistic-Encouraging (C1) Scale (Figure 4.13). The MA and Staff Secretary Category had the highest mean value on this scale and scored significantly different from the DMTS and SMTS, SAT, TA, and STA, and Graded Employee Categories, with the Graded Employee Category having the lowest mean value on this scale. Other statistically significant differences are presented in Appendix B.

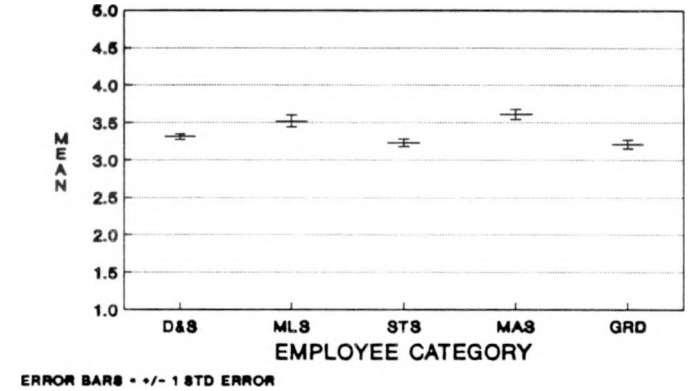


Figure 4.13. Significant differences between employee categories on the humanistic-encouraging scale

Statistically significant differences between employee categories were also found on the Affiliative (C2) scale (Figure 4.14). The MA and Staff Secretaries had the highest mean value on this scale and were significantly different from the DMTS and SMTS, MTS, and SAT, TA, and STA Employee Categories. The DMTS and SMTS Employee Category had the lowest mean value on this scale and were statistically significantly different from the MLS, MA, and Staff Secretary, and Graded Employee Categories. No other statistically significant differences between employee categories were found for this scale.

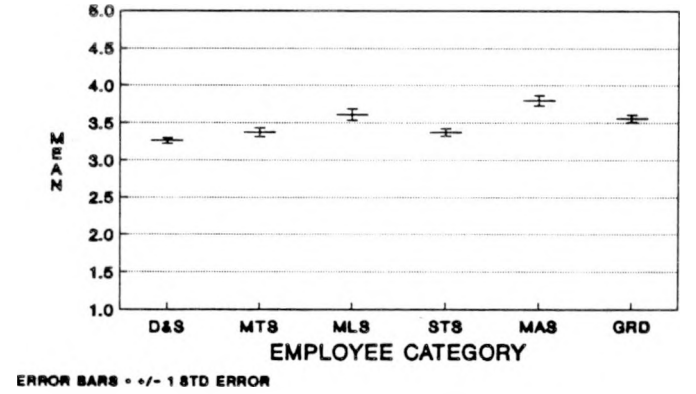


Figure 4.14. Significant differences between employee categories on the affiliative scale

On the Approval (C3) Scale, the DMTS and SMTS Employee Category had the lowest mean value (Figure 4.15) and was significantly different from the MLS, MA and Staff Secretary, and Graded Employee Categories. The MLS Employee Category had the highest mean value on this scale. No other statistically significant differences between any employee categories were obtained for this scale.

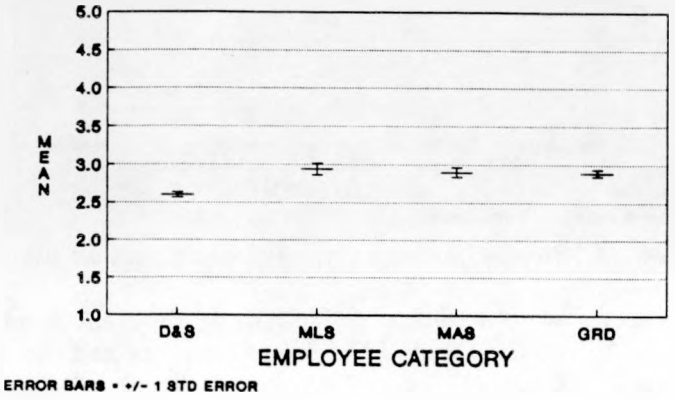


Figure 4.15. Significant differences between employee categories on the approval scale

Statistically significant differences between employee categories on the Conventional (C4) Scale are presented in Figure 4.16. The Graded Employee Category had the highest mean value on this scale and were significantly different from the MA and Staff Secretary, MLS, MTS, and DMTS and SMTS Employee Categories. The DMTS and SMTS Employee Category had the lowest mean value on this scale. Other significant differences between employee categories on this scale are presented in Appendix B.

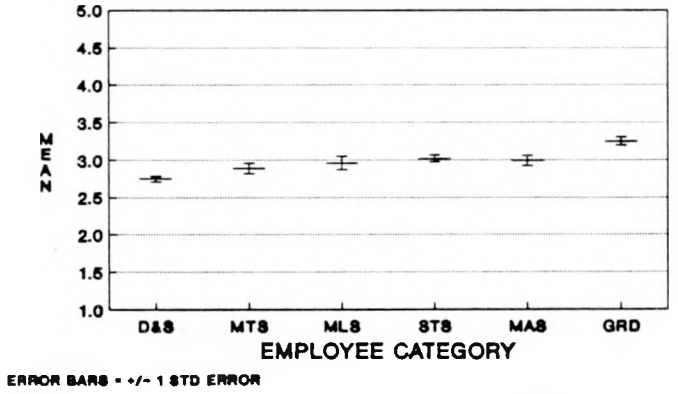


Figure 4.16. Significant differences between employee categories on the conventional scale

Statistically significant differences between employee categories were also found on the Dependent (C5) Scale (Figure 4.17). The Graded Employee Category had the highest mean value on this scale and was statistically significantly different from the MTS and DMTS and SMTS Employee Categories. The DMTS and SMTS Employee Category had the lowest mean value on this scale and was also statistically different from the MLS Employee Category.

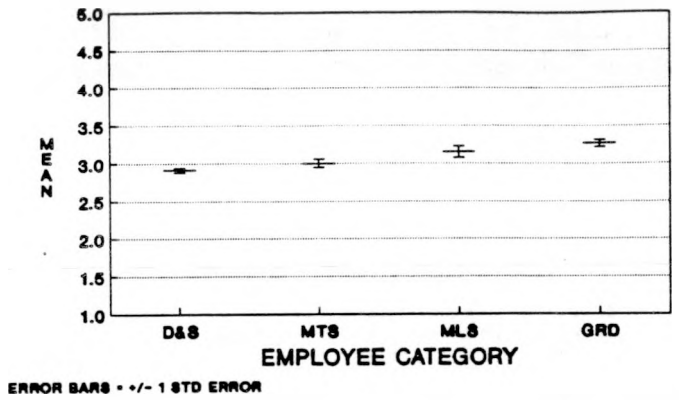


Figure 4.17. Significant differences between employee categories on the dependent scale

Two employee categories were statistically significantly different from one another on the Avoidance (C6) Scale (Figure 4.18). The Graded Employee Category had the highest mean value on this scale and was statistically significantly different from the DMTS and SMTS Employee Category.

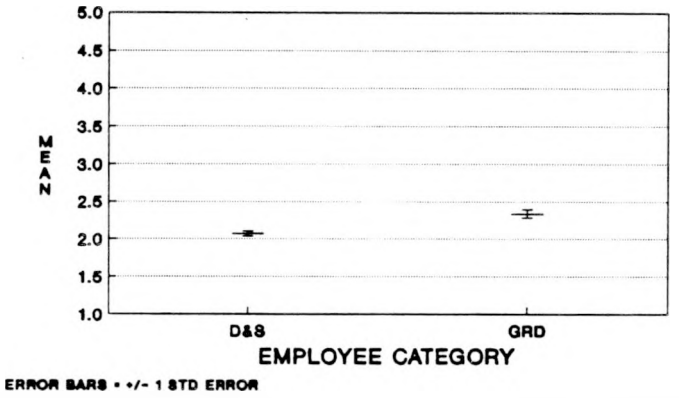


Figure 4.18. Significant differences between employee categories on the avoidance scale

No statistically significant differences between employee categories were obtained on the Oppositional (C7) or Power (C8) scales.

On the Competitive (C9) Scale (Figure 4.19), the DMTS and SMTS Employee Category had the highest mean value. They, along with the MTS Employee Category, were statistically significantly different from both the Graded and MA and Staff Secretary Employee Categories. The Graded Employee Category had the lowest mean value on this scale. Other statistically significant differences between employee categories on this scale are presented in Appendix B.

No statistically significant differences between employee categories were obtained on the Perfectionistic (C10) scale.

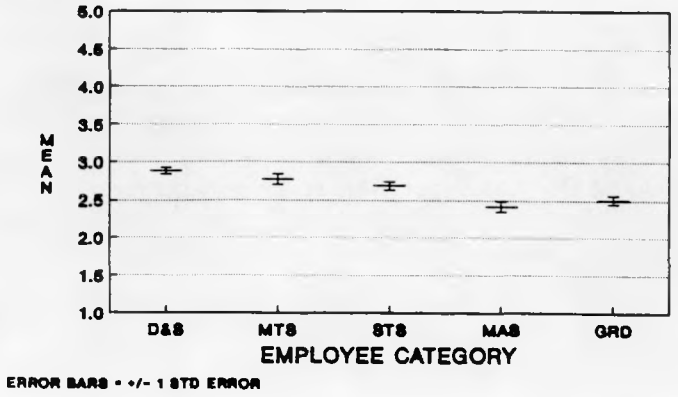


Figure 4.19. Significant differences between employee categories on the competitive scale

On the Achievement (C11) Scale, (Figure 4.20), the Graded Employee Category had the lowest mean value. In addition, they were statistically significantly lower on this scale from every other employee category. The MA and Staff Secretary Employee Category had the highest mean value on this scale. No other statistically significant differences between employee categories were obtained on this scale.

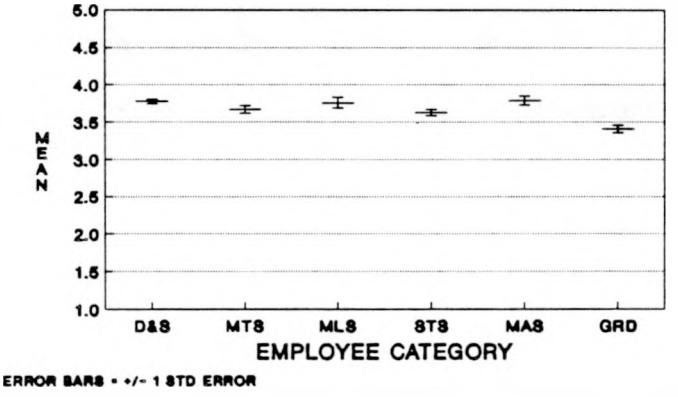


Figure 4.20. Significant differences between employee categories on the achievement scale

No statistically significant differences between employee categories were obtained on the Self-Actualizing (C12) scale.

### 4.1.6 Differences Between Supervisory Levels on the OCI

Statistically significant differences between supervisory levels were assessed in two ways. The first way utilized the four supervisory levels listed on the demographics sheet: Non-Manager, Director and Above, Department Manager, and Section and Division Supervisor. The second way involved analyses of Managers versus Nonmanagers. Managers were defined as those individuals who selected either Director and Above, Department Manager, or Section and Division Supervisor on the demographics sheet, and Nonmanagers are those who classified themselves as such.

For the interested reader, the means on each scale for these two ways of classifying supervisory levels, as well as all statistically significant differences which were obtained between supervisory levels, are presented in Appendix C.

On the Humanistic-Encouraging (C1) Scale, statistically significant differences were obtained between every supervisory level and at least one other supervisory level (Figure 4.21). The Director and Above Supervisory Level had the highest mean value on this scale and was statistically significantly different from both the Section and Division Supervisors and Nonmanagers. The Nonmanagers had the lowest mean value on this scale and were statistically significantly different from the Department Managers and Section and Division Supervisors, as well as from the Directors and Above.

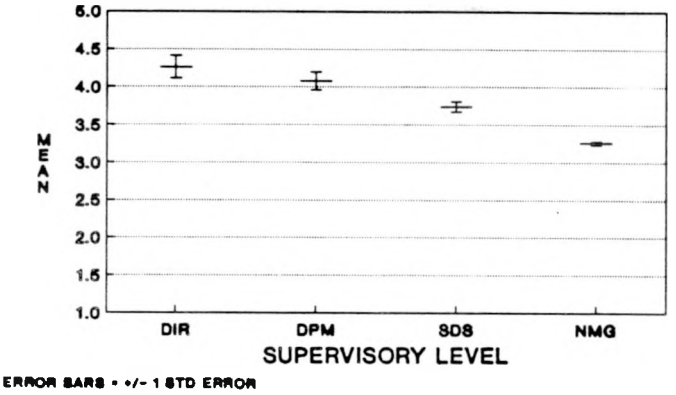


Figure 4.21. Significant differences between supervisory levels on the humanistic-encouraging scale

When the three supervisory levels were combined into one category of Managers and compared to the Nonmanagers on the Humanistic-Encouraging (C1) Scale, the Managers had a statistically significantly higher mean value on the scale than did the Nonmanagers (Figure 4.22).

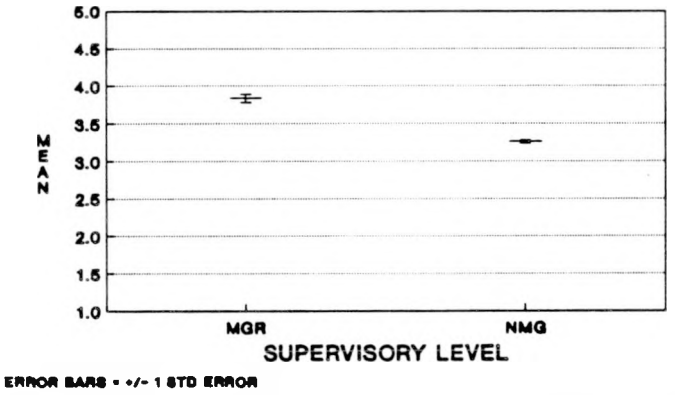


Figure 4.22. Significant differences between managers and nonmanagers on the humanistic-encouraging scale

Statistically significant differences between the four supervisory levels on the Affiliative (C2) Scale are presented in Figure 4.23. Directors and Above had the highest mean value and were statistically significantly different from the NonManagers. No other statistically significant differences were obtained on this scale.

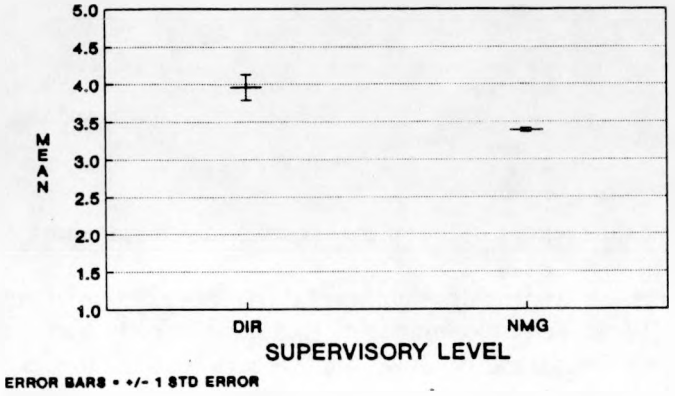


Figure 4.23. Significant differences between supervisory levels on the affiliative scale

When the three supervisory levels were combined into one group called Managers and compared to the Nonmanagers on the Affiliative (C2) Scale (Figure 4.24), the Managers had a statistically significantly higher mean value on this scale than did the Nonmanagers.

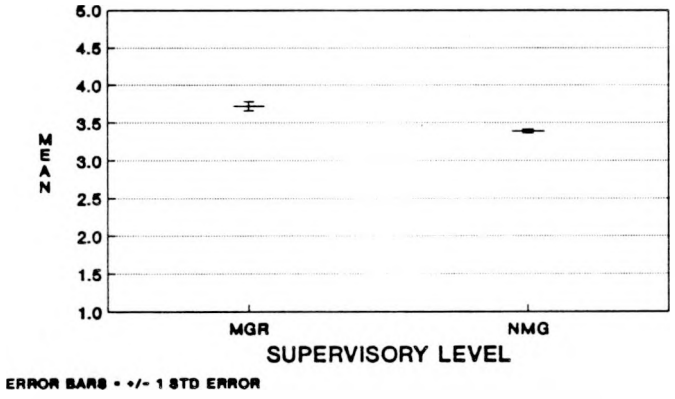


Figure 4.24. Significant differences between managers and nonmanagers on the affiliative scale

No statistically significant differences between the four supervisory levels were obtained on the Approval (C3) Scale. However, when the three supervisory levels were combined into one group called Managers and compared to the Nonmanagers, the Nonmanagers had a statistically significantly higher mean value on this scale than did the Managers (Figure 4.25).

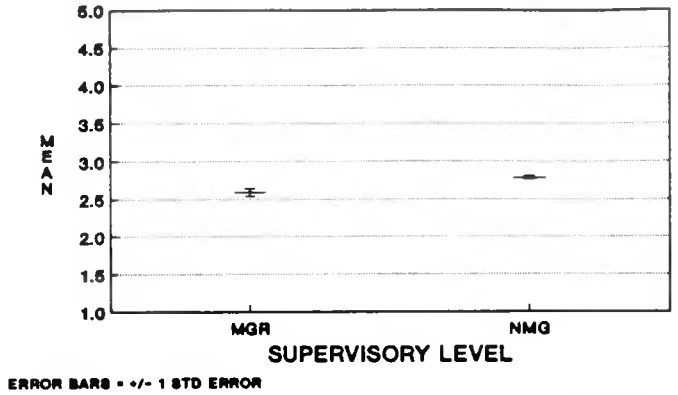


Figure 4.25. Significant differences between managers and nonmanagers on the approval scale

Figure 4.26 presents the statistically significant differences obtained between supervisory levels on the Conventional (C4) Scale. The Nonmanagers had a statistically significantly higher mean value on this scale than both the Directors and Above and Department Managers Supervisory Levels. No other statistically significant differences between supervisory levels were found on this scale.

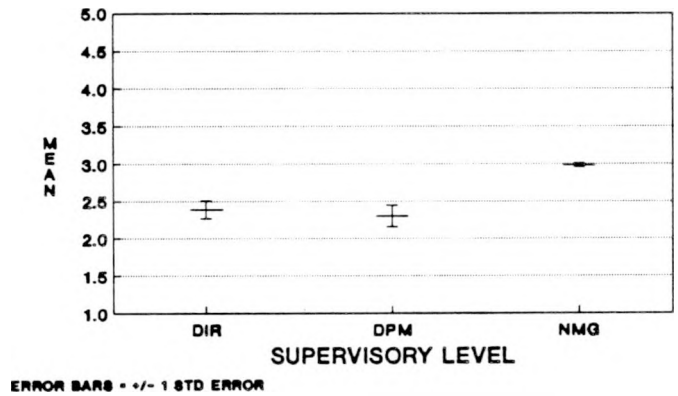


Figure 4.26. Significant differences between supervisory levels on the conventional scale

When respondents in supervisor positions were combined into one group called Managers and compared to Nonmanagers, the Nonmanagers had a statistically significantly higher mean value on this scale than the Managers (Figure 4.27).

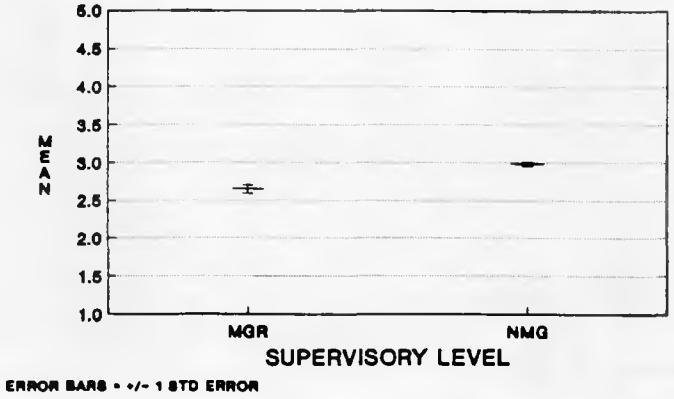


Figure 4.27. Significant differences between managers and nonmanagers on the conventional scale

On the Dependent (C5) Scale, the only statistically significant difference between supervisory levels was between the Directors and Above and the Nonmanagers. The Directors and Above Supervisory Level had a statistically significantly lower mean value on this Scale than did the Nonmanagers (Figure 4.28).

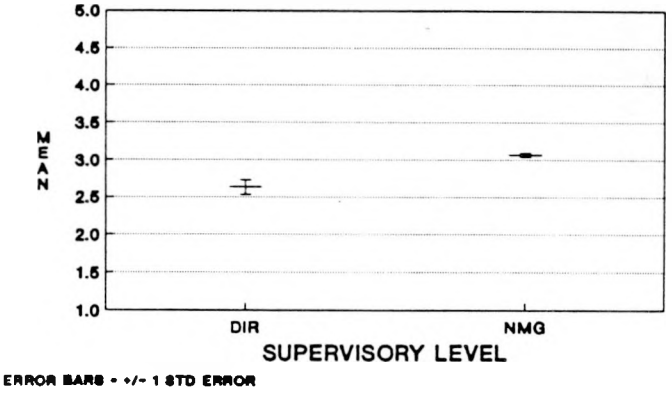


Figure 4.28. Significant differences between supervisory levels on the dependent scale

When the three supervisory levels were combined into one group called Managers and compared to the Nonmanagers on the Dependent (C5) Scale, the Nonmanagers had a statistically significantly higher mean value on this scale than did the Managers (Figure 4.29).

On the Avoidance (C6) Scale (Figure 4.30), the Department Managers had a statistically significantly lower mean value than did the Nonmanagers. No other significant differences between supervisory levels were obtained on this scale.

When the three supervisory levels were combined into one group called Managers and compared to the Nonmanagers, the Nonmanagers had a statistically significantly higher mean value on the Avoidance (C6) Scale than the Managers (Figure 4.31).

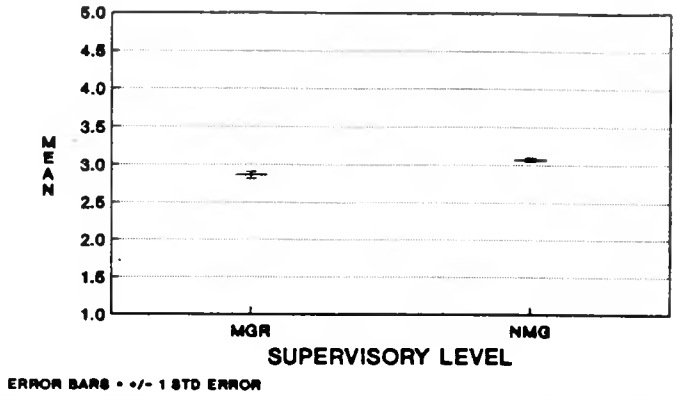


Figure 4.29. Significant differences between managers and nonmanagers on the dependent scale

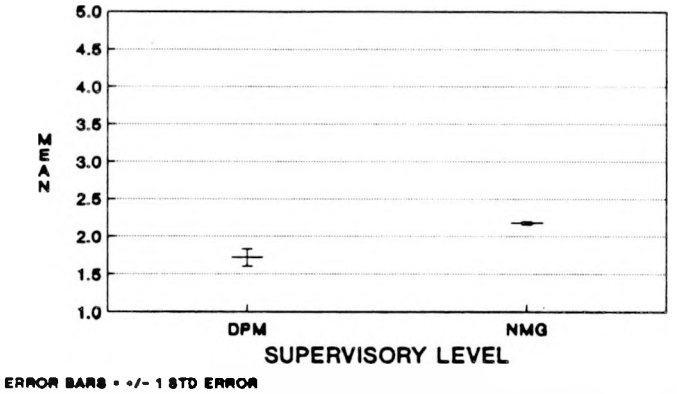


Figure 4.30. Significant differences between supervisory levels on the avoidance scale

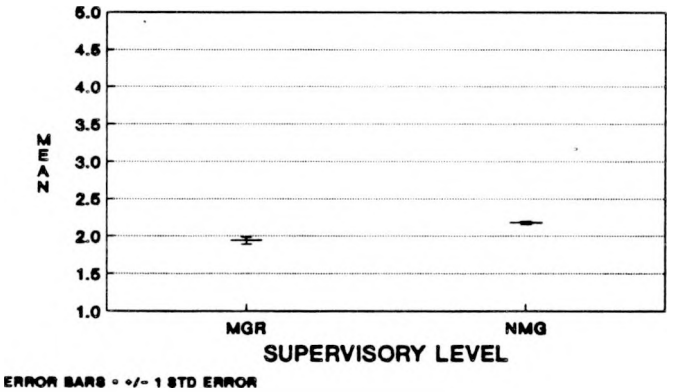


Figure 4.31. Significant differences between managers and nonmanagers on the avoidance scale

No statistically significant differences between supervisory levels, regardless of the way in which the categories were defined, were obtained on the Oppositional (C7), Power (C8), Competitive (C9), and Perfectionistic (C10) Scales. The lack of differences on these four scales is an interesting result, since these four scales make up the Aggressive-Defensive Cultural Style.

On the Achievement Scale (C11) (Figure 4.32), the Nonmanagers had the lowest mean value and were statistically significantly different from the Directors and Above and Department Managers Supervisory Levels. The Directors and Above Supervisory Level had the highest mean value on this scale.

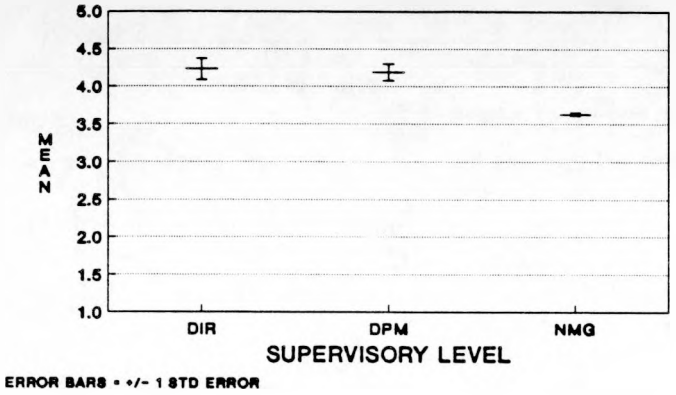


Figure 4.32. Significant differences between supervisory levels on the achievement scale

When the three supervisory levels were combined into one group called Managers and compared to the Nonmanagers on the Achievement (C11) Scale, the Managers had a statistically significantly higher mean value on this scale than did the Nonmanagers (Figure 4.33).

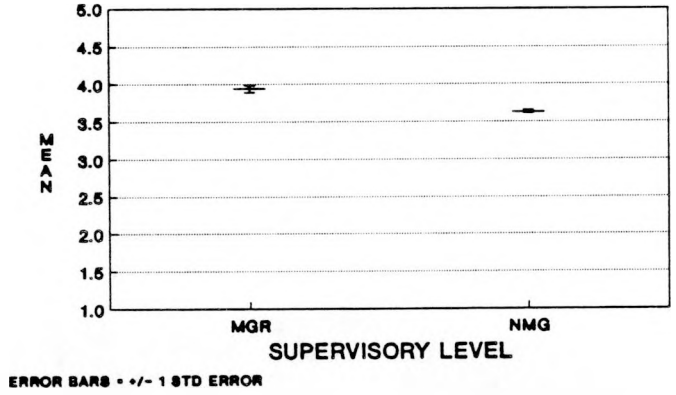


Figure 4.33. Significant differences between managers and nonmanagers on the achievement scale

Figure 4.34 depicts statistically significant differences between supervisory levels on the Self-Actualizing (C12) Scale. The Non-Manager Supervisory Level had the lowest mean value on this scale

and was statistically significantly different from both the Directors and Above and the Department Managers Supervisory Levels. The Department Managers had the highest mean value on this scale.

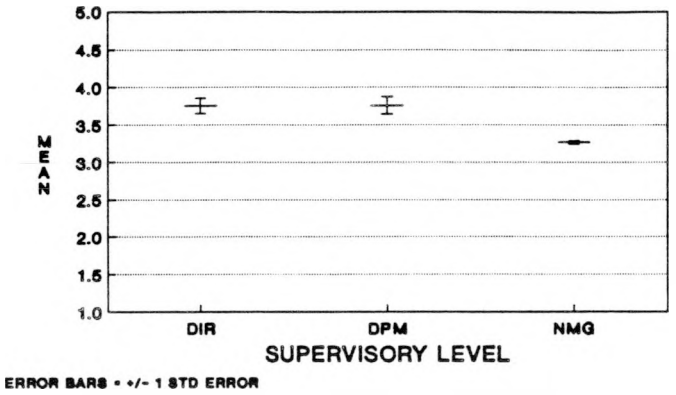


Figure 4.34. Significant differences between supervisory levels on the self-actualizing scale

When the three supervisory levels were combined into one group called Managers and compared to the Nonmanagers on the Self-Actualizing (C12) Scale, the Managers had a statistically significantly higher mean value on this scale than did the Nonmanagers (Figure 4.35).

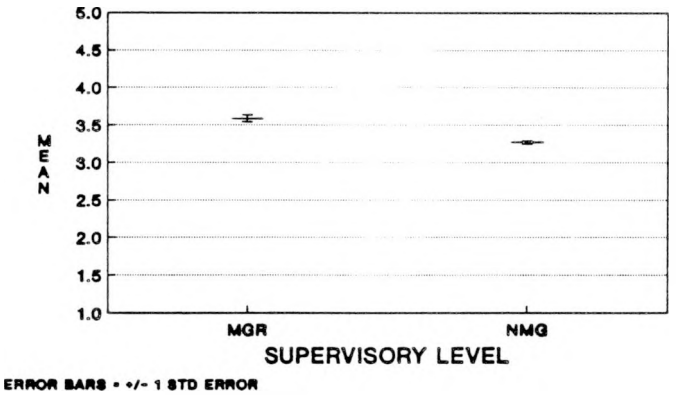


Figure 4.35. Significant differences between managers and nonmanagers on the self-actualizing scale

## 4.2 Communication Scales

### 4.2.1 Description

Communication is a critical process for effective operations in any organization. However, because it is a process rather than a variable, it is very difficult to measure. The scales used in the questionnaire administered at SNL were developed by Roberts and O'Reilly (1974). They have been administered to various organizations with good reliability and success in analyzing several facets of the communication process.

Four communication scales were administered and are described below. The range on each scale is from a low score of 1 to a high score of 7.

**TRUST:** Freedom to discuss the problems and difficulties in the job with an immediate supervisor without jeopardy.

**ACCURACY:** Perception of the accuracy of information received from other organizational levels (superior, same, and subordinate).

**INTERACT:** Desirability of frequent contact with others in the organization (superiors, same, and subordinate).

**SATISFAC:** Overall satisfaction with the communication process in the organization.

### 4.2.2 Overall SNL Results

The overall means for SNL on each of the communication scales described above are presented in Figure 4.36. SNL employees desire a high level of interaction with others across the organization and perceive the information they receive from others to be accurate. SNL employees also trust their superiors to a moderate extent and are moderately satisfied with the overall communication process at SNL.

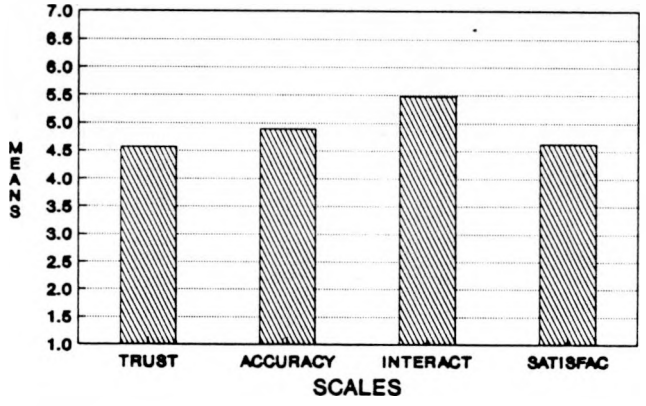


Figure 4.36. Overall means on communication scales for SNL

### 4.2.3 Differences Between VP Groups

Appendix A presents all of the means and statistically significant differences between VP Groups on the communication scales. Appendix L presents graphs which compare each VP Group to the overall mean for SNL on each of the communication scales.

Statistically significant differences between VP Groups on the Communication-Trust Scale are presented in Figure 4.37. The 0000 VP Group has the lowest mean value on this scale and is statistically significantly different from the 6000 and 9000 VP Groups. The 6000 VP Group had the highest mean value on this scale and was statistically significantly different from the 3000, as well as the 0000, VP Groups.

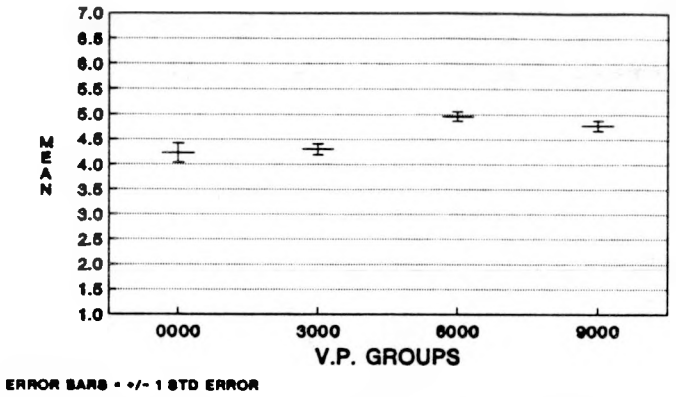


Figure 4.37. Significant differences between VP groups on the communication-trust scale

VP Groups also exhibited statistically significant differences on the Communication-Accuracy Scale (Figure 4.38). The 3000 and 7000 VP Groups had equivalent mean values on this scale and were statistically significantly lower on this scale than the 6000 and 9000 VP Groups. The 6000 VP Group had the highest mean value on this scale.

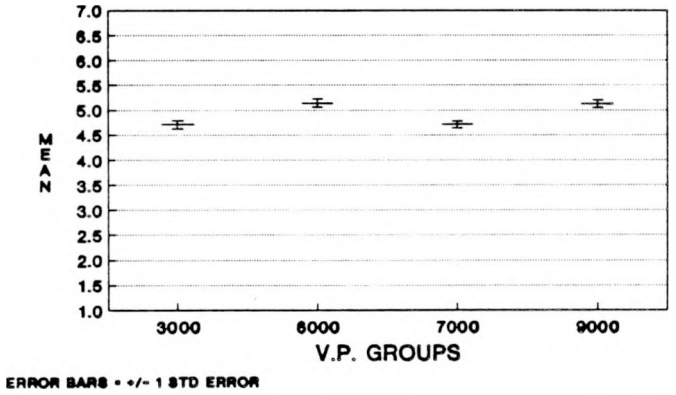


Figure 4.38. Significant differences between VP groups on the communication-accuracy scale

On the Communication-Interaction Scale, two VP Groups were statistically significantly different from one another (Figure 4.39). The 6000 VP Group had the highest mean value on this scale and was statistically significantly different from the 3000 VP Group, which had the lowest mean value on this scale.

No statistically significant differences were obtained between VP Groups on the Communication-Satisfaction Scale.

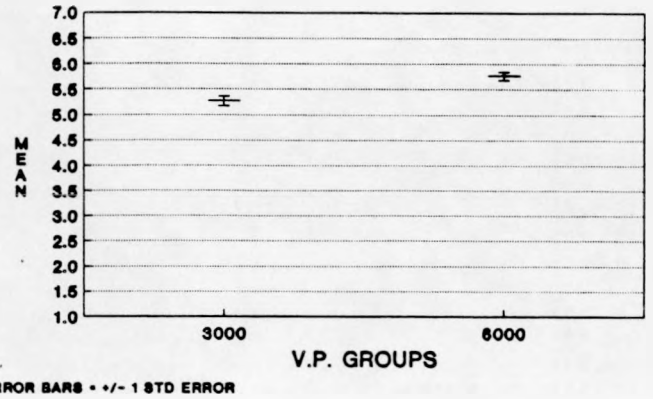


Figure 4.39. Significant differences between VP groups on the communication-interaction scale

4.2.4 Differences Between Directorates Within VP Groups on the Communication Scales

The only directorates within a VP Group to have statistically significant differences on the communication scales are in VP Group 3000 (Figure 4.40). The 3400 Directorate had the lowest mean value on the Communication-Trust Scale and is statistically significantly different from both the 3200 and 3500 Directorates. The 3500 Directorate had the highest mean value on this scale in VP Group 3000.

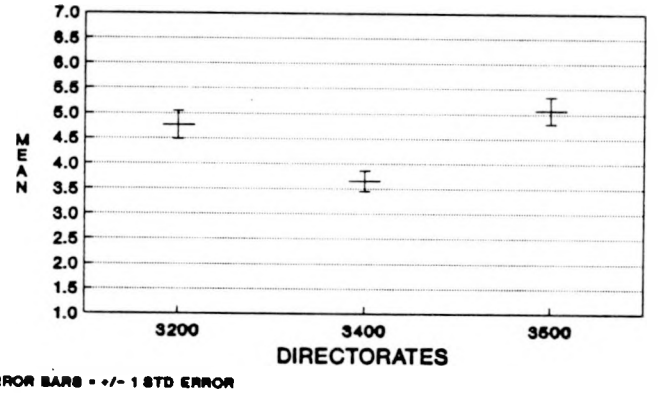


Figure 4.40 Significant differences between directorates in VP group 3000 on communication-trust scale

4.2.5 Differences Between Employee Categories on the Communication Scales

Statistically significant differences between employee categories were obtained on every communication scale except the Communication-Satisfaction Scale. However, on all four communication scales, the Graded Employee Category had the lowest mean value.

The statistically significant differences between employee categories on the Communication-Trust Scale are presented in Figure 4.41. The Graded Employee Category is statistically significantly lower

on this scale than the DMTS and SMTS and MA and Staff Secretary Employee Categories. The MA and Staff Secretary Employee Category had the highest mean value on this scale.

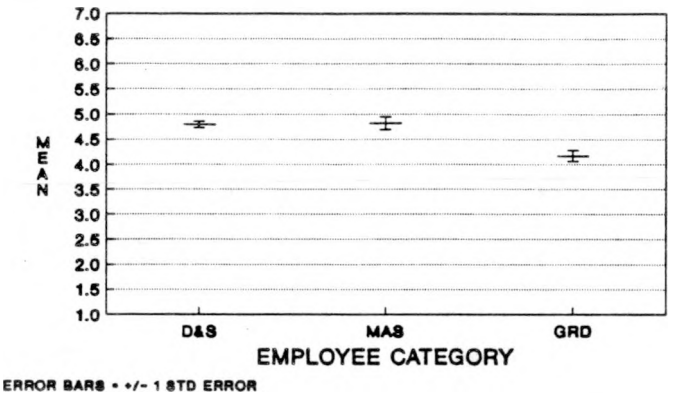


Figure 4.41. Significant differences between employee categories on the communication-trust scale

The Graded Employee Category is statistically significantly lower on the Communication-Accuracy Scale than every other employee category (Figure 4.42). The employee categories that had the highest mean values on this scale are the DMTS and SMTS and MTS groups. Additional statistically significant differences between employee categories on the Communication-Accuracy Scale are presented in Appendix B.

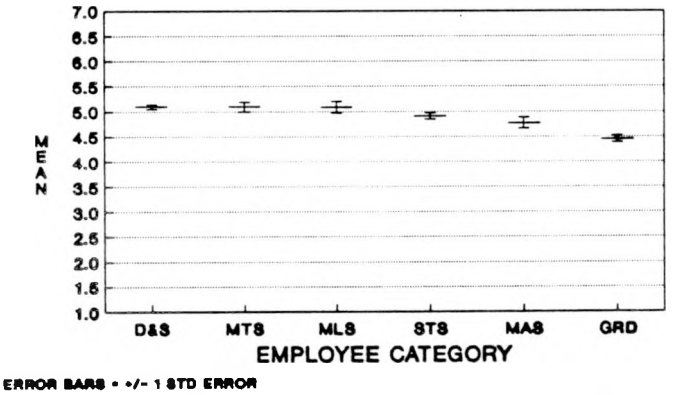


Figure 4.42. Significant differences between employee categories on the communication-accuracy scale

The Graded Employee Category is also statistically significantly lower on the Communication-Interaction Scale than every other employee category (Figure 4.43). The employee category with the highest mean value on this scale is the MTS group.

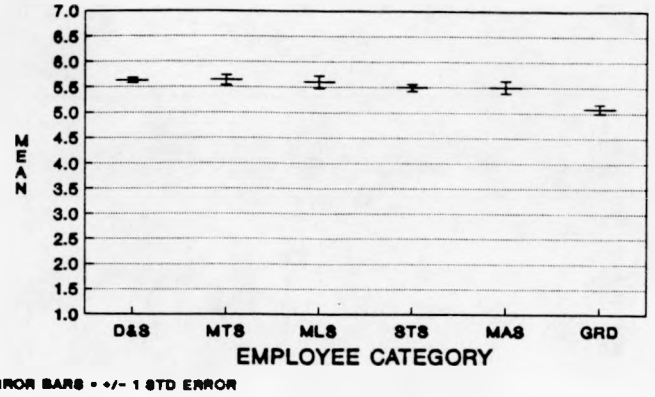


Figure 4.43. Significant differences between employee categories on the communication-interaction scale

4.2.6 Differences Between Supervisory Levels on the Communication Scales

It will be recalled that supervisory level was analyzed in two different ways. The first involved utilizing those categories included on the demographics sheet for Non-Manager, Director and Above, Department Manager, and Section and Division Supervisor. The second analysis consisted of combining the Director and Above, Department Manager, and Section and Division Supervisor categories into one group called Managers and comparing this group to the Nonmanagers.

No statistically significant differences between the four supervisory levels were obtained on the Communication-Trust Scale. However, when the three supervisory levels were combined into a group called Managers and compared to the Nonmanagers, the Nonmanagers had statistically significantly lower mean scores on this scale than did the Managers (Figure 4.44).

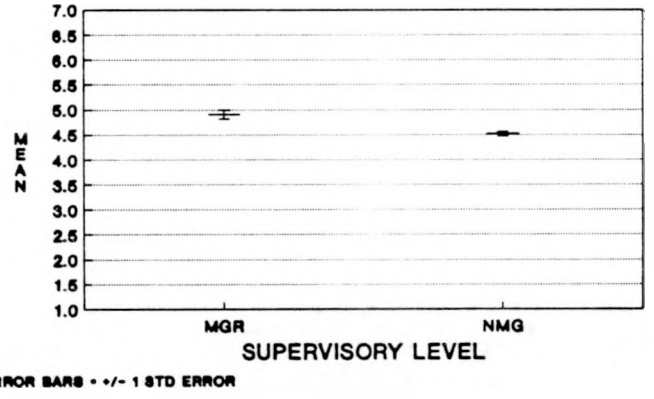


Figure 4.44. Significant differences between managers and nonmanagers on the communication-trust scale

Figure 4.45 depicts the statistically significant differences obtained between supervisory levels on the Communication-Accuracy Scale. The Nonmanagers had statistically significantly lower values on

this scale than did the Director and Above and Department Manager Supervisory Levels. The Director and Above Supervisory Level had the highest mean value on this scale.

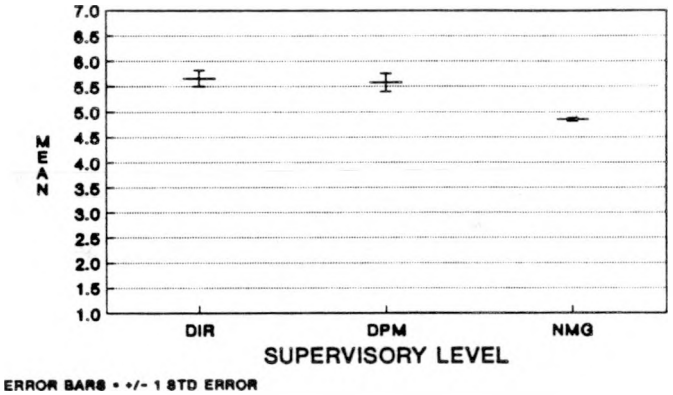


Figure 4.45. Significant differences between supervisory levels on the communication-accuracy scale

Statistically significant differences were also obtained on the Communication-Accuracy Scale when the three supervisory levels were combined into one group called Managers and compared to Nonmanagers. As shown in Figure 4.46, the Nonmanagers had a statistically significantly lower mean value on this scale than did the Managers.

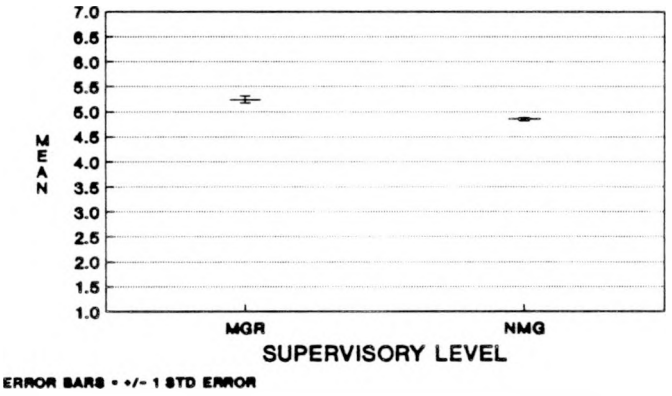


Figure 4.46. Significant differences between managers and nonmanagers on the communication-accuracy scale

No statistically significant differences were obtained between the four supervisory levels on the Communication-Interaction Scale. However, when the three supervisory levels were combined into one group called Managers and compared to Nonmanagers, the Nonmanagers had a statistically significantly lower mean value on this scale than did the Managers (Figure 4.47).

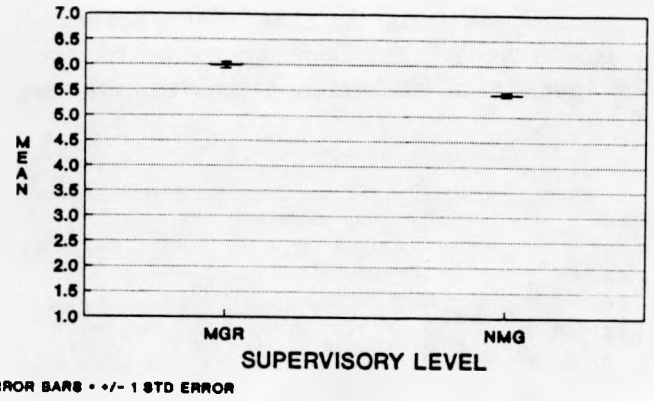


Figure 4.47. Significant differences between managers and nonmanagers on the communication-interaction scale

No statistically significant differences were found between the four supervisory levels on the Communication-Satisfaction Scale. Yet, when the three supervisory levels were combined into the Manager group and compared to the Nonmanagers the Managers had a statistically significantly higher mean score on this scale than did the Nonmanagers (Figure 4.48).

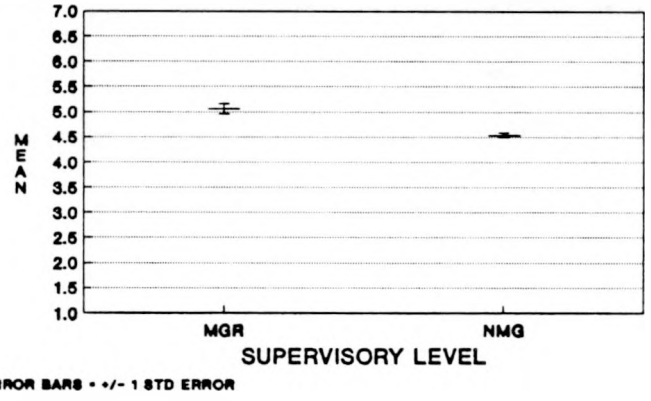


Figure 4.48. Significant differences between managers and nonmanagers on the communication-satisfaction scale

## 4.3 Commitment Scale

### 4.3.1 Scale Description

The Commitment Scale is defined as the relative strength of an individual's identification with and involvement in a particular organization (Mowday & Steers, 1979). This commitment extends to the goals of the organization and the desire to maintain membership in the organization to facilitate these goals. The range on this scale is from a low score of 1 (low commitment) to a high score of 7 (high commitment).

### 4.3.2 Overall SNL Results

The mean score for the SNL sample on the Commitment Scale was 4.72 (Figure 4.49). Mean scores for additional scales are also shown in this figure and will be discussed later. Employees of SNL who responded to the survey appear to be moderately committed to the organization.

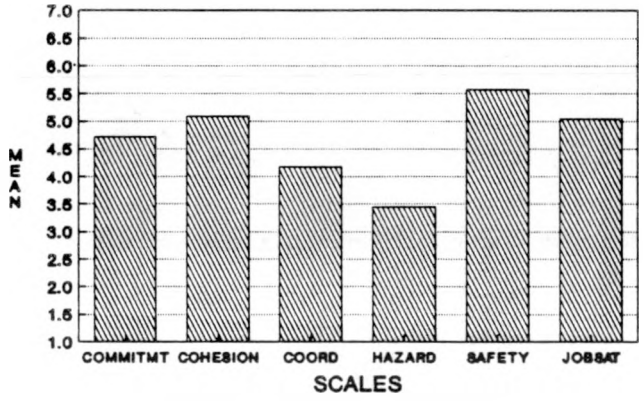


Figure 4.49. Overall means on additional scales for SNL

Appendix M contains figures which compare each VP Group to the overall mean value of the SNL sample for the Commitment Scale as well as for each of the other scales depicted in Figure 4.49.

### 4.3.3 Differences Between VP Groups

As shown in Figure 4.50, the 5000 VP Group had the highest mean score on the Commitment Scale, and is statistically significantly different from the 0000, 3000, and 7000 VP Groups. The VP Group with the lowest mean score on the Commitment Scale is the 0000 VP Group, which is statistically significantly different from the 6000 as well as the 5000 VP Groups. Other statistically significant differences between VP Groups on this scale are presented in Appendix A.

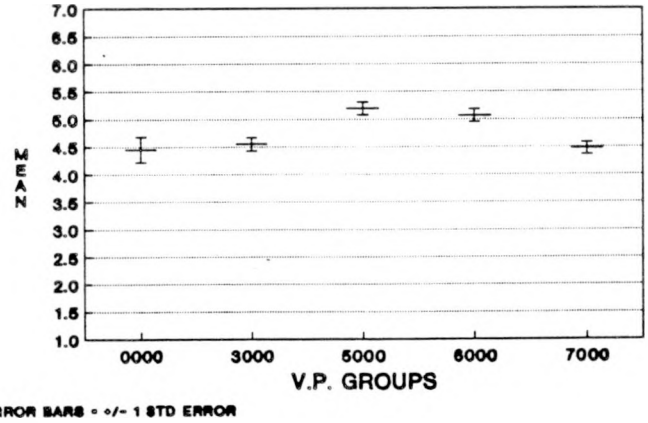


Figure 4.50. Significant differences between VP groups on the commitment scale

4.3.4 Differences Between Directorates Within VP Groups on the Commitment Scale

No statistically significant differences were obtained between any directorates within any VP Groups on the Commitment Scale.

4.3.5 Differences Between Employee Categories on the Commitment Scale

As depicted in Figure 4.51, the Graded Employee Category scored statistically significantly lower on the Commitment Scale than every other employee category except the SAT, TA, and STA Employee Category. The MA and Staff Secretary Employee Category had the highest mean value on this scale. No other statistically significant differences between employee categories were obtained on this scale.

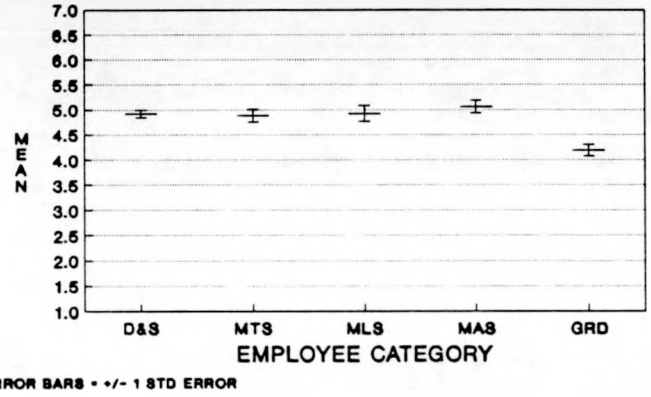


Figure 4.51. Significant differences between employee categories on the commitment scale

4.3.6 Differences Between Supervisory Levels on the Commitment Scale

The Non-Manager Supervisory Level scored statistically significantly lower on the Commitment Scale than did the Director and Above, and Department Manager Supervisory Levels (Figure 4.52). The Director and Above Supervisory Level had the highest mean value on this scale.

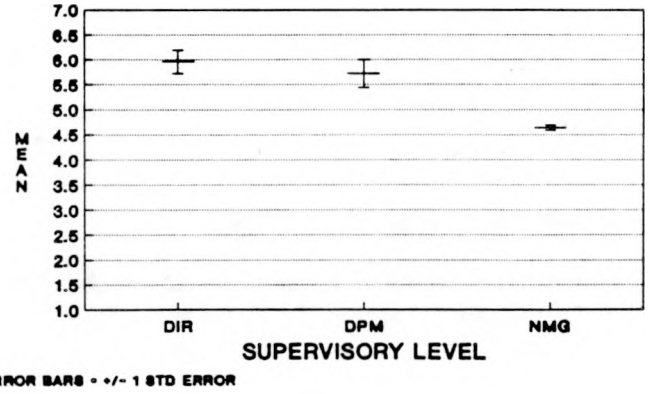


Figure 4.52. Significant differences between supervisory levels on the commitment scale

When the three supervisory levels are combined into one group called Managers and compared to the Nonmanagers, the Managers had a statistically significantly higher mean value on the Commitment Scale than did the Nonmanagers (Figure 4.53).

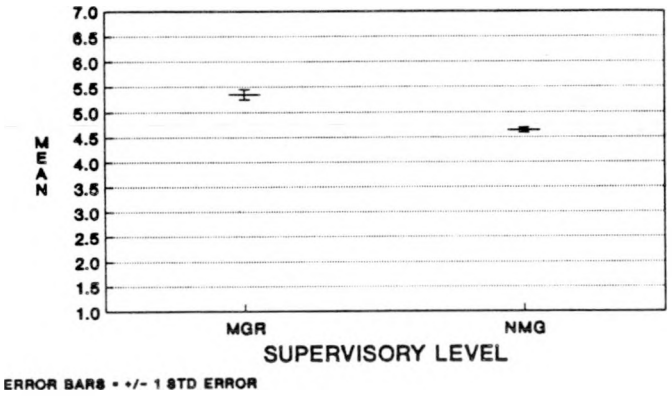


Figure 4.53. Significant differences between managers and nonmanagers on the commitment scale

## 4.4 Cohesion Scale

### 4.4.1 Scale Description

The Cohesion Scale is very similar to the Commitment Scale except that it is defined as the relative strength of an individual's identification and involvement in a particular work group (Seashore, 1954; Price & Muller, 1972). The range on this scale is from a low score of 1 (weak cohesiveness) to a high score of 7 (strong cohesiveness).

### 4.4.2 Overall SNL Results

The overall mean score for the SNL sample on the Cohesion Scale was 5.09 (Figure 4.49), higher than the mean score for the same sample on the Commitment Scale. In general, employees of SNL who responded to the survey identify to a great extent with their own work groups. Thus, it appears that employees of SNL identify to a greater extent with their own working groups, than with the organization as a whole. This result is not surprising at such a large and diverse facility as SNL.

### 4.4.3 Differences Between VP Groups on the Cohesion Scale

No statistically significant differences between VP Groups were obtained on the Cohesion Scale. Appendix A presents the means on this scale for each VP Group.

### 4.4.4 Differences Between Directorates Within VP Groups on the Cohesion Scale

No statistically significant differences between any directorates within any VP Groups were obtained on the Cohesion Scale. Appendix D through J present the means for each directorate within each VP Group on the Cohesion Scale.

### 4.4.5 Differences Between Employee Categories on the Cohesion Scale

No statistically significant differences between any employee categories were obtained on the Cohesion Scale. Appendix B presents the means for each employee category on the Cohesion Scale.

### 4.4.6 Differences Between Supervisory Levels on the Cohesion Scale

When supervisory levels were analyzed for statistically significant differences using the four identified categories, no significant differences were found. However, when the three supervisory levels were combined into one category called Managers and compared to the Nonmanagers (Figure 4.54), Managers had a statistically significantly higher value on the Cohesion Scale than did Nonmanagers.

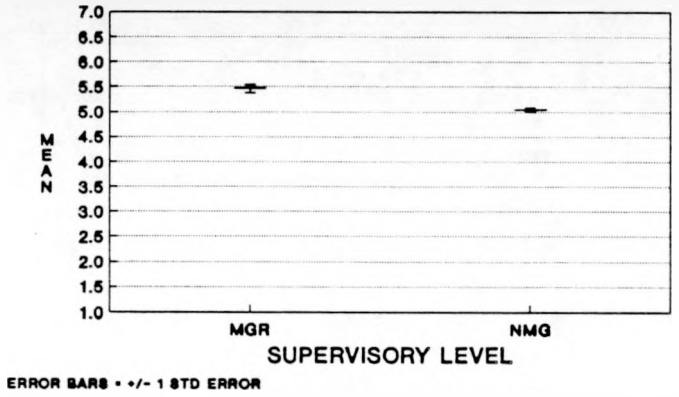


Figure 4.54. Significant differences between managers and nonmanagers on the cohesion scale

## 4.5 Coordination Scale

### 4.5.1 Scale Description

The Coordination Scale assesses the employee's perception of the degree to which the subunits of an organization operate according to the requirements of each other and of the total organization (Georgopoulos & Mann, 1962). The range on this scale is from a low score of 1 (low coordination) to a high score of 7 (high coordination).

### 4.5.2 Overall SNL Results

The overall mean score on this scale for the SNL sample was 4.18 (see Figure 4.49). This indicates that SNL personnel perceive a moderate amount of coordination to exist between the work activities in their organization.

### 4.5.3 Differences Between VP Groups on the Coordination Scale

No statistically significant differences between VP Groups were obtained on the Coordination Scale for the SNL sample.

4.5.4 Differences Between Directorates Within VP Groups on the Coordination Scale

Statistically significant differences between directorates were obtained only within one VP Group on the Coordination Scale. Within VP Group 3000, the 3500 Directorate had the highest mean value on the Coordination Scale and was statistically significantly different from the 3100, 3200, and 3400 Directorates (Figure 4.55). The 3200 Directorate had the lowest mean value on this scale.

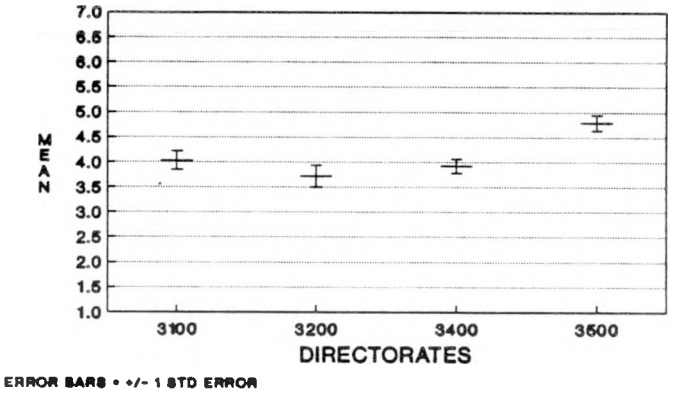


Figure 4.55. Significant differences between directorates in VP group 3000 on coordination scale

4.5.5 Differences Between Employee Categories on the Coordination Scale

No statistically significant differences between employee categories were obtained on the Coordination Scale.

4.5.6 Differences Between Supervisory Levels on the Coordination Scale

No statistically significant differences between supervisory levels on the Coordination Scale were obtained regardless of the way in which they were analyzed.

4.6 Job Satisfaction

4.6.1 Description of Scale

The Job Satisfaction Scale (Kunin, 1955) refers to employees' overall satisfaction with their jobs. While it is not able to point to specific aspects of the working environment which people are satisfied or dissatisfied with, it can help to determine if employee satisfaction is something which needs further consideration by management. The scale ranges from a low score of 1 (very dissatisfied) to a high score of 7 (very satisfied).

4.6.2 Overall SNL Results

Overall, SNL employees tend to be satisfied with their jobs. The mean value for the SNL sample for this scale was 5.04 (see Figure 4.49).

### 4.6.3 Differences Between VP Groups

No statistically significant differences were obtained between VP Groups on the Job Satisfaction Scale for the SNL Sample.

### 4.6.4 Differences Between Directorates Within VP Groups

No statistically significant differences were obtained between directorates within VP Groups on the Job Satisfaction Scale for the SNL Sample.

### 4.6.5 Differences Between Employee Categories

No statistically significant differences were obtained between any employee categories in the SNL sample on the Job Satisfaction Scale.

### 4.6.6 Differences Between Supervisory Levels

Regardless of the way in which supervisory levels were analyzed, no statistically significant differences were obtained between supervisory levels on the Job Satisfaction Scale.

## 4.7 Hazard Scale

### 4.7.1 Scale Description

The Hazard Scale is used to identify people's perception of the hazardous nature of their work (K.H. Roberts, 1990, personal communication). The scale ranges from a low score of 1 (not hazardous) to a high score of 7 (very hazardous).

### 4.7.2 Overall SNL Results

The overall SNL mean score on this scale was 3.45 (see Figure 4.49). This indicates that while employees tend to perceive some amount of hazard in their work, the amount is not, in general, very high.

### 4.7.3 Differences Between VP Groups

The statistically significant differences between VP Groups on the Hazard Scale are depicted in Figure 4.56. Every VP Group is statistically significantly different from at least one other VP Group on the Hazard Scale. The 7000 VP group had the highest mean value on this scale and was statistically significantly different from every other VP Group except the 1000 VP Group. The 0000 VP Group perceived the lowest amount of hazard in their jobs and scored statistically significantly lower from every other VP Group.

### 4.7.4 Differences Between Directorates within VP Groups

Statistically significant differences between directorates were obtained within four of the eight VP Groups on the Hazard Scale. As shown in Figure 4.57, the 2500 Directorate had a statistically significantly higher mean value on the Hazard Scale than the 2100, 2300, 2800, and 2900 Directorates. No other statistically significant differences were obtained within directorates for the 2000 VP Group.

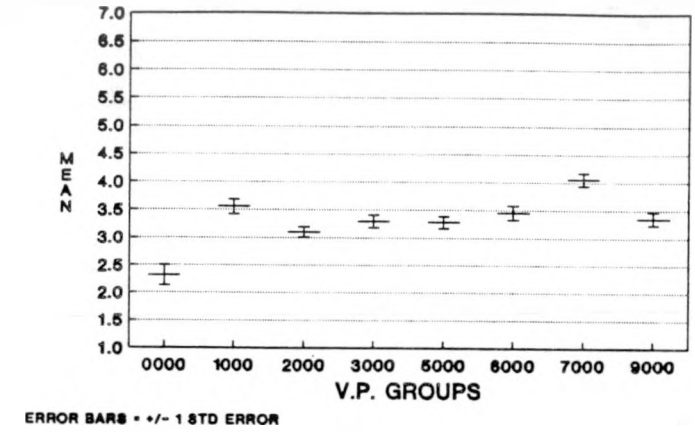


Figure 4.56. Significant differences between VP groups on the hazard scale

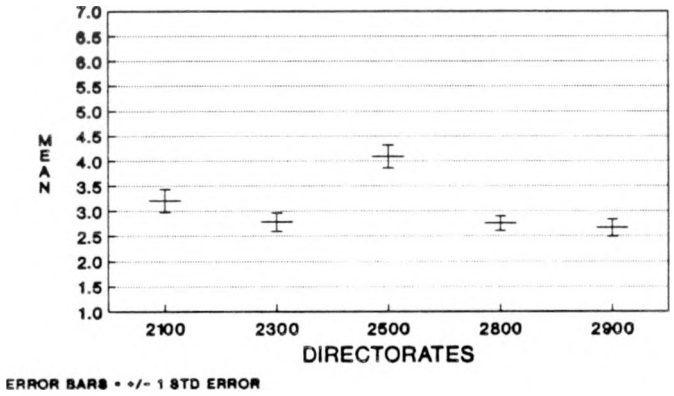


Figure 4.57. Significant differences between directorates in VP group 2000 on the hazard scale

Within the 3000 VP Group, every directorate scored statistically significantly different from at least two other directorates on the Hazard Scale (Figure 4.58). The 3200 Directorate had the highest mean value on this scale and was statistically significantly different from the 3100, 3500, and 3700 Directorates. The 3400 Directorate also had a statistically significantly higher mean value on this scale than the 3100, 3500, and 3700 directorates. The 3500 Directorate had the lowest mean value.

Statistically significant differences were also obtained on the Hazard Scale between the directorates in the 7000 VP Group (Figure 4.59). Every directorate is significantly different from at least two other directorates in this group. The 7400 Directorate had the highest mean value on this scale, and along with the 7500 and 7800 Directorates scored statistically significantly different from the 7200 and 7300 Directorates. The 7300 Directorate had the lowest mean value on this scale.

In the 9000 VP Group, the 9300 Directorate had the highest mean value on the Hazard Scale (Figure 4.60) and scored statistically significantly different from both the 9100 and 9200 Directorates. The 9200 Directorate had the lowest mean value on the Hazard Scale of the directorates in the 9000 VP Group.

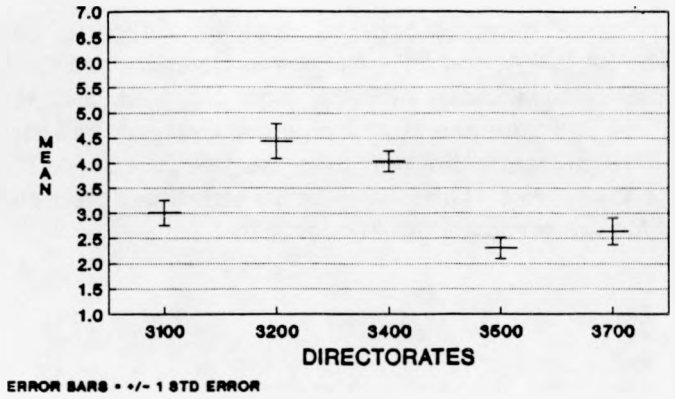


Figure 4.58. Significant differences between directorates in VP group 3000 on the hazard scale

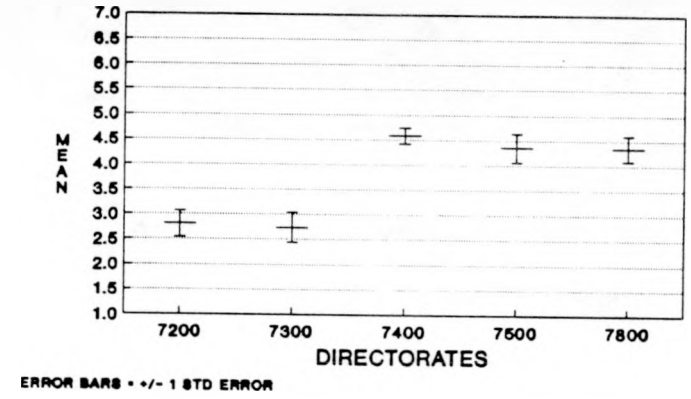


Figure 4.59. Significant differences between directorates in VP group 7000 on the hazard scale

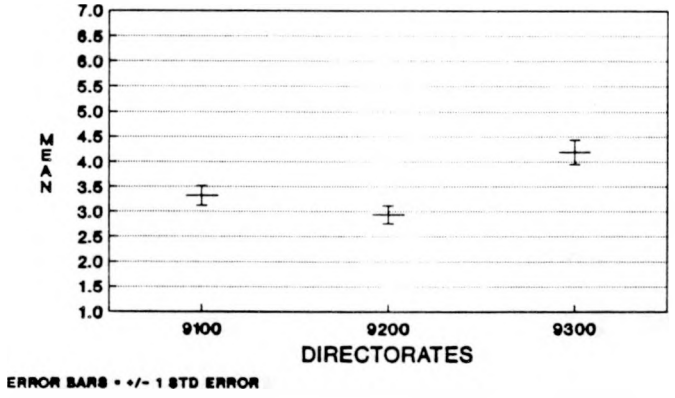


Figure 4.60. Significant differences between directorates in VP group 9000 on the hazard scale

### 4.7.5 Differences Between Employee Categories

The statistically significant differences between employee categories on the Hazard Scale are presented in Figure 4.61. The SAT, TA, and STA Employee Category had the highest mean value on this scale and scored statistically significantly different from the MLS and MA and Staff Secretary Employee Categories. The MA and Staff Secretary Employee Category had the lowest mean value on this scale and was statistically significantly different from the DMTS and SMTS, MTS, SAT, TA, and STA, and Graded Employee Categories. Other statistically significant differences between employee categories on the Hazard Scale are presented in Appendix B.

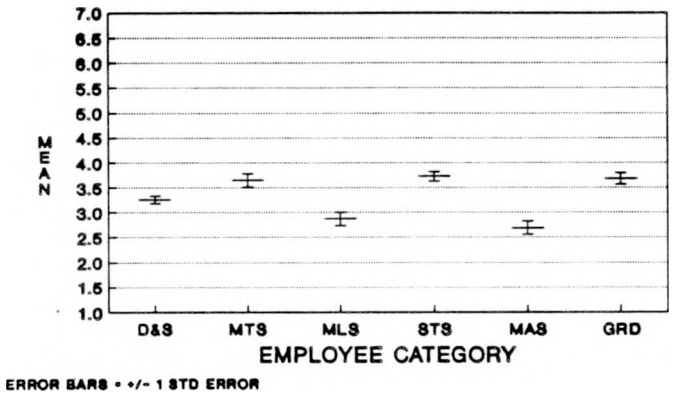


Figure 4.61. Significant differences between employee categories on the hazard scale

### 4.7.6 Differences Between Supervisory Levels

No statistically significant differences between supervisory levels were obtained on the Hazard Scale regardless of the way in which the supervisory levels were analyzed.

## 4.8 Safety Scale

### 4.8.1 Scale Description

The Safety Scale, developed by researchers at the University of California at Berkeley (K. H. Roberts, 1989, personal communication), is used to assess an individual's perception of the importance of safety to success in an organization. Safety is defined as operating in a manner to ensure that the probability of making a mistake is low, because the consequence of making a mistake is high. Organizations typically viewed as operating in this manner are nuclear reactors, naval aircraft carriers and air traffic control centers. The safety scale consists of 40 items which range from a low score of 1 (does not help at all) to a high score of 7 (helps a great deal).

### 4.8.2 Overall SNL Results

The overall mean score for the SNL sample on the Safety Scale was 5.57 (see Figure 4.49). Thus, it appears that the employees of SNL do have a good understanding of those behaviors which are important to safe operations.

4.8.3 Differences Between VP Groups

Statistically significant differences between VP Groups on the Safety Scale are depicted in Figure 4.62. The 1000 VP Group had the lowest mean value on the Safety Scale and scored statistically significantly different from the 0000, 3000, 7000, and 8000 VP Groups. The 0000 VP Group had the highest mean value of all the VP Groups on the Safety Scale. No other statistically significant differences were obtained between VP Groups on the Safety Scale.

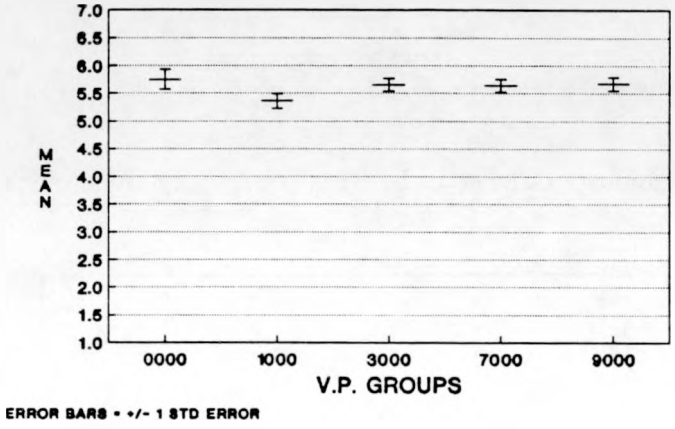


Figure 4.62. Significant differences between VP groups on the safety scale

4.8.4 Differences Between Directorates Within VP Groups

No statistically significant differences between directorates within any VP Group were obtained on the Safety Scale.

4.8.5 Differences Between Employee Categories

No statistically significant differences between employee categories on the Safety Scale were obtained.

4.8.6 Differences Between Supervisory Levels

Statistically significant differences were obtained between supervisory levels on the Safety Scale. As depicted in Figure 4.63, the Director and Above Supervisory Level had the highest mean value on the Safety Scale and was statistically significantly different from the Non-Manager Supervisory Level.

When the three supervisory levels were combined into one group called Managers and compared to the Nonmanagers, the Managers had a statistically significantly higher mean value on the Safety Scale than did the Nonmanagers (Figure 4.64).

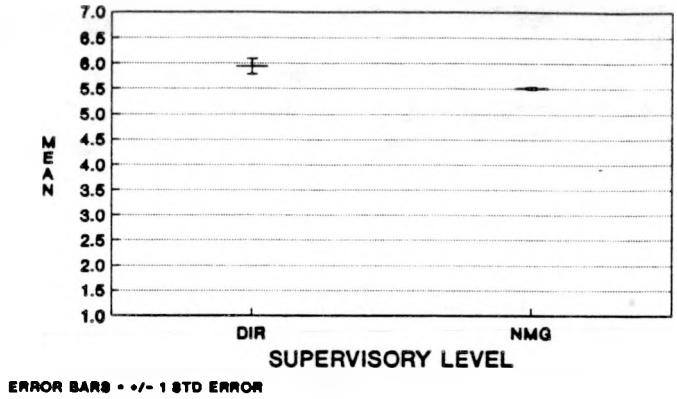


Figure 4.63. Significant differences between supervisory levels on the safety scale

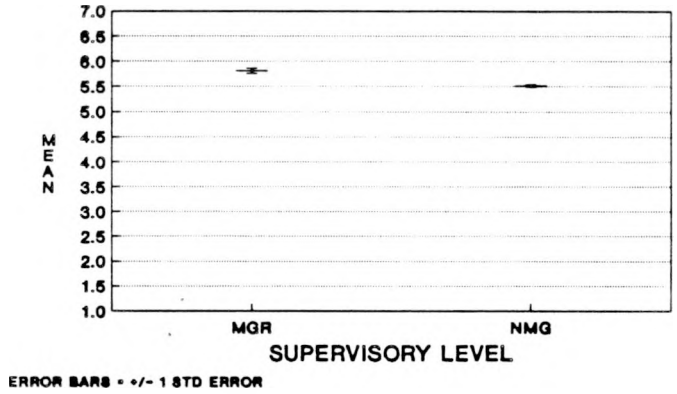


Figure 4.64. Significant differences between managers and nonmanagers on the safety scale

## 4.9 Environmental, Safety and Health Questions

### 4.9.1 Question Descriptions

For the administration of the Organizational Culture Survey (OCS) at SNL, four questions pertaining to environmental, safety and health (ES&H) issues were used. Each question ranges from a low score of 1 (not at all or little) to a high score of 7 (very likely or a lot).

The first ES&H question deals with the likelihood of serious offsite environmental damages/consequences due to improper or substandard performance by a work group. The second ES&H question deals with the likelihood of serious onsite environmental damages/consequences due to improper or substandard performance by a work group. The third ES&H question asks employees to assess the amount of emphasis they believe management places on environmental issues. Finally, the fourth ES&H question asks employees for their perception of how well informed they are of possible risks in their work environment.

4.9.2 Overall SNL Results

For the first ES&H question, a mean value of 2.47 (Figure 4.65) was obtained for the SNL sample. SNL employees do not believe that if improper or substandard work was performed by their working group that a large potential for serious offsite environmental consequences would exist.

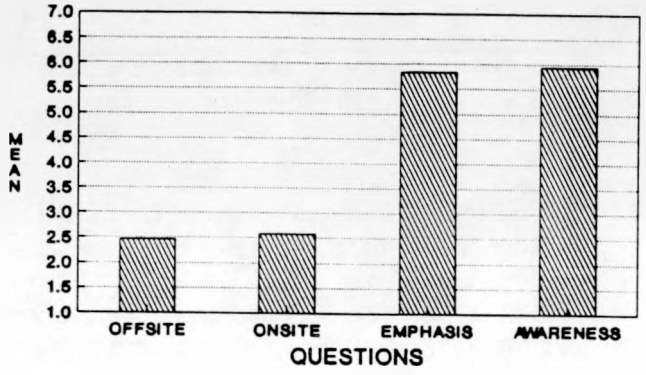


Figure 4.65. Overall means on environmental, safety, and health questions for SNL

The mean value for the SNL sample on the second ES&H question was 2.58 (Figure 4.65). This mean is only slightly higher than the mean obtained on the first ES&H question, indicating that while SNL employees who responded to the survey do not believe there to be a large potential for onsite environmental consequences due to improper or substandard performance in their working groups, the perceived potential for onsite damages to the environment is slightly greater than the potential for offsite environmental damages.

The mean value obtained for the third ES&H question was 5.84 (Figure 4.65). SNL employees believe management places a large amount of emphasis on environmental issues.

The mean value obtained for the fourth ES&H question was 5.94, slightly higher than the previous question (Figure 4.65). SNL employees believe themselves to be well informed concerning the risks in their work environment.

4.9.3 Differences Between VP Groups

Statistically significant differences were obtained between VP groups on each of the four ES&H questions. As depicted in Figure 4.66, every VP Group, was statistically significantly different from at least one other VP Group on the question of potential offsite environmental consequences as a function of improper or substandard performance by their work group. The 0000 VP Group had the lowest mean value on this question and were statistically significantly different from the 3000, 5000, 6000, 7000, and 9000 VP Groups. The 6000 VP Group had the highest mean value on this question and was statistically significantly different from the 0000, 1000, 2000, and 9000 VP Groups. Other significant differences between VP Groups on this ES&H question are presented in Appendix A.

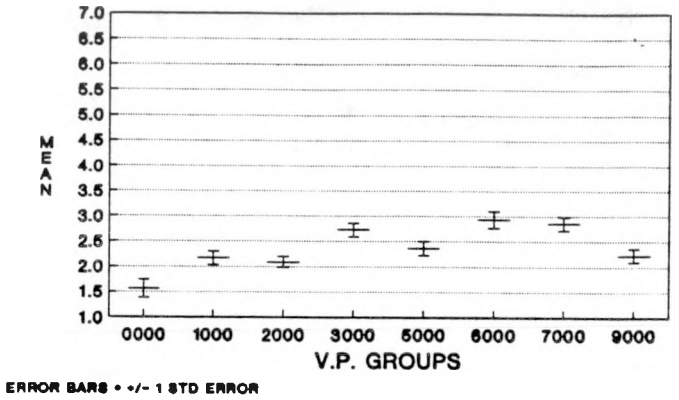


Figure 4.66. Significant differences between VP groups on the offsite environmental consequences question

Statistically significant differences were also obtained on the perception of SNL employees who responded to the survey concerning the amount of onsite environmental damages/consequences which could occur as a function of substandard performance by their work group (Figure 4.67). Every VP Group is statistically significantly different from at least two other VP Groups on this question. Once again, the 0000 VP Group had the lowest mean value on this question and was statistically significantly different from the 1000, 3000, 5000, 6000 and 7000 VP Groups. The 7000 VP Group had the highest mean value on this question and was statistically significantly different from every other VP group except the 3000 and 6000 groups. Other significant differences between VP Groups on this question are presented in Appendix A.

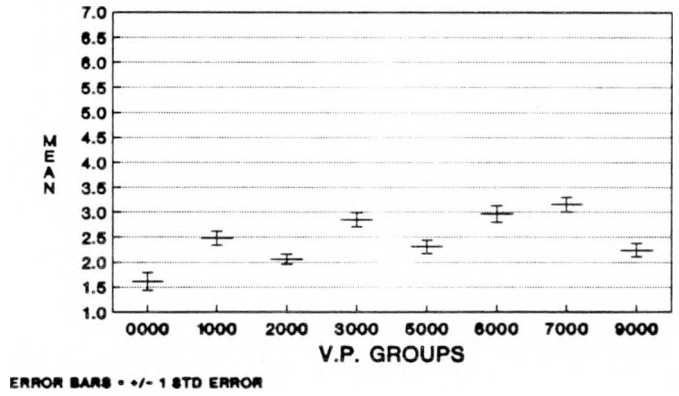


Figure 4.67. Significant differences between VP groups on the onsite environmental consequences question

A comparison of the mean values for each VP Group on the first ES&H question to that group's mean value on the second ES&H question indicates that, in general, the mean value on the second question is higher than the mean value on the first question. This indicates that within those VP Groups in which this is true, the perceived potential for onsite environmental consequences due to substandard performance by their work group is greater than the perceived potential for offsite environmental

consequences. For two VP Groups, however, this relationship does not hold. These two VP Groups are the 2000 and 5000 groups. While the differences between the means for these VP Groups on these two questions are not great, the results indicate that the perceived potential for offsite environmental consequences by these groups is slightly greater than the potential for onsite environmental consequences. Such a profile may be indicative of organizations which design and produce components and systems to be used outside their organization.

Statistically significant differences between VP Groups on the third ES&H question are presented in Figure 4.68. The 3000 VP group, while having a relatively high mean value on this question had the lowest mean value of all the VP Groups and scored statistically significantly lower than the 2000, 5000, and 6000 VP Groups. The 6000 VP Group had the highest mean value on this scale. No other statistically significant differences between VP Groups were obtained on this question.

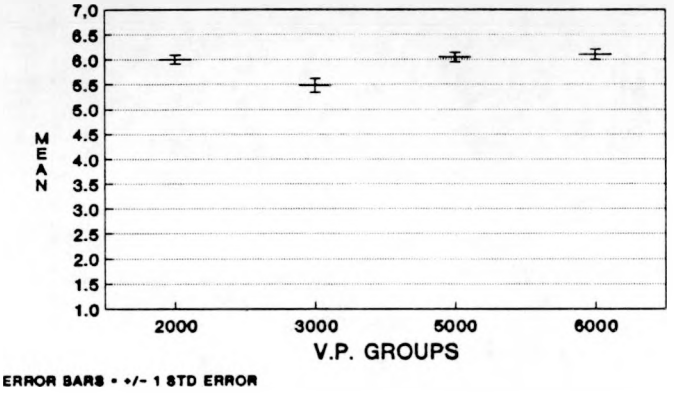


Figure 4.68. Significant differences between VP groups on the management emphasis question

Statistically significant differences between VP Groups on the fourth ES&H question are depicted in Figure 4.69. As in the previous question, the 3000 VP Group, while having a relatively high overall mean value on this question, had the lowest mean value as compared to the other VP Groups. The 3000 VP Group scored statistically significantly lower than the 0000, 2000, 6000, and 7000 VP Groups. The 0000 VP Group had the highest mean value on this scale of the VP Groups.

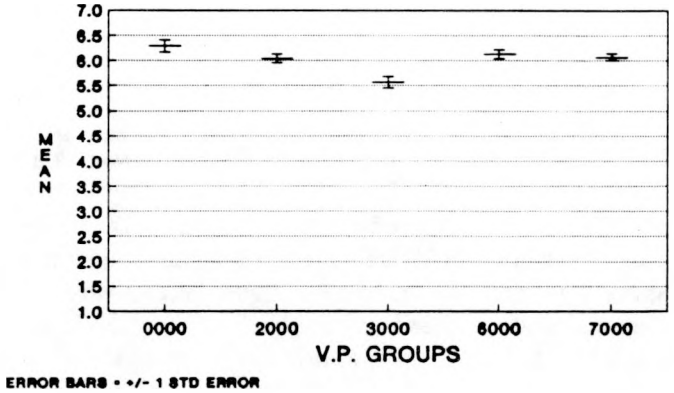


Figure 4.69. Significant differences between VP groups on the employee awareness question

Appendix N contains figures which compare each VP Group to the overall mean value of the SNL sample on each of the four environmental questions.

### 4.9.4 Differences Between Directorates Within VP Groups

Statistically significant differences between directorates on the ES&H questions were obtained in four of the eight VP Groups. Within the 2000 Group, statistically significant differences between directorates were obtained on the first, second, and third ES&H questions.
For the first ES&H question, the 2900 Directorate had the lowest mean value and was statistically significantly different from the 2100 and 2500 Directorates (Figure 4.70). The 2500 Directorate had the highest mean value on this scale. Other statistically significant differences between directorates in the 2000 VP Group on this question are presented in Appendix E.

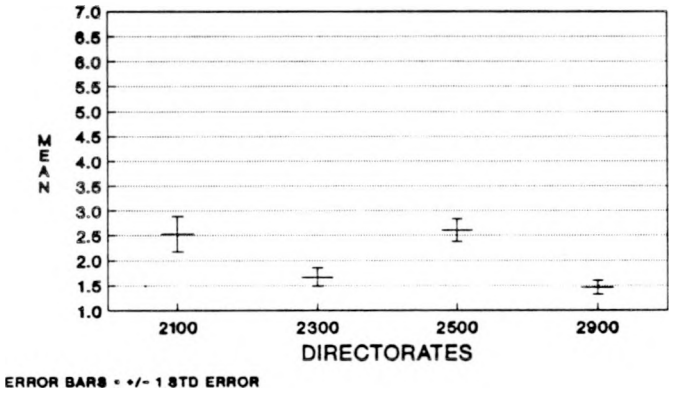


Figure 4.70. Significant differences between directorates in VP 2000 on ES&H offsite consequences question

On the second ES&H question, every directorate in the 2000 VP Group was statistically significantly different from at least one other directorate (Figure 4.71). The 2500 Directorate had the highest mean value on this question, and was statistically significantly different from the 2300, 2800, and 2900 Directorates. The 2300 Directorate had the lowest mean value on this scale and was also statistically significantly different from the 2100 Directorate. Other significant differences between directorates in the 2000 VP Group on this question are presented in Appendix E.

On the third ES&H question, statistically significant differences between directorates in the 2000 VP Group were also obtained (Figure 4.72). The 2800 Directorate had the lowest mean value on this question and was statistically significantly different from the 2100, 2300, and 2900 Directorates. No other significant differences between directorates in the 2000 VP Group were obtained on this question.

Statistically significant differences between directorates in the 3000 VP Group were obtained on two of the four ES&H questions. For the first ES&H question, which concerns the potential for offsite environmental consequences, the 3200 directorate has the highest mean value on this question (Figure 4.73). They are statistically significantly different from the 3100 and 3500 Directorates. The 3500 Directorate has the lowest mean value on this scale and is also statistically significantly different from the 3400 Directorate. No other statistically significant differences between directorates in the 3000 VP Group were obtained on this question.

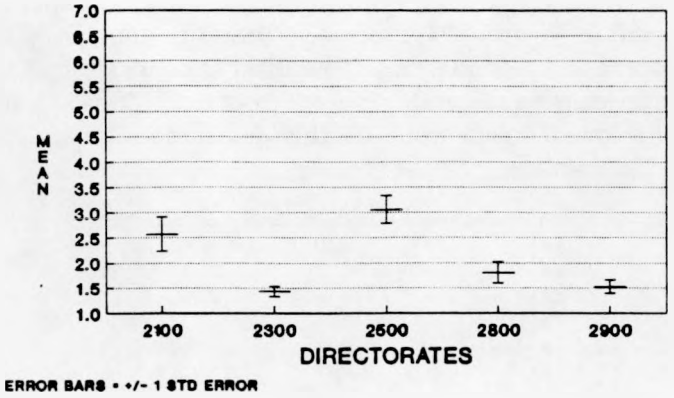


Figure 4.71. Significant differences between directorates in VP 2000 on ES&H onsite consequences question

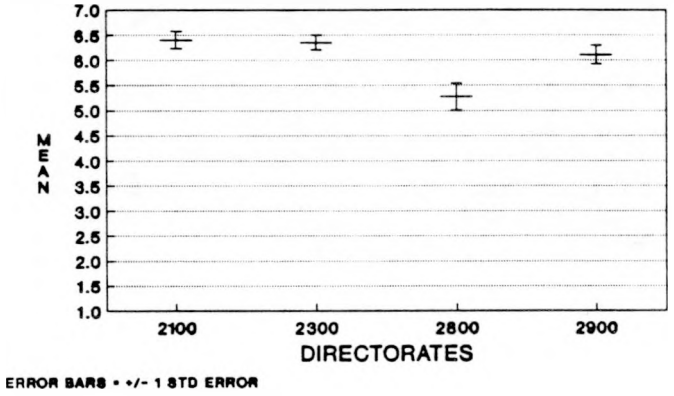


Figure 4.72. Significant differences between directorates in VP 2000 on ES&H management emphasis question

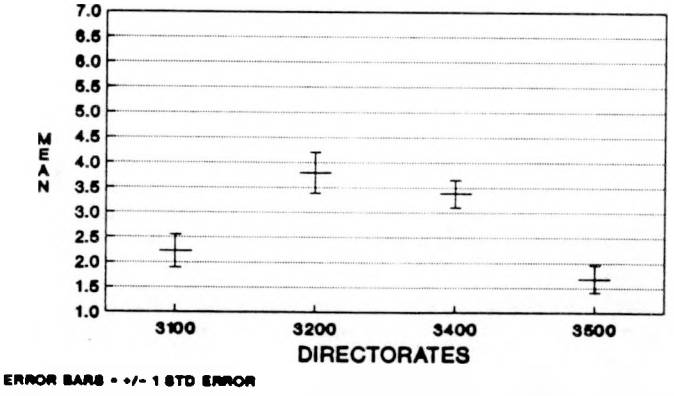


Figure 4.73. Significant differences between directorates in VP group 3000 on ES&H offsite question

Statistically significant differences between directorates within the 3000 VP Group were also obtained on the second ES&H question, which concerns the potential for onsite environmental consequences. As depicted in Figure 4.74, every directorate is statistically significantly different from at least one other directorate on this question. The 3200 Directorate had the highest mean value on this question and was statistically significantly different from the 3100, 3500, and 3700 Directorates. The 3500 Directorate had the lowest mean value on this question and was also statistically significantly different from the 3400 Directorate.

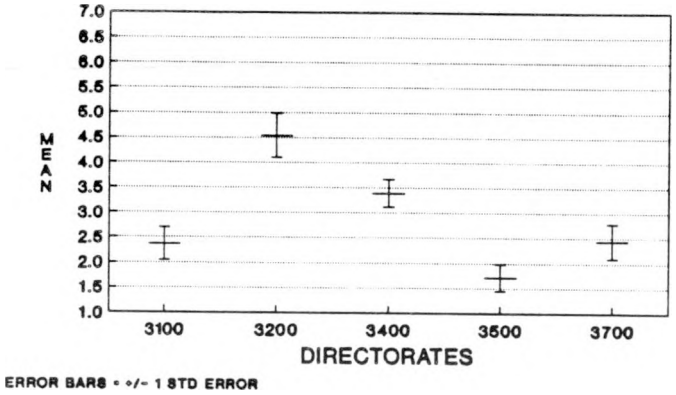


Figure 4.74. Significant differences between directorates in VP group 3000 on ES&H onsite question

Statistically significant differences were also obtained between Directorates in the 7000 VP Group on the second ES&H question. As can be seen in Figure 4.75, the 7300 Directorate had the lowest mean score on this question and was statistically significantly different from both the 7400 and 7800 Directorates. The 7800 Directorate had the highest mean value on this question.

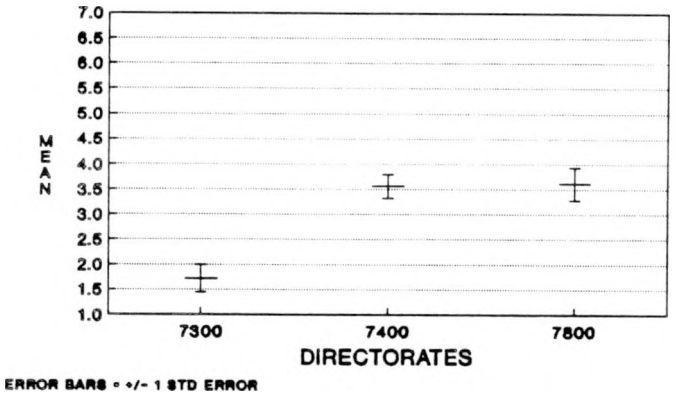


Figure 4.75. Significant differences between directorates in VP group 7000 on ES&H onsite question

Statistically significant differences between directorates in the 9000 VP Group were obtained on two of the four ES&H questions. On the question of offsite environmental consequences, the 9300 Directorate had a statistically significantly greater mean score on this question than did the 9200 Directorate (Figure 4.76). No other statistically significant differences between directorates in the 9000 VP Group were obtained on this question.

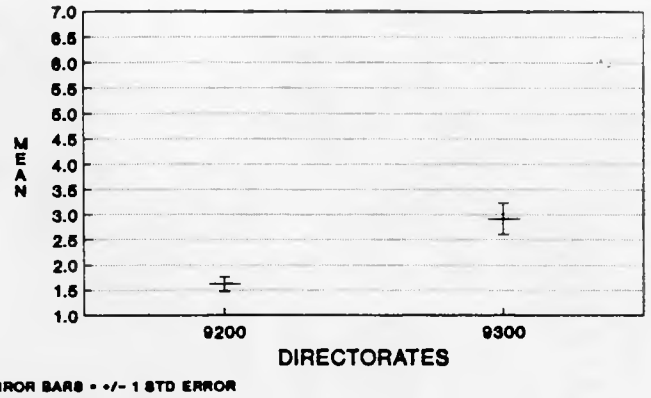


Figure 4.76. Significant differences between directorates in VP group 9000 on ES&H offsite question

Statistically significant differences were also obtained between the 9200 and 9300 Directorates in the 9000 VP Group on the question concerning onsite environmental consequences. The 9300 Directorate had a statistically significant higher mean value on this question than the 9200 Directorate (see Figure 4.77). No other statistically significant differences between directorates in the 9000 VP Group were obtained on this question.

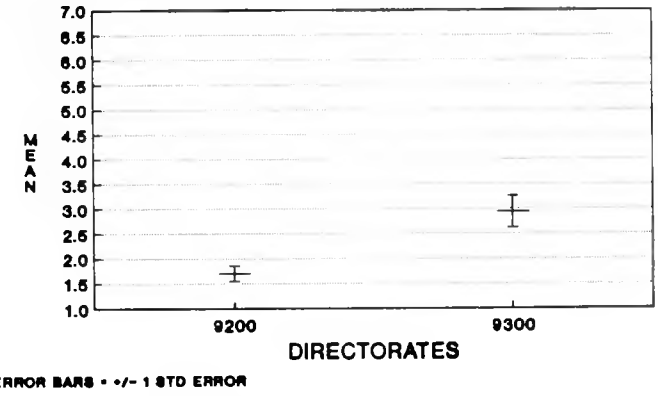


Figure 4.77. Significant differences between directorates in VP group 9000 on ES&H onsite question

### 4.9.5 Differences Between Employee Categories

Statistically significant differences between employee categories were obtained on three of the four ES&H questions: offsite consequences, onsite consequences, and management emphasis.

Statistically significant differences between employee categories on the issue of offsite environmental consequences are presented in Figure 4.78. The Graded Employee Category had the highest mean value on this question and was statistically significantly different from the DMTS and SMTS and MLS Employee Categories. The MLS Employee Category had the lowest mean value on this question and was statistically significantly different from the SAT, TA, and STA, MA and Staff Secretary, and Graded Employee Categories. No other statistically significant differences between employee categories were obtained on this question.

Statistically significant differences between employee categories on the second ES&H question (onsite environmental consequences) are depicted in Figure 4.79. The Graded Employee Category had the highest mean value on this question and was statistically significantly different from the DMTS and

SMTS, MTS, MLS, and MA and Staff Secretary Employee Categories. The MLS Employee Category had the lowest mean value on this question and was statistically significantly different from the MTS and SAT, TA, and STA, and Graded Employee Categories. No other statistically significant differences between employee categories were found on this question.

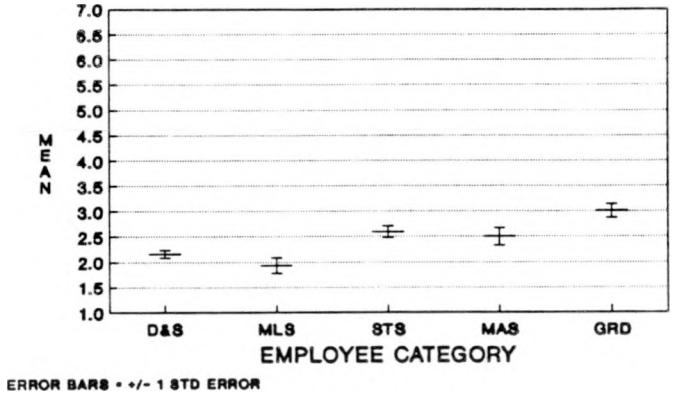


Figure 4.78. Significant differences between employee categories on the offsite consequences question

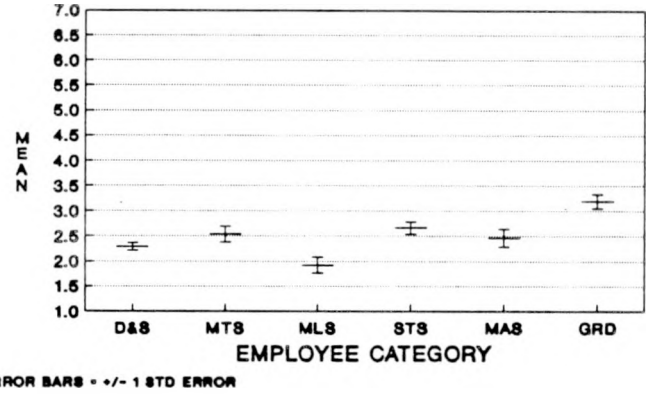


Figure 4.79. Significant differences between employee categories on the onsite consequences question

Statistically significant differences between employee categories were also obtained on the third ES&H question which relates to the amount of emphasis respondents believe management places on environmental issues. The Graded Employee Category had the lowest mean value on this question and was statistically significantly different from the DMTS and SMTS, MTS, and MA and Staff Secretary Employee Categories (Figure 4.80). No other statistically significant differences between employee categories were obtained on this question.

### 4.9.6 Differences Between Supervisory Levels

Statistically significant differences between supervisory levels on the ES&H Questions were obtained only on one question, management emphasis, and only when the three supervisory levels were combined into one group called Managers and compared to the Nonmanagers. As shown in Figure 4.81, the Managers had a statistically significantly higher mean score on this question than the Nonmanagers.

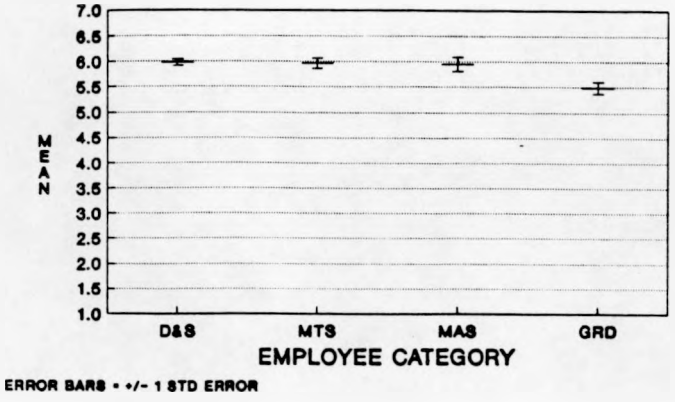


Figure 4.80. Significant differences between employee categories on the management emphasis question

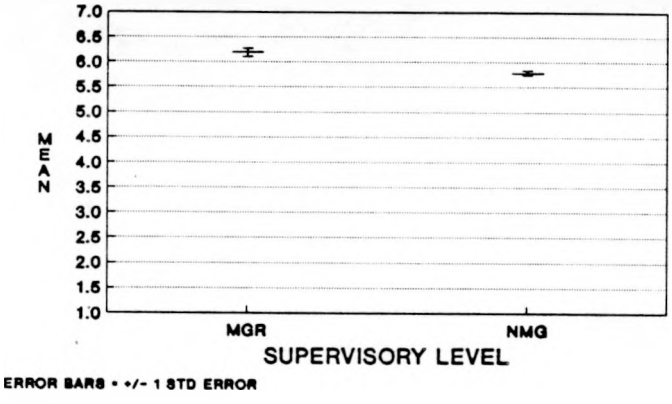


Figure 4.81. Significant differences between managers and nonmanagers on the management emphasis question

## 5. CONCLUSIONS

An Organizational Culture Survey (OCS) was administered to Sandia National Laboratories (SNL) on April 2 and 3, 1991. This was the fifth Department of Energy (DOE) facility at which such a survey was administered. Comparisons among these organizations would be premature at this time and comparisons to other types of organizations at which the OCS has been administered are not justified. A random sample of 1,765 employees was targeted from the total population of SNL employees that were being included in the Tiger Team assessment. A total of 1,398 employees actually completed the survey, resulting in a 79.2 percent response rate.

Overall, the organizational cultural profile which emerges from the SNL sample is one of a constructive cultural style. Employees are supportive of one another, are achievement-oriented, and are encouraged to demonstrate creativity and individual development. The respondents also tend to view the organization as being hierarchically managed and controlled, as indicated by the relatively high mean values on the Conventional (C4) and Dependent (C5) Scales. Another characteristic of the SNL sample is the desire to pursue goals aggressively, as indicated by the mean scores on the Competitive (C9) and Perfectionistic (C10) Scales.

SNL employees who responded to the OCS appear to be committed to the organization and generally describe their values to be similar to the values of SNL. Respondents also have a high sense of cohesiveness within their work groups. Overall mean scores on the Commitment Scale were lower than those on the Cohesion Scale, indicating that SNL employees identify to a greater extent with their own working groups than with the organization as a whole. Such a finding is not surprising due to the size of the organization and the number of diverse activities it engages in.

While there is a general satisfaction with the communication process among the SNL sample, scores on two of the communication scales were somewhat lower and worth noting. The Perceived Accuracy and Trust in Communications Scales had lower mean values than the Satisfaction and Desire for Interaction Communication Scales. Some of these differences were especially apparent in the analyses of employee categories and supervisory levels.

The overall mean score for the SNL sample on the Hazard Scale was moderate and the perception of hazard does appear to be dependent on work function. The Hazard Scale was one of the scales on which many statistically significant differences were obtained between different organizational groups. However, despite the differential perception of the hazardous nature of work, there was an overall high attention to safety across the organization. Attention to safety did not seem to be distinguished by work function as evidenced by the few statistically significant differences obtained between groups on the Safety Scale.

The Environmental, Safety and Health Questions yielded some interesting results, especially pertaining to the first two questions which deal with the potential for offsite and onsite environmental consequences. Both of these questions had relatively low mean values in the SNL sample. This may be due to the fact that many hazardous operations which are conducted at the SNL site appear to be removed from the general population of the laboratory and the surrounding community. Thus, despite the fact that hazardous operations do take place, they are not perceived as being potentially dangerous to the off or onsite environment. The environmental, safety, and health questions which deal with management emphasis on environmental issues and employee awareness of potential risks in their work environments both yielded high mean values in the SNL sample.

In terms of differences obtained between VP Groups on the OCS scales, the 3000 VP Group exhibited a consistently different profile from the other VP Groups on many of the scales. For example, they tended to score higher on the Approval-oriented, Conventional, Dependent, and Avoidance Scales than the other VP Groups. Additionally, they had lower mean scores on the Perceived Accuracy of Communication and Desire for Interaction Scales.

The 6000 and 9000 VP Groups, on the other hand, exhibited profiles which emphasize values opposite of the 3000 VP Group. They score lower on the Approval-oriented, Conventional, Dependent, and Avoidance Scales. Additionally, these two groups tended to score higher on the Achievement-oriented, Commitment, Communication-Trust, and Communication-Accuracy Scales.

Differences between Directorates within VP Groups were not as numerous as might be expected given the size of the organization. Differences were obtained in only four of the seven VP Groups in which directorate analyses were conducted (2000, 3000, 7000, 9000). Most of these differences were obtained on the Hazard Scale or the Environmental, Safety, and Health Questions. It was only in the 3000 VP Group that statistically significant differences between directorates extended into other scales (e.g. Conventional, Avoidance, Coordination, and Communication-Trust).

Among employee categories, the Graded Employee Category exhibited a profile consistently different from the other employee categories. Graded Employees scored lower on the Humanistic-Encouraging Scale and higher on the Approval-oriented, Conventional, Dependent, and Avoidance Scales than the other employee categories. In addition, they scored lower on the Achievement-oriented Commitment, Desire for Interaction, and Communication-Accuracy Scales. The Graded Employee Category also had a higher perceived hazardous nature of work score than other categories, and believed that substandard performance in their work group has a high potential for both off and onsite environmental consequences.

Differences between supervisory levels are similar to those frequently reported in the literature. For example, the results for supervisors tended to indicate more affiliativeness, less approval-seeking, less conventionalism, less dependency, more achievement-orientation, more commitment to the organization, and a stronger belief that management places a high emphasis on environmental issues than Non-Supervisors.

In summary, the SNL population, as represented by the OCS sample, is a committed and largely cohesive workforce. The consistently different pattern of the Graded Employee Category appears to be the most significant deviation in the organizational profile and should be more carefully examined. Employees perceive constructive and supportive behaviors to be valued by the organization, but also believe that aggressive/defensive type behaviors are important for success in the organization. Organizationally, the VP group differences are not dissimilar with the expectations for their work function and yet, there is a high degree of homogeneity within VP groups among the directorates sampled.

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# APPENDIX A

## SIGNIFICANT DIFFERENCES BETWEEN VP GROUPS AT SANDIA

| Code | VP Group | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 | C10 | C11 | C12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0000 Other | 3.39 | 3.43 | 2.87 | 2.94 | 3.09 | 2.19 | 2.37 | 2.57 | 2.72 | 3.05 | 3.64 | 3.22 |
| | | | | 8 | | | | | | | | | |
| 2 | 1000 Research | 3.17 | 3.19 | 2.64 | 2.88 | 2.93 | 2.12 | 2.30 | 2.63 | 3.00 | 3.03 | 3.69 | 3.28 |
| | | | 4 | 4 | | 4 | | | | 5,8,7,4 | | | |
| 3 | 2000 Component Development | 3.41 | 3.45 | 2.77 | 2.94 | 3.11 | 2.12 | 2.33 | 2.55 | 2.73 | 2.93 | 3.72 | 3.30 |
| | | | | | | | | | | | | | |
| 4 | 3000 Support Staff | 3.39 | 3.65 | 2.91 | 3.15 | 3.22 | 2.35 | 2.43 | 2.64 | 2.57 | 3.02 | 3.58 | 3.21 |
| | | | 2 | 2,6,8 | 6,5,8 | 5,2,6,8 | 6,5,8 | | | 2 | | | |
| 5 | 5000 Defense Programs | 3.33 | 3.41 | 2.69 | 2.77 | 2.95 | 2.01 | 2.27 | 2.56 | 2.70 | 2.88 | 3.73 | 3.40 |
| | | | | | 4 | 4 | 4 | | | 2 | | | |
| 6 | 6000 Energy Programs | 3.34 | 3.38 | 2.61 | 2.81 | 2.92 | 2.02 | 2.34 | 2.45 | 2.72 | 2.91 | 3.76 | 3.39 |
| | | | | 4 | 4 | 4 | 4 | | | | | 7 | |
| 7 | 7000 Technical Support | 3.32 | 3.43 | 2.80 | 3.05 | 3.09 | 2.27 | 2.42 | 2.56 | 2.58 | 2.90 | 3.51 | 3.26 |
| | | | | | | | 8 | | | 2 | | 8,6 | |
| 8 | 9000 Exploratory Systems | 3.39 | 3.48 | 2.60 | 2.76 | 2.88 | 1.98 | 2.35 | 2.51 | 2.61 | 2.94 | 3.82 | 3.39 |
| | | | | 4,1 | 4 | 4 | 4,7 | | | 2 | | 7 | |

First line of each box = mean for VP group on that scale.
Second and third line of each box = those VP groups (coded by number) that the VP group is significantly different from.

| Code | VP Group | COT | COH | HAZ | COD | SAF | JOB | CMT | CMA | CMI | CMS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0000 Other | 4.45 | 4.73 | 2.32 | 4.01 | 5.75 | 4.95 | 4.23 | 4.77 | 5.34 | 4.76 |
| | | 5,6 | | 2,3,4,5,6,7,8 | | 2 | | 6,8 | | | |
| 2 | 1000 Research | 4.61 | 5.03 | 3.56 | 4.06 | 5.36 | 4.79 | 4.64 | 4.82 | 5.53 | 4.33 |
| | | | | 1 | | 1,8,4,7 | | | | | |
| 3 | 2000 Component Development | 4.63 | 5.14 | 3.10 | 4.31 | 5.50 | 5.02 | 4.60 | 5.03 | 5.44 | 4.75 |
| | | | | 1,7 | | | | | | | |
| 4 | 3000 Support Staff | 4.55 | 5.03 | 3.30 | 4.17 | 5.65 | 4.97 | 4.30 | 4.71 | 5.27 | 4.56 |
| | | 5 | | 1,7 | | 2 | | 6 | 6,8 | 6 | |
| 5 | 5000 Defense Programs | 5.19 | 5.14 | 3.28 | 4.35 | 5.52 | 5.09 | 4.69 | 5.05 | 5.64 | 4.66 |
| | | 4,7,1 | | 1,7 | | | | | | | |
| 6 | 6000 Energy Programs | 5.06 | 5.41 | 3.46 | 4.18 | 5.54 | 5.30 | 4.96 | 5.14 | 5.77 | 4.82 |
| | | 7,1 | | 1,7 | | | | 4,1 | 7,4 | 4 | |
| 7 | 7000 Technical Support | 4.47 | 4.98 | 4.06 | 4.05 | 5.64 | 4.99 | 4.47 | 4.71 | 5.41 | 4.54 |
| | | 5,6 | | 1,3,4,5,6,8 | | 2 | | | 6,8 | | |
| 8 | 9000 Exploratory Systems | 5.18 | 5.27 | 3.36 | 4.25 | 5.67 | 5.36 | 4.78 | 5.12 | 5.69 | 4.77 |
| | | | | 1,7 | | 2 | | 1 | 7,4 | | |

First line of each box = mean for VP group on that scale.
Second and third line of each box = those VP groups (coded by number) that the VP group is significantly different from.

| Code | VP Group | OFF | ONS | MGE | EMA |
|---|---|---|---|---|---|
| 1 | 0000 Other | 1.56 | 1.61 | 5.83 | 6.29 |
| | | 6,7,4,5,8 | 7,6,4,5,2 | | 4 |
| 2 | 1000 Research | 2.17 | 2.48 | 5.77 | 5.94 |
| | | 6,7 | 7,1 | | |
| 3 | 2000 Component Development | 2.09 | 2.06 | 6.00 | 6.04 |
| | | 6,7 | 7,6,4 | 4 | 4 |
| 4 | 3000 Support Staff | 2.73 | 2.85 | 5.48 | 5.57 |
| | | 1 | 3,1 | 3,5,6 | 1,6,7,3 |
| 5 | 5000 Defense Programs | 2.37 | 2.31 | 6.05 | 5.94 |
| | | 1 | 7,1 | 4 | |
| 6 | 6000 Energy Programs | 2.94 | 2.96 | 6.10 | 6.13 |
| | | 8,2,3,1 | 8,3,1 | 4 | 4 |
| 7 | 7000 Technical Support | 2.86 | 3.15 | 5.83 | 6.07 |
| | | 2,3,1 | 2,5,8,3,1 | | 4 |
| 8 | 9000 Exploratory Systems | 2.23 | 2.24 | 5.90 | 5.91 |
| | | 6,1 | 7,6 | | |

First line of each box = mean for VP group on that scale.
Second and third line of each box = those VP groups (coded by number) that the VP group is significantly different from.

# APPENDIX B

## SIGNIFICANT DIFFERENCES BETWEEN EMPLOYEE CATEGORIES AT SANDIA

| Code | Employee Category | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 | C10 | C11 | C12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | DMTS & SMTS | 3.31 | 3.26 | 2.60 | 2.75 | 2.91 | 2.07 | 2.37 | 2.63 | 2.88 | 2.95 | 3.78 | 3.35 |
| | | 5 | 5,3,6 | 3,5,6 | 6,4 | 6,3 | 6 | | | 6,5 | | 6 | |
| 2 | MTS | 3.38 | 3.37 | 2.74 | 2.89 | 3.00 | 2.13 | 2.38 | 2.61 | 2.77 | 2.95 | 3.67 | 3.30 |
| | | | 5 | | 6 | 6 | | | | 6,5 | | 6 | |
| 3 | MLS | 3.52 | 3.61 | 2.94 | 2.96 | 3.15 | 2.22 | 2.35 | 2.56 | 2.65 | 2.99 | 3.76 | 3.26 |
| | | 4,6 | 1 | 1 | 6 | 1 | | | | | | 6 | |
| 4 | SAT, TA, & STA | 3.23 | 3.37 | 2.76 | 3.02 | 3.05 | 2.15 | 2.31 | 2.53 | 2.69 | 2.94 | 3.63 | 3.26 |
| | | 5,3 | 5 | | 1 | | | | | 5 | | 6 | |
| 5 | MA & Staff Secretary | 3.61 | 3.80 | 2.90 | 2.99 | 3.07 | 2.13 | 2.31 | 2.45 | 2.42 | 3.05 | 3.79 | 3.45 |
| | | 1,4,6 | 2,4,1 | 1 | 6 | | | | | 1,2,4 | | 6 | |
| 6 | Graded | 3.21 | 3.56 | 2.89 | 3.25 | 3.27 | 2.34 | 2.40 | 2.58 | 2.51 | 2.99 | 3.41 | 3.21 |
| | | 5,3 | 1 | 1 | 5,3,2,1 | 2,1 | 1 | | | 1,2 | | 1,2,3,4,5 | |

First line of each box = mean for employee category on that scale.
Second and third line of each box = those employee categories (coded by number) that the employee category is significantly different from.

| Code | VP Group | COT | COH | HAZ | SAF | COD | JOB | CMT | CMA | CMI | CMS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | DMTS & SMTS | 4.92 | 5.17 | 3.26 | 5.46 | 4.19 | 5.03 | 4.79 | 5.09 | 5.63 | 4.64 |
| | | 6 | | 5 | | | | 6 | 5,6 | 6 | |
| 2 | MTS | 4.88 | 5.15 | 3.65 | 5.61 | 4.11 | 4.99 | 4.60 | 5.09 | 5.64 | 4.58 |
| | | 6 | | 3,5 | | | | | 5,6 | 6 | |
| 3 | MLS | 4.92 | 5.18 | 2.87 | 5.58 | 4.34 | 5.13 | 4.48 | 5.08 | 5.60 | 4.88 |
| | | 6 | | 4,6,2 | | | | | 5,6 | 6 | |
| 4 | SAT, TA & STA | 4.62 | 5.05 | 3.73 | 5.51 | 4.21 | 5.06 | 4.53 | 4.90 | 5.50 | 4.56 |
| | | | | 3,5 | | | | | 6 | 6 | |
| 5 | MA & Staff Secretary | 5.06 | 5.18 | 2.69 | 5.74 | 4.32 | 5.24 | 4.81 | 4.77 | 5.51 | 4.94 |
| | | 6 | | 4,6,2,1 | | | | 6 | 1,2,3,6 | 6 | |
| 6 | Graded | 4.19 | 4.89 | 3.68 | 5.63 | 4.03 | 4.95 | 4.17 | 4.45 | 5.08 | 4.38 |
| | | 5,3,1,2 | | 3,5 | | | | 5,1 | 1,2,3,4,5 | 1,2,3,4,5 | |

First line of each box = mean for employee category on that scale.
Second and third line of each box = those employee categories (coded by number) that the employee category is significantly different from.

| Code | VP Group | OFF | ONS | MGE | EMA |
|---|---|---|---|---|---|
| 1 | DMTS & SMTS | 2.16 | 2.29 | 5.98 | 5.98 |
| | | 6 | 6 | 6 | |
| 2 | MTS | 2.46 | 2.54 | 5.96 | 6.01 |
| | | | 6,3 | 6 | |
| 3 | MLS | 1.93 | 1.92 | 5.82 | 6.14 |
| | | 6,4,5 | 6,4,2 | | |
| 4 | SAT, TA, & STA | 2.59 | 2.67 | 5.91 | 5.96 |
| | | 3 | 3 | | |
| 5 | MA & Staff Secretary | 2.50 | 2.47 | 5.95 | 6.04 |
| | | 3 | 6 | 6 | |
| 6 | Graded | 3.01 | 3.20 | 5.49 | 5.68 |
| | | 1,3 | 2,5,1,3 | 1,2,5 | |

First line of each box = mean for employee category on that scale.
Second and third line of each box = those employee categories (coded by number) that the employee category is significantly different from.

# APPENDIX C

## SIGNIFICANT DIFFERENCES BETWEEN SUPERVISORY LEVELS AT SANDIA

| Code | Supervisory Level | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 | C10 | C11 | C12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Director & Above | 4.26 | 3.96 | 2.54 | 2.39 | 2.63 | 1.79 | 2.58 | 2.47 | 2.59 | 2.85 | 4.23 | 3.76 |
| | | 3,4 | 4 | | 4 | 4 | | | | | | 4 | 4 |
| 2 | Department Manager | 4.08 | 3.80 | 2.44 | 2.30 | 2.68 | 1.72 | 2.39 | 2.38 | 2.55 | 2.85 | 4.19 | 3.76 |
| | | 4 | | | 4 | | 4 | | | | | 4 | 4 |
| 3 | Section & Division Supervisor | 3.74 | 3.68 | 2.62 | 2.74 | 2.92 | 2.00 | 2.46 | 2.63 | 2.80 | 2.93 | 3.86 | 3.54 |
| | | 1,4 | | | | | | | | | | | |
| 4 | Non-Manager | 3.26 | 3.39 | 2.78 | 2.98 | 3.07 | 2.18 | 2.35 | 2.57 | 2.70 | 2.97 | 3.63 | 3.27 |
| | | 1,2,3 | 1 | | 1,2 | 1 | 2 | | | | | 1,2 | 1,2 |
| | | | | | | | | | | | | | |
| 1 | Managers | 3.84 | 3.72 | 2.59 | 2.65 | 2.86 | 1.94 | 2.46 | 2.58 | 2.75 | 2.91 | 3.94 | 3.59 |
| | | 2 | 2 | 2 | 2 | 2 | 2 | | | | | 2 | 2 |
| 2 | Non-Managers | 3.26 | 3.39 | 2.78 | 2.98 | 3.07 | 2.18 | 2.35 | 2.57 | 2.70 | 2.97 | 3.63 | 3.27 |
| | | 1 | 1 | 1 | 1 | 1 | 1 | | | | | 1 | 1 |

First line of each box = mean for supervisory level on that scale.
Second and third line of each box = those supervisory levels (coded by number) that the supervisory level is significantly different from.

| Code | Supervisory Level | COT | COH | HAZ | SAF | COD | JOB | CMT | CMA | CMI | CMS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Director & Above | 5.96 | 5.74 | 3.14 | 5.94 | 4.53 | 5.58 | 5.39 | 5.66 | 5.91 | 5.37 |
| | | 4 | | | 4 | | | | 4 | | |
| 2 | Department Manager | 5.72 | 5.72 | 3.33 | 5.80 | 4.70 | 5.73 | 4.93 | 5.58 | 5.86 | 5.15 |
| | | 4 | | | | | | | 4 | | |
| 3 | Section & Division Supervisor | 5.21 | 5.38 | 3.53 | 5.79 | 4.29 | 5.06 | 4.84 | 5.13 | 6.03 | 5.00 |
| | | | | | | | | | | | |
| 4 | Non-Manager | 4.64 | 5.04 | 3.38 | 5.52 | 4.15 | 5.01 | 4.52 | 4.85 | 5.43 | 4.54 |
| | | 1,2 | | | 1 | | | | 1,2 | | |
| | | | | | | | | | | | |
| 1 | Managers | 5.35 | 5.46 | 3.46 | 5.81 | 4.37 | 5.21 | 4.90 | 5.24 | 5.99 | 5.06 |
| | | 2 | 2 | | 2 | | | | | | |
| 2 | Non-Managers | 4.64 | 5.04 | 3.38 | 5.52 | 4.15 | 5.01 | 4.52 | 4.85 | 5.43 | 4.54 |
| | | 1 | 1 | | 1 | | | 1 | 1 | 1 | 1 |

First line of each box = mean for supervisory level on that scale.
Second and third line of each box = those supervisory levels (coded by number) that the supervisory level is significantly different from.

| Code | Supervisory Level | OFF | ONS | MGE | EMA |
|---|---|---|---|---|---|
| 1 | Director & Above | 2.16 | 2.89 | 6.47 | 6.05 |
| | | | | | |
| 2 | Department Manager | 1.69 | 2.28 | 6.12 | 6.42 |
| | | | | | |
| 3 | Section & Division Supervisor | 2.28 | 2.32 | 6.16 | 6.17 |
| | | | | | |
| 4 | Non-Manager | 2.47 | 2.54 | 5.79 | 5.91 |
| | | | | | |
| | | | | | |
| 1 | Managers | 2.19 | 2.37 | 6.19 | 6.19 |
| | | | | 2 | |
| 2 | Non-Managers | 2.47 | 2.54 | 5.79 | 5.91 |
| | | | | 1 | |

First line of each box = mean for supervisory level on that scale.
Second and third line of each box = those supervisory levels (coded by number) that the supervisory level is significantly different from.

# APPENDIX D

## SIGNIFICANT DIFFERENCES BETWEEN DIRECTORATES IN VP GROUP 1000

## (RESEARCH)

| Code | Department | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 | C10 | C11 | C12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1100 Solid State Sciences | 3.14 | 3.07 | 2.50 | 2.68 | 2.81 | 1.97 | 2.25 | 2.43 | 2.98 | 2.90 | 3.69 | 3.33 |
| | | | | | | | | | | | | | |
| 2 | 1200 Pulsed Power Sciences | 3.33 | 3.36 | 2.62 | 2.70 | 2.81 | 2.10 | 2.37 | 2.47 | 2.69 | 2.79 | 3.65 | 3.21 |
| | | | | | | | | | | | | | |
| 3 | 1400 Computer Science & Math | 2.90 | 2.97 | 2.43 | 2.71 | 2.70 | 1.90 | 2.06 | 2.46 | 2.91 | 3.00 | 3.64 | 3.19 |
| | | | | | | | | | | | | | |
| 4 | 1500 Engineering Sciences | 3.08 | 3.23 | 2.69 | 3.12 | 3.16 | 2.25 | 2.34 | 2.89 | 3.21 | 3.28 | 3.68 | 3.33 |
| | | | | | | | | | | | | | |
| 5 | 1800 Materials & Process Sciences | 3.19 | 3.10 | 2.80 | 3.14 | 3.09 | 2.29 | 2.34 | 2.89 | 3.27 | 3.18 | 3.67 | 3.27 |
| | | | | | | | | | | | | | |

First line of each box = mean for directorate on that scale.
Second and third line of each box = those directorates (coded by number) that the directorate is significantly different from.

| Code | Department | COT | COH | HAZ | SAF | COD | JOB | CMT | CMA | CMI | CMS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1100 Solid State Sciences | 4.70 | 4.95 | 3.61 | 5.12 | 4.21 | 5.15 | 4.28 | 4.68 | 5.51 | 4.41 |
| | | | | | | | | | | | |
| 2 | 1200 Pulsed Power Sciences | 4.93 | 5.31 | 3.89 | 5.47 | 4.15 | 4.89 | 4.93 | 4.89 | 5.39 | 4.68 |
| | | | | | | | | | | | |
| 3 | 1400 Computer Science & Math | 4.94 | 5.09 | 2.48 | 5.24 | 4.13 | 5.10 | 4.93 | 5.21 | 5.83 | 4.62 |
| | | | | | | | | | | | |
| 4 | 1500 Engineering Sciences | 4.47 | 4.69 | 4.22 | 5.34 | 3.98 | 4.67 | 4.30 | 4.47 | 5.49 | 3.83 |
| | | | | | | | | | | | |
| 5 | 1800 Materials & Process Sciences | 4.02 | 4.96 | 3.49 | 5.39 | 3.87 | 4.23 | 4.70 | 4.87 | 5.60 | 4.09 |
| | | | | | | | | | | | |

First line of each box = mean for directorate on that scale.
Second and third line of each box = those directorates (coded by number) that the directorate is significantly different from.

| Code | Department | OFF | ONS | MGE | EMA |
|---|---|---|---|---|---|
| 1 | 1100 Solid State Sciences | 1.93 | 2.19 | 5.69 | 5.65 |
| | | | | | |
| 2 | 1200 Pulsed Power Sciences | 2.26 | 3.05 | 5.68 | 5.92 |
| | | | | | |
| 3 | 1400 Computer Science & Math | 1.48 | 1.45 | 5.76 | 6.19 |
| | | | | | |
| 4 | 1500 Engineering Sciences | 2.61 | 2.25 | 5.58 | 5.75 |
| | | | | | |
| 5 | 1800 Materials & Process Sciences | 2.32 | 2.91 | 5.83 | 6.09 |
| | | | | | |

First line of each box = mean for directorate on that scale.
Second and third line of each box = those directorates (coded by number) that the directorate is significantly different from.

# APPENDIX E

## SIGNIFICANT DIFFERENCES BETWEEN DIRECTORATES IN VP GROUP 2000

## (COMPONENT DEVELOPMENT)

| Code | Department | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 | C10 | C11 | C12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2100 Semiconductor Components | 3.60 | 3.60 | 2.63 | 2.88 | 2.91 | 1.91 | 2.36 | 2.42 | 2.83 | 2.94 | 3.96 | 3.52 |
| | | | | | | | | | | | | | |
| 2 | 2300 Electronic Subsystems | 3.51 | 3.50 | 2.69 | 2.95 | 3.07 | 2.14 | 2.34 | 2.61 | 2.67 | 3.00 | 3.88 | 3.36 |
| | | | | | | | | | | | | | |
| 3 | 2500 Components | 3.33 | 3.28 | 2.58 | 2.81 | 3.04 | 2.05 | 2.38 | 2.52 | 2.66 | 2.86 | 3.65 | 3.28 |
| | | | | | | | | | | | | | |
| 4 | 2800 Computing | 3.21 | 3.32 | 2.94 | 3.10 | 3.23 | 2.23 | 2.32 | 2.64 | 2.84 | 2.96 | 3.55 | 3.18 |
| | | | | | | | | | | | | | |
| 5 | 2900 Design Engineering | 3.47 | 3.63 | 3.03 | 3.04 | 3.26 | 2.28 | 2.34 | 2.61 | 2.77 | 2.93 | 3.67 | 3.28 |
| | | | | | | | | | | | | | |

**First line of each box = mean for directorate on that scale.**
**Second and third line of each box = those directorates (coded by number) that the directorate is significantly different from.**

| Code | Department | COT | COH | HAZ | SAF | COD | JOB | CMT | CMA | CMI | CMS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2100 Semiconductor Components | 4.91 | 5.53 | 3.21 | 5.66 | 4.55 | 5.40 | 5.12 | 5.09 | 5.74 | 4.90 |
| | | | | 3 | | | | | | | |
| 2 | 2300 Electronic Subsystems | 5.03 | 5.28 | 2.78 | 5.63 | 4.50 | 5.29 | 4.71 | 5.22 | 5.44 | 4.82 |
| | | | | 3 | | | | | | | |
| 3 | 2500 Components | 4.86 | 5.14 | 4.09 | 5.47 | 4.31 | 4.88 | 4.64 | 4.99 | 5.48 | 4.75 |
| | | | | 1,2,4,5 | | | | | | | |
| 4 | 2800 Computing | 3.84 | 4.63 | 2.76 | 5.23 | 4.02 | 4.75 | 4.28 | 4.72 | 5.28 | 4.34 |
| | | | | 3 | | | | | | | |
| 5 | 2900 Design Engineering | 4.56 | 5.17 | 2.67 | 5.57 | 4.28 | 4.87 | 4.30 | 5.12 | 5.45 | 4.91 |
| | | | | 3 | | | | | | | |

First line of each box = mean for directorate on that scale.
Second and third line of each box = those directorates (coded by number) that the directorate is significantly different from.

| Code | Department | OFF | ONS | MGE | EMA |
|---|---|---|---|---|---|
| 1 | 2100 Semiconductor Components | 2.53 | 2.57 | 6.40 | 6.40 |
| | | 5 | 5,2 | 4 | |
| 2 | 2300 Electronic Subsystems | 1.67 | 1.43 | 6.35 | 6.14 |
| | | 3 | 3,1 | 4 | |
| 3 | 2500 Components | 2.61 | 3.06 | 6.02 | 6.15 |
| | | 2,5 | 4,5,2 | | |
| 4 | 2800 Computing | 2.25 | 1.81 | 5.27 | 5.71 |
| | | | 3 | 1,2,6 | |
| 5 | 2900 Design Engineering | 1.46 | 1.53 | 6.11 | 5.96 |
| | | 3,1 | 3,1 | 4 | |

First line of each box = mean for directorate on that scale.
Second and third line of each box = those directorates (coded by number) that the directorate is significantly different from.

## APPENDIX F

## SIGNIFICANT DIFFERENCES BETWEEN DIRECTORATES IN VP GROUP 3000

## (SUPPORT STAFF)

| Code | Department | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 | C10 | C11 | C12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3100 Information & Communication | 3.39 | 3.59 | 2.73 | 2.87 | 3.09 | 2.14 | 2.48 | 2.50 | 2.59 | 3.05 | 3.67 | 3.33 |
| | | | | | 3 | | | | | | | | |
| 2 | 3200 Environment, Safety & Health | 3.32 | 3.24 | 2.67 | 3.00 | 3.02 | 2.21 | 2.31 | 2.50 | 2.62 | 2.94 | 3.55 | 3.09 |
| | | | | | | | | | | | | | |
| 3 | 3400 Security & Facility Support | 3.10 | 3.62 | 3.00 | 3.51 | 3.51 | 2.65 | 2.52 | 2.92 | 2.65 | 3.11 | 3.33 | 3.09 |
| | | | | | 1,4 | | 4 | | | | | | |
| 4 | 3500 Human Resources | 3.78 | 3.91 | 2.69 | 2.77 | 2.94 | 1.90 | 2.19 | 2.33 | 2.21 | 2.87 | 3.87 | 3.43 |
| | | | | | 3,5 | | 3,5 | | | | | | |
| 5 | 3700 Purchasing & Materials Management | 3.34 | 3.60 | 3.27 | 3.37 | 3.34 | 2.62 | 2.39 | 2.74 | 2.87 | 3.13 | 3.56 | 3.11 |
| | | | | | 4 | | 4 | | | | | | |

First line of each box = mean for directorate on that scale.
Second and third line of each box = those directorates (coded by number) that the directorate is significantly different from.

| Code | Department | COT | COH | HAZ | SAF | COD | JOB | CMT | CMA | CMI | CMS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3100 Information & Communication | 4.33 | 5.07 | 3.01 | 5.56 | 4.03 | 4.76 | 4.35 | 4.38 | 5.05 | 4.53 |
| | | | | 2,3 | | 4 | | | | | |
| 2 | 3200 Environment, Safety & Health | 4.64 | 4.95 | 4.43 | 5.59 | 3.72 | 4.79 | 4.76 | 4.94 | 5.57 | 4.21 |
| | | | | 1,4,5 | | 4 | | 3 | | | |
| 3 | 3400 Security & Facility Support | 4.01 | 4.88 | 4.04 | 5.65 | 3.92 | 4.73 | 3.65 | 4.32 | 4.98 | 4.13 |
| | | | | 1,4,5 | | 4 | | 4,2 | | | |
| 4 | 3500 Human Resources | 5.34 | 5.53 | 2.31 | 5.68 | 4.79 | 5.84 | 5.07 | 5.12 | 5.41 | 5.03 |
| | | | | 2,3 | | 1,3,2 | | 3 | | | |
| 5 | 3700 Purchasing & Materials Management | 4.82 | 4.73 | 2.65 | 5.55 | 4.28 | 4.97 | 4.15 | 4.63 | 5.50 | 4.75 |
| | | | | 2,3 | | | | | | | |

First line of each box = mean for directorate on that scale.
Second and third line of each box = those directorates (coded by number) that the directorate is significantly different from.

| Code | Department | OFF | ONS | MGE | EMA |
|---|---|---|---|---|---|
| 1 | 3100 Information & Communication | 2.23 | 2.37 | 5.51 | 5.80 |
| | | 2 | 2 | | |
| 2 | 3200 Environment, Safety & Health | 3.79 | 4.54 | 5.54 | 4.79 |
| | | 1,4 | 5,1,4 | | |
| 3 | 3400 Security & Facility Support | 3.38 | 3.39 | 5.28 | 5.28 |
| | | 4 | 4 | | |
| 4 | 3500 Human Resources | 1.68 | 1.71 | 5.70 | 6.13 |
| | | 2,3 | 2,3 | | |
| 5 | 3700 Purchasing & Materials Management | 2.72 | 2.44 | 5.22 | 5.41 |
| | | | 2 | | |

First line of each box = mean for directorate on that scale.
Second and third line of each box = those directorates (coded by number) that the directorate is significantly different from.

# APPENDIX G

## SIGNIFICANT DIFFERENCES BETWEEN DIRECTORATES IN VP GROUP 5000

## (DEFENSE PROGRAMS)

| Code | Department | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 | C10 | C11 | C12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5100 Weapon Development | 3.37 | 3.44 | 2.67 | 2.75 | 2.91 | 2.01 | 2.30 | 2.50 | 2.68 | 2.85 | 3.73 | 3.44 |
| 2 | 5200 Nuclear Security Systems | 3.27 | 3.39 | 2.73 | 2.77 | 2.96 | 1.99 | 2.19 | 2.58 | 2.73 | 2.90 | 3.73 | 3.37 |

| Code | Department | COT | COH | HAZ | SAF | COD | JOB | CMT | CMA | CMI | CMS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5100 Weapon Development | 5.32 | 5.33 | 3.55 | 5.57 | 4.48 | 5.16 | 4.61 | 5.10 | 5.70 | 4.53 |
| 2 | 5200 Nuclear Security Systems | 5.11 | 4.89 | 2.98 | 5.46 | 4.20 | 5.09 | 4.78 | 4.98 | 5.58 | 4.83 |

| Code | Department | OFF | ONS | MGE | EMA |
|---|---|---|---|---|---|
| 1 | 5100 Weapon Development | 2.73 | 2.57 | 6.05 | 6.08 |
| 2 | 5200 Nuclear Security Systems | 1.88 | 1.92 | 6.09 | 5.78 |

First line of each box = mean for directorate on that scale.
Second and third line of each box = those directorates (coded by number) that the directorate is significantly different from.

# APPENDIX H

## SIGNIFICANT DIFFERENCES BETWEEN DIRECTORATES IN VP GROUP 6000

## (ENERGY PROGRAMS)

| Code | Department | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 | C10 | C11 | C12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6200 Advanced Energy Technology | 3.15 | 3.28 | 2.55 | 2.90 | 2.89 | 2.10 | 2.32 | 2.36 | 2.66 | 2.89 | 3.66 | 3.16 |
| | | | | | | | | | | | | | |
| 2 | 6300 Nuclear Waste Management & Transport | 3.50 | 3.60 | 2.52 | 2.56 | 2.75 | 1.93 | 2.37 | 2.40 | 2.49 | 2.72 | 3.74 | 3.51 |
| | | | | | | | | | | | | | |
| 3 | 6400 Nuclear Energy Technology | 3.31 | 3.30 | 2.67 | 2.87 | 2.99 | 2.03 | 2.31 | 2.46 | 2.81 | 2.96 | 3.79 | 3.42 |
| | | | | | | | | | | | | | |

| Code | Department | COT | COH | HAZ | SAF | COD | JOB | CMT | CMA | CMI | CMS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6200 Advanced Energy Technology | 5.04 | 5.26 | 3.95 | 5.37 | 4.23 | 5.22 | 4.65 | 5.10 | 5.63 | 4.50 |
| | | | | | | | | | | | |
| 2 | 6300 Nuclear Waste Management & Transport | 4.96 | 5.42 | 3.05 | 5.54 | 4.31 | 5.38 | 5.03 | 5.18 | 5.75 | 4.85 |
| | | | | | | | | | | | |
| 3 | 6400 Nuclear Energy Technology | 5.05 | 5.46 | 3.62 | 5.57 | 4.08 | 5.30 | 5.07 | 5.17 | 5.79 | 4.90 |
| | | | | | | | | | | | |

| Code | Department | OFF | ONS | MGE | EMA |
|---|---|---|---|---|---|
| 1 | 6200 Advanced Energy Technology | 2.56 | 2.89 | 5.92 | 6.08 |
| | | | | | |
| 2 | 6300 Nuclear Waste Management & Transport | 3.50 | 2.69 | 6.13 | 6.20 |
| | | | | | |
| 3 | 6400 Nuclear Energy Technology | 2.86 | 3.24 | 6.13 | 6.09 |
| | | | | | |

First line of each box = mean for directorate on that scale.
Second and third line of each box = those directorates (coded by number) that the directorate is significantly different from.

# APPENDIX I

## SIGNIFICANT DIFFERENCES BETWEEN DIRECTORATES IN VP GROUP 7000

## (TECHNICAL SUPPORT)

| Code | Department | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 | C10 | C11 | C12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7200 Systems Evaluation | 3.60 | 3.73 | 2.71 | 2.61 | 2.94 | 2.06 | 2.47 | 2.44 | 2.38 | 2.77 | 3.73 | 3.43 |
| | | 3 | 3 | | | | | | | | | | |
| 2 | 7300 Quality Improvement | 3.24 | 3.37 | 2.98 | 3.01 | 3.20 | 2.41 | 2.66 | 2.89 | 2.94 | 2.98 | 3.62 | 3.37 |
| | | | | | | | | | | | | | |
| 3 | 7400 Materials Process Engineering & Fabrication | 3.05 | 3.18 | 2.79 | 3.29 | 3.15 | 2.32 | 2.34 | 2.57 | 2.60 | 2.90 | 3.30 | 3.04 |
| | | 1,5 | 1,5 | | | | | | | | | | |
| 4 | 7500 Development Testing | 3.28 | 3.40 | 2.84 | 2.99 | 3.15 | 2.31 | 2.45 | 2.67 | 2.74 | 3.00 | 3.59 | 3.27 |
| | | | | | | | | | | | | | |
| 5 | 7800 Facilities Organization | 3.60 | 3.72 | 2.78 | 3.03 | 3.02 | 2.22 | 2.38 | 2.44 | 2.40 | 2.88 | 3.56 | 3.40 |
| | | 3 | 3 | | | | | | | | | | |

First line of each box = mean for directorate on that scale.
Second and third line of each box = those directorates (coded by number) that the directorate is significantly different from.

| Code | Department | COT | COH | HAZ | SAF | COD | JOB | CMT | CMA | CMI | CMS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7200 Systems Evaluation | 5.18 | 5.23 | 2.81 | 5.53 | 4.43 | 5.10 | 4.95 | 5.09 | 5.42 | 5.10 |
| | | | | 3,4,5 | | | | | | | |
| 2 | 7300 Quality Improvement | 4.31 | 5.28 | 2.74 | 5.47 | 3.94 | 5.06 | 4.53 | 5.15 | 5.72 | 4.67 |
| | | | | 3,4,5 | | | | | | | |
| 3 | 7400 Materials Process Engineering & Fabrication | 4.21 | 4.72 | 4.58 | 5.56 | 4.01 | 5.00 | 4.16 | 4.51 | 5.30 | 4.32 |
| | | | | 1,2 | | | | | | | |
| 4 | 7500 Development Testing | 4.25 | 4.93 | 4.35 | 5.68 | 4.23 | 4.66 | 4.44 | 4.76 | 5.48 | 4.13 |
| | | | | 1,2 | | | | | | | |
| 5 | 7800 Facilities Organization | 4.59 | 5.18 | 4.34 | 5.86 | 3.81 | 5.22 | 4.66 | 4.61 | 5.45 | 4.80 |
| | | | | 1,2 | | | | | | | |

First line of each box = mean for directorate on that scale.
Second and third line of each box = those directorates (coded by number) that the directorate is significantly different from.

| Code | Department | OFF | ONS | MGE | EMA |
|---|---|---|---|---|---|
| 1 | 7200 Systems Evaluation | 2.71 | 2.31 | 6.31 | 6.24 |
| | | | | | |
| 2 | 7300 Quality Improvement | 1.72 | 1.72 | 5.61 | 6.47 |
| | | | 3,5 | | |
| 3 | 7400 Materials Process Engineering & Fabrication | 3.09 | 3.56 | 5.82 | 6.00 |
| | | | 2 | | |
| 4 | 7500 Development Testing | 2.63 | 3.03 | 5.81 | 6.03 |
| | | | | | |
| 5 | 7800 Facilities Organization | 3.12 | 3.61 | 5.61 | 5.98 |
| | | | 2 | | |

First line of each box = mean for directorate on that scale.
Second and third line of each box = those directorates (coded by number) that the directorate is significantly different from.

# APPENDIX J

## SIGNIFICANT DIFFERENCES BETWEEN DIRECTORATES IN VP GROUP 9000

## (EXPLORATORY SYSTEMS)

| Code | Department | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 | C10 | C11 | C12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 9100 Exploratory Systems Development | 3.39 | 3.49 | 2.59 | 2.69 | 2.80 | 1.88 | 2.31 | 2.67 | 2.61 | 2.89 | 3.80 | 3.45 |
| | | | | | | | | | | | | | |
| 2 | 9200 Monitoring Systems | 2.25 | 3.35 | 2.68 | 2.82 | 3.02 | 2.08 | 2.34 | 2.49 | 2.70 | 3.00 | 3.78 | 3.27 |
| | | | | | | | | | | | | | |
| 3 | 9300 Radiation Effects & Testing | 3.43 | 3.57 | 2.58 | 2.87 | 2.90 | 2.04 | 2.39 | 2.39 | 2.50 | 2.96 | 3.82 | 3.40 |
| | | | | | | | | | | | | | |

First line of each box = mean for directorate on that scale.
Second and third line of each box = those directorates (coded by number) that the directorate is significantly different from.

| Code | Department | COT | COH | HAZ | SAF | COD | JOB | CMT | CMA | CMI | CMS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 9100 Exploratory Systems Development | 5.31 | 5.37 | 3.32 | 5.63 | 4.22 | 5.13 | 4.75 | 5.06 | 5.42 | 4.68 |
| | | | | 3 | | | | | | | |
| 2 | 9200 Monitoring Systems | 5.15 | 5.03 | 2.94 | 5.64 | 4.16 | 5.45 | 4.65 | 5.22 | 5.81 | 4.82 |
| | | | | 3 | | | | | | | |
| 3 | 9300 Radiation Effects & Testing | 4.91 | 5.33 | 4.19 | 5.76 | 4.20 | 5.40 | 4.90 | 4.92 | 5.88 | 4.64 |
| | | | | 1,2 | | | | | | | |

First line of each box = mean for directorate on that scale.
Second and third line of each box = those directorates (coded by number) that the directorate is significantly different from.

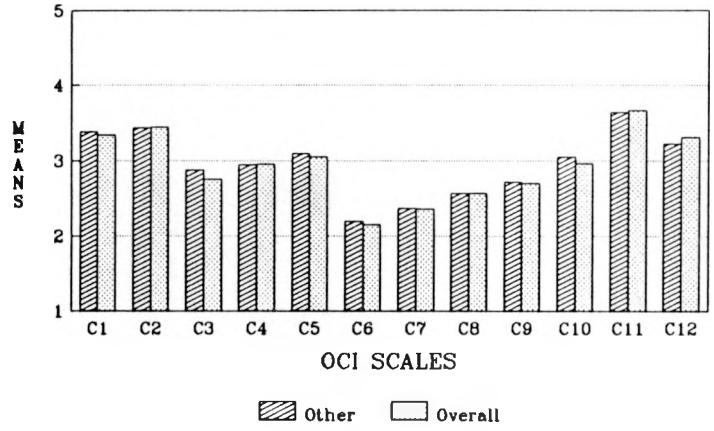
| Code | Department | OFF | ONS | MGE | EMA |
|---|---|---|---|---|---|
| 1 | 9100 Exploratory Systems Development | 2.35 | 2.27 | 5.66 | 5.85 |
| | | | | | |
| 2 | 9200 Monitoring Systems | 1.62 | 1.70 | 5.95 | 6.14 |
| | | 3 | 3 | | |
| 3 | 9300 Radiation Effects & Testing | 2.92 | 2.94 | 5.97 | 5.56 |
| | | 2 | 2 | | |

First line of each box = mean for directorate on that scale.
Second and third line of each box = those directorates (coded by number) that the directorate is significantly different from.

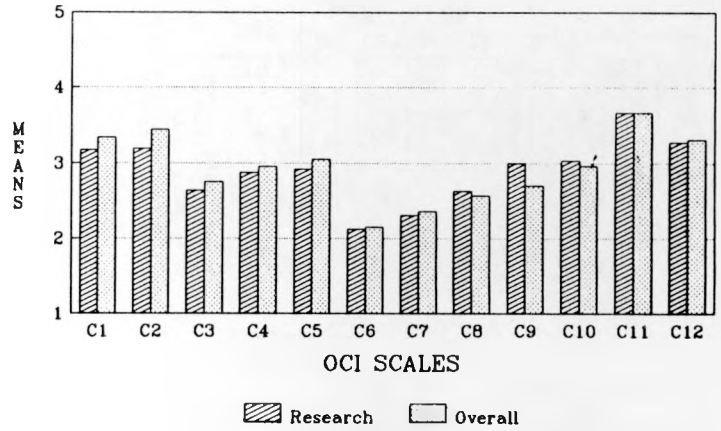
# APPENDIX K

## VP GROUPS COMPARED TO OVERALL MEANS ON OCI

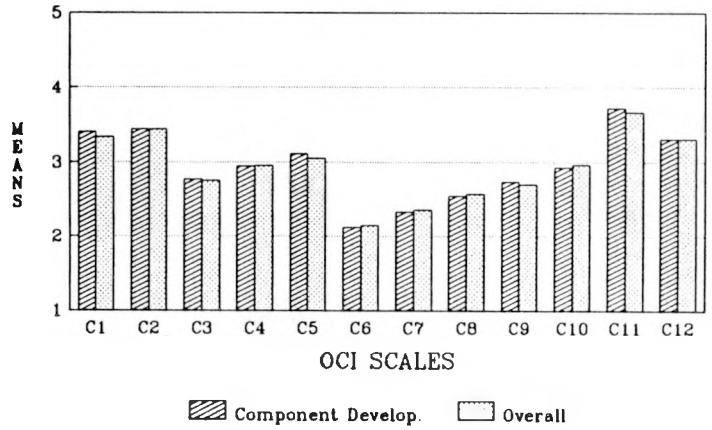
## Other VP Group Compared Overall Means on the OCI



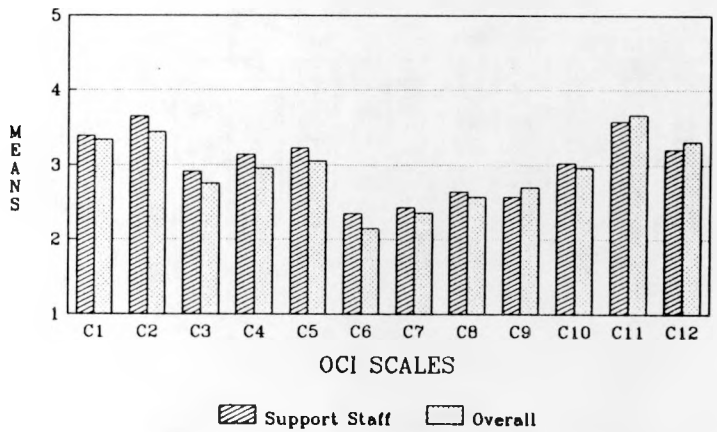

## Research Compared to Overall Means on the OCI



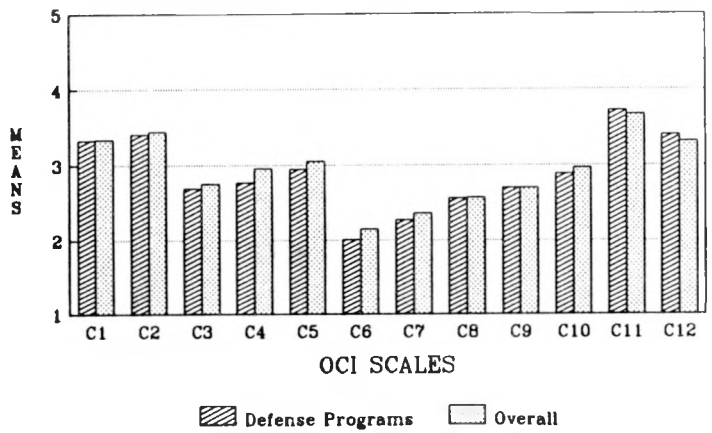

## Component Development Compared to Overall Means on the OCI



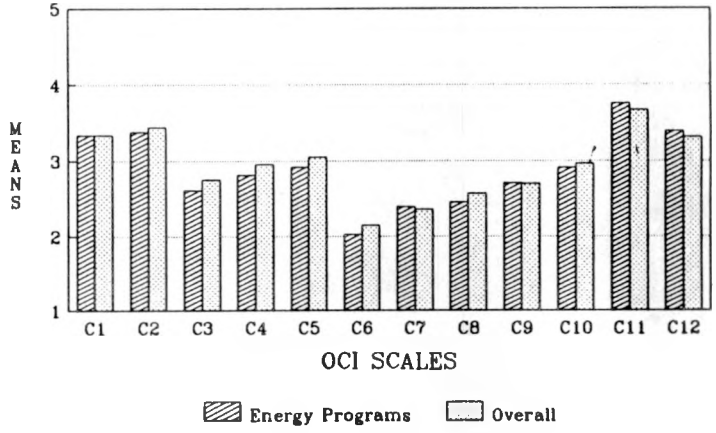

## Support Staff Compared to Overall Means on the OCI



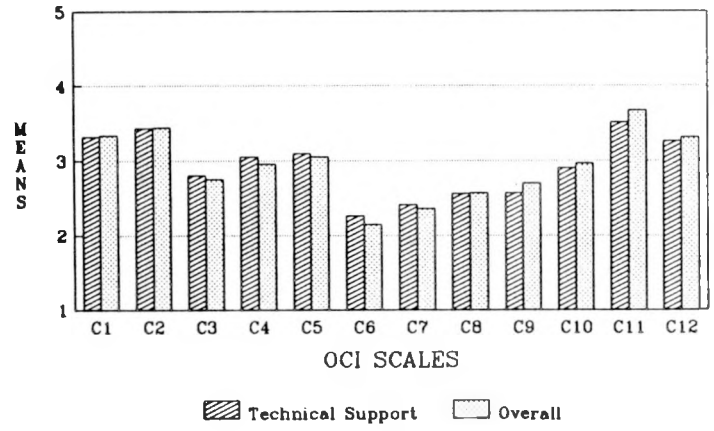
## Defense Programs Compared to Overall Means on the OCI



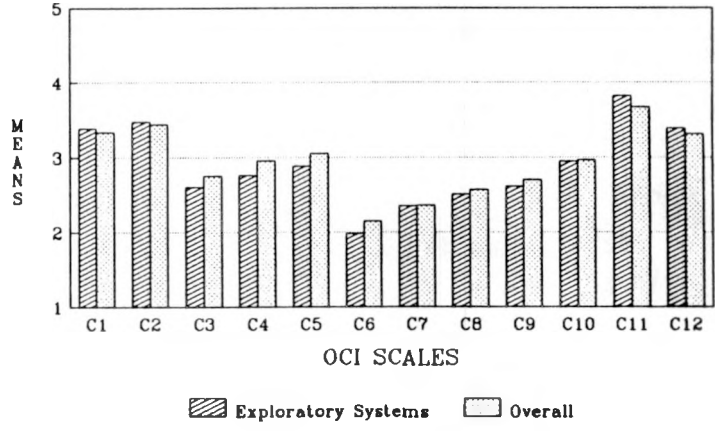

## Energy Programs Compared to Overall Means on the OCI




## Technical Support Compared to Overall Means on the OCI



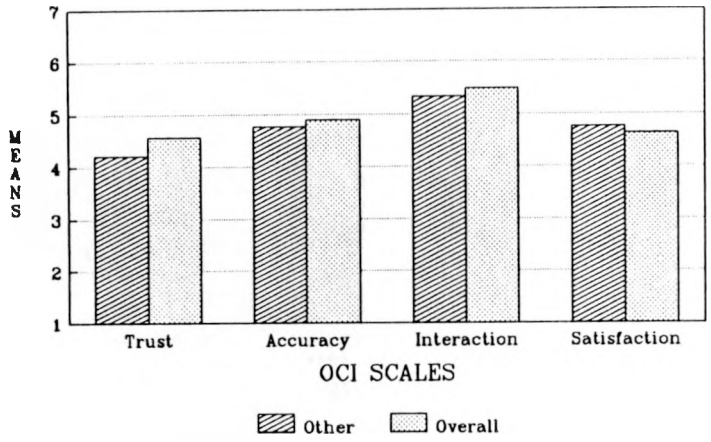

## Exploratory Systems Compared to Overall Means on the OCI



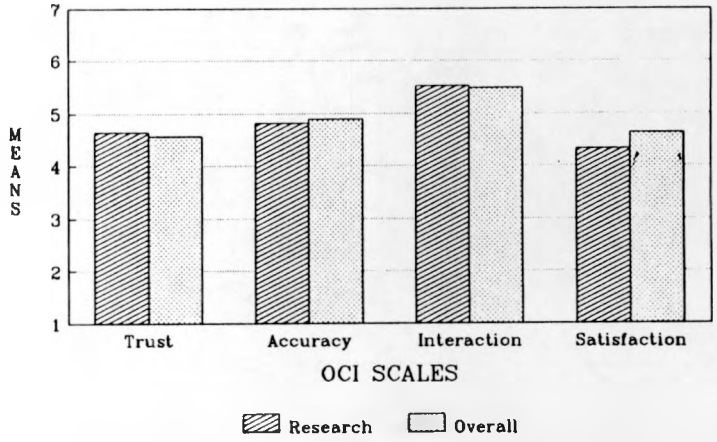
# APPENDIX L

## VP GROUPS COMPARED TO OVERALL MEANS ON COMMUNICATION SCALES

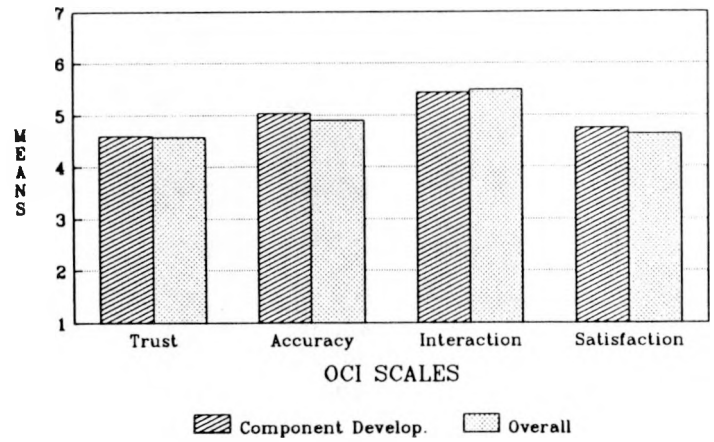
## Other VP Group Compared to Overall Means on Communication Scales



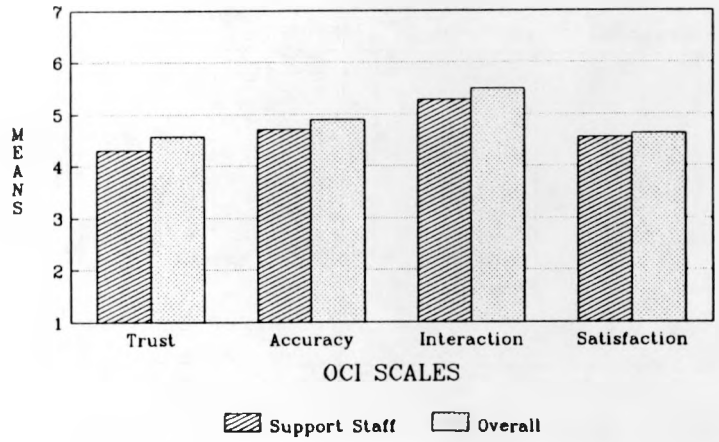

## Research Compared to Overall Means on Communication Scales



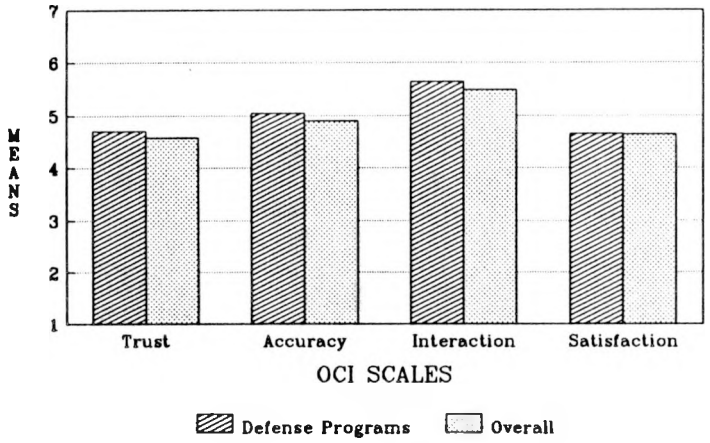

## Component Development Compared to Overall Means on Communication Scales



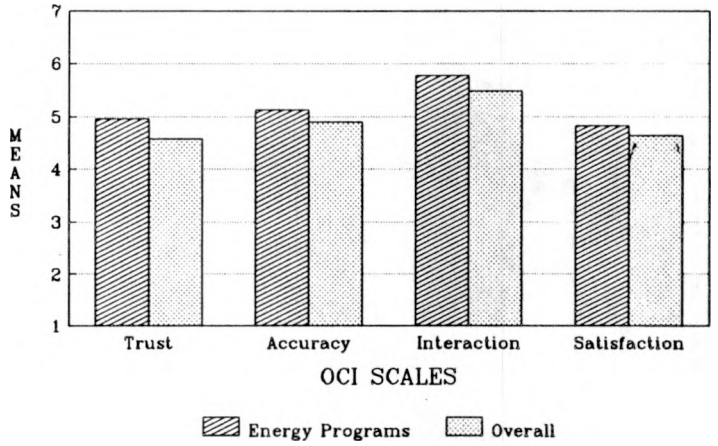

## Support Staff Compared to Overall Means on Communication Scales



## Defense Programs Compared to Overall Means on Communication Scales

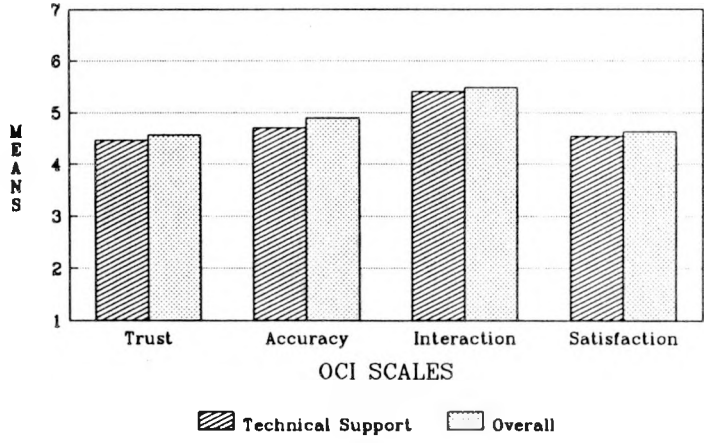



## Energy Programs Compared to Overall Means on Communication Scales

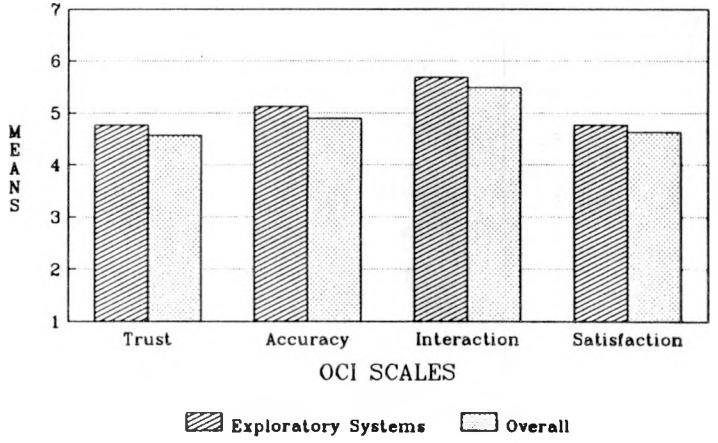





## Technical Support Compared to Overall Means on Communication Scales



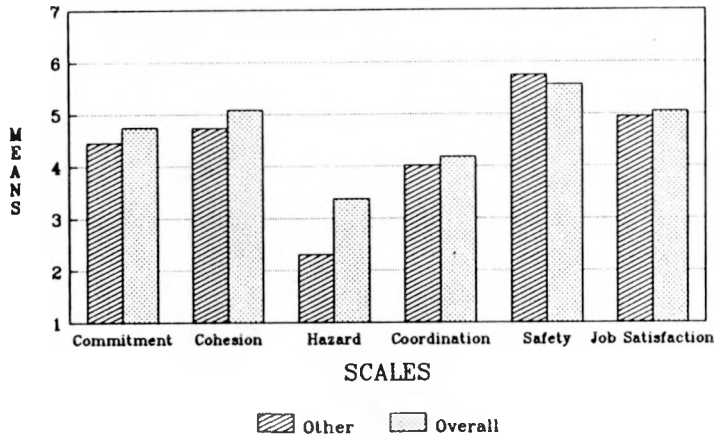

## Exploratory Systems Compared to Overall Means on Communication Scales



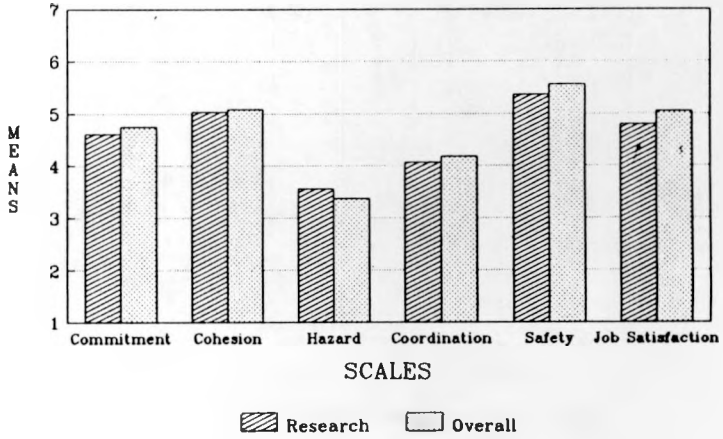
# APPENDIX M

## VP GROUPS COMPARED TO OVERALL MEANS ON ADDITIONAL SCALES

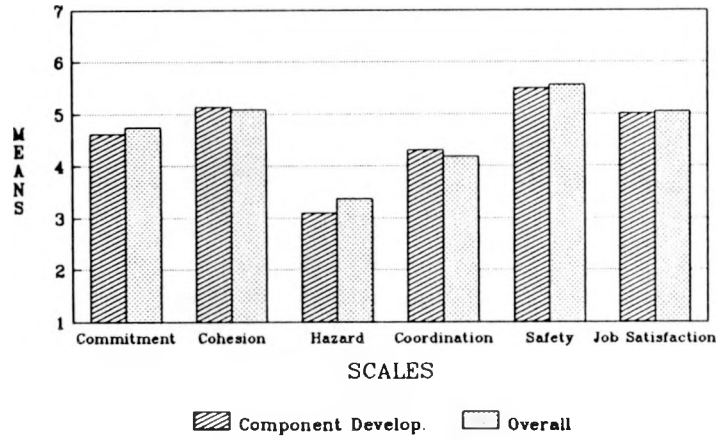
## Other VP Group Compared to Overall Means on Additional Scales



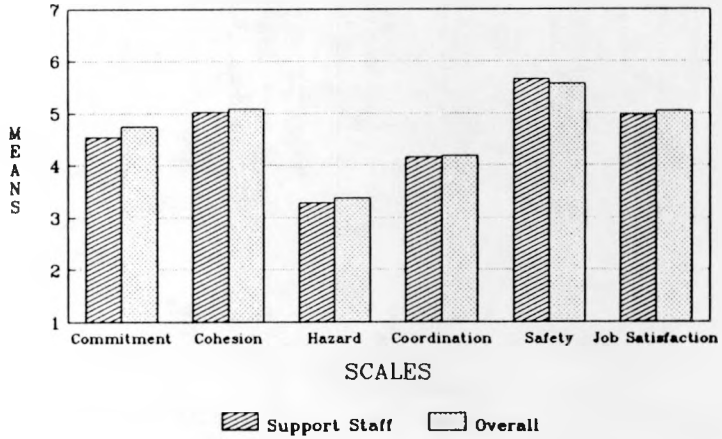

## Research Compared to Overall Means on Additional Scales



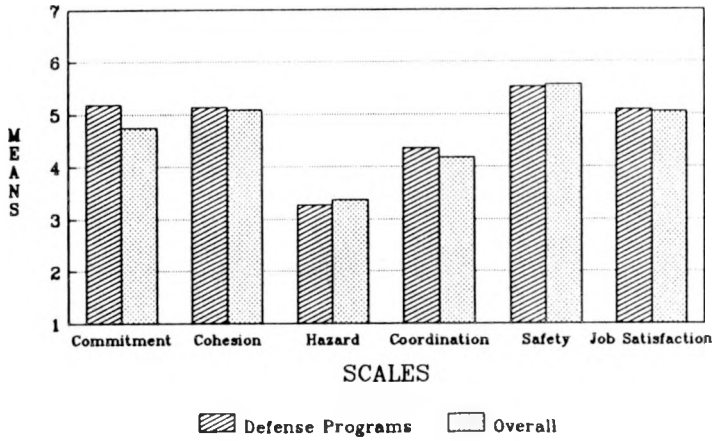

## Component Development Compared to Overall Means on Additional Scales



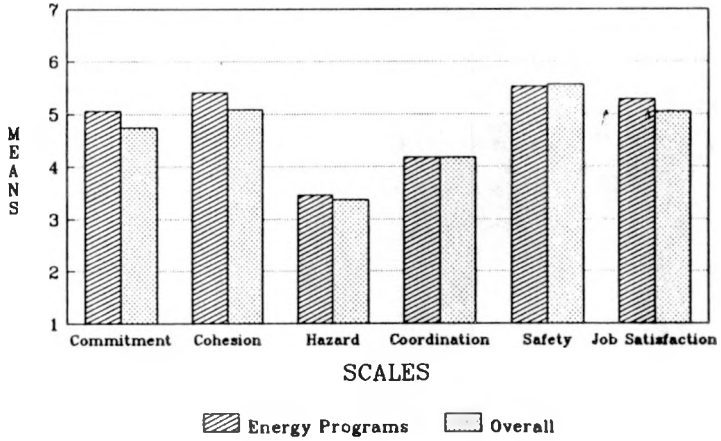

## Support Staff Compared to Overall Means on Additional Scales



## Defense Programs Compared to Overall Means on Additional Scales

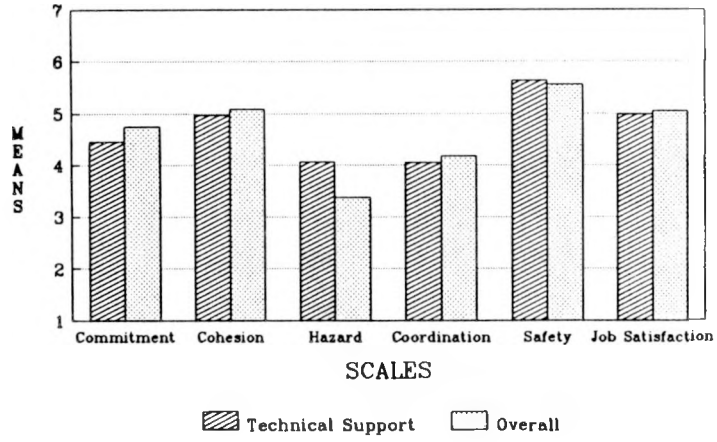



## Energy Programs Compared to Overall Means on Additional Scales

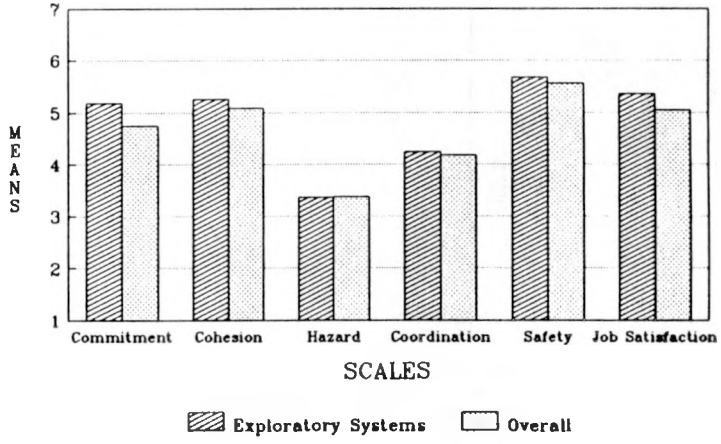





## Technical Support Compared to Overall Means on Additional Scales



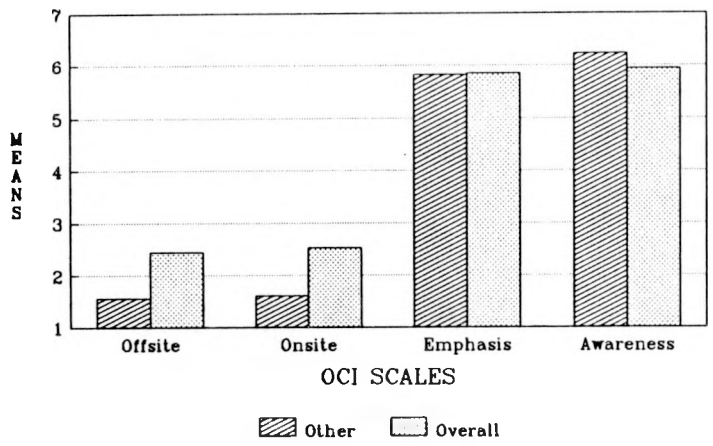

## Exploratory Systems Compared to Overall Means on Additional Scales



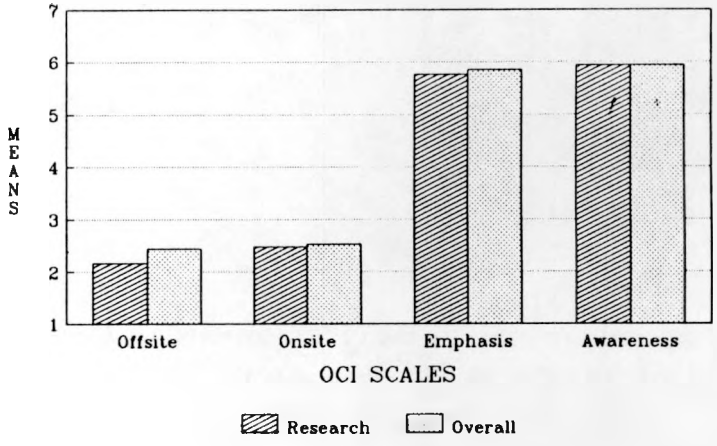
## APPENDIX N

## VP GROUPS COMPARED TO OVERALL MEANS ON ENVIRONMENTAL QUESTIONS

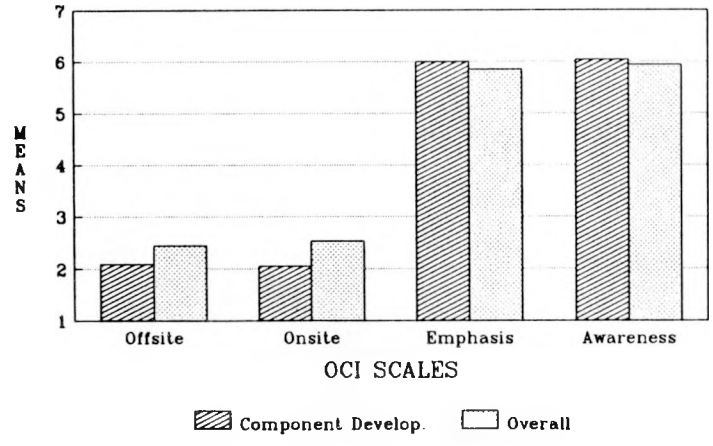
## Other VP Group Compared to Overall Means on Environmental Questions



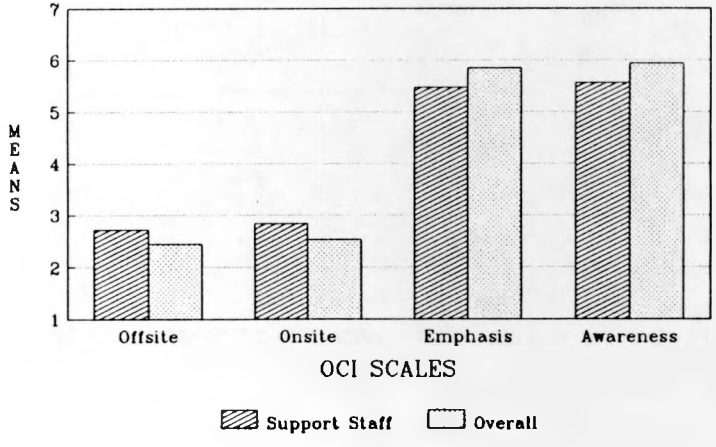

## Research Compared to Overall Means on Environmental Questions



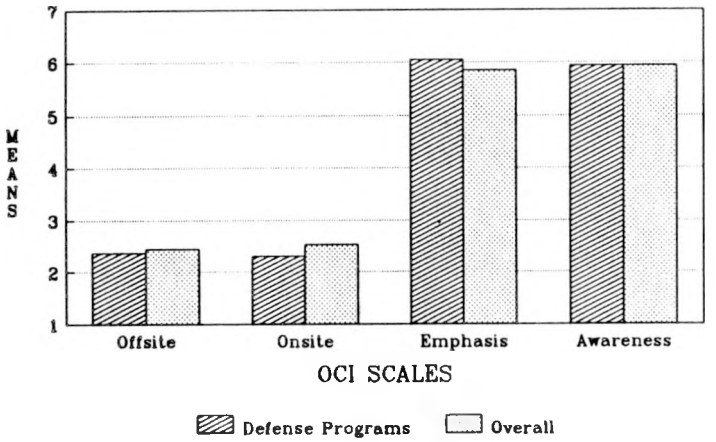

## Component Development Compared to Overall Means on Environmental Questions



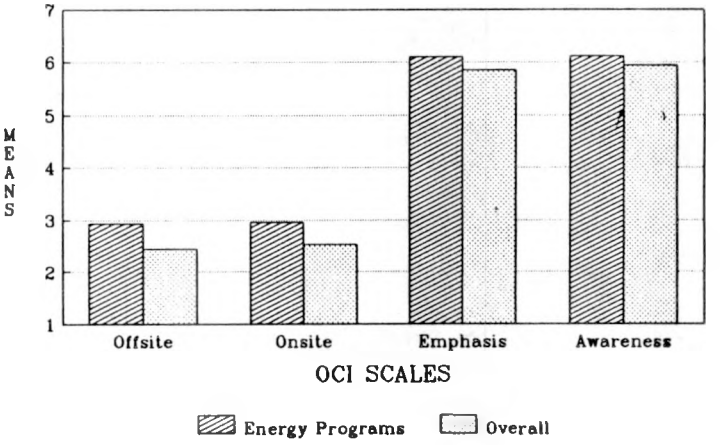

## Support Staff Compared to Overall Means on Environmental Questions



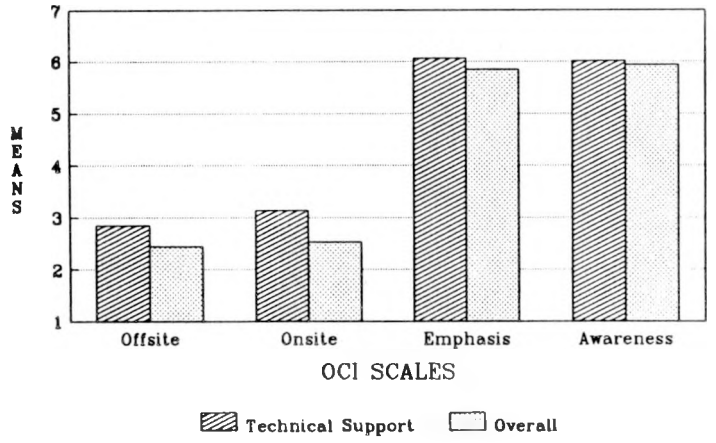
## Defense Programs Compared to Overall Means on Environmental Questions




## Energy Programs Compared to Overall Means on Environmental Questions




## Technical Support Compared to Overall Means on Environmental Questions




## Exploratory Systems Compared to Overall Means on Environmental Questions