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Using A Cultural Change Intervention to Improve Organizational Effectiveness: An Evaluative Case Study

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USING A CULTURAL CHANGE INTERVENTION

TO IMPROVE ORGANIZATIONAL EFFECTIVENESS:

AN EVALUATIVE CASE STUDY

by

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A dissertation submitted in partial fulfillment

of the requirements for the degree of

Doctor of Education

University of San Diego

1989

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ABSTRACT

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An Evaluative Case Study

DEARSTONE, TERRY M., Ed.D. University of San Diego, 1989
320 pp.

Director: William Foster, Ed.D.

This study examines one organization in its attempt to improve organizational effectiveness by effecting a change to the organizational culture. In late 1984 the Rancho Bernardo division of Northern Telecom Electronics began a long term effort to change its culture. This study answers four research questions regarding this organization's attempt at culture change: 1) What were the strategies used by the Northern Telecom Electronics-Rancho Bernardo division to attempt to change organizational culture? 2) To what extent did the organization's culture change between 1984 and 1988? 3) In what ways did organizational effectiveness change between 1984 and 1988? and 4) What was the relationship between any changes in organizational culture and any changes in organizational effectiveness?

Both qualitative and quantitative data were collected in order to answer the research questions. Investigative tools used include: participant observation, archival records, physical artifacts, an employee opinion survey, newly

generated statistics, interviews with internal staff, and interviews with corporate officers and customers.

In addition to documenting the steps used by the Northern Telecom Electronics-Rancho Bernardo organization to attempt a culture change, this evaluative case study presents the following findings:

1) The organizational culture changed substantially between 1984 and 1988; further change is expected in the months and years to come.

2) The organization's productivity steadily improved between 1984 and 1988; employee job satisfaction changed significantly in the same time frame.

3) Changes in the organizational culture were viewed as the cause of improvements in employee job satisfaction; these same changes as well as organizational maturation were viewed as the causes of improvements in productivity.

Recommendations for future research include: 1) studying this same organization through approximately 1991 in order to fully evaluate the impact of culture change and 2) conducting similar evaluative case studies of other organizations so that students of organizational change can draw sound conclusions regarding the viability of improving organizational effectiveness through culture change.

ACKNOWLEDGEMENTS

The writing of this dissertation has taken approximately eighteen months. Many people have provided me with support in one way or another during this long and intense project. Although it is not possible to mention every person by name, I would like to express my appreciation to a few people who have made significant contributions.

Special thanks to Ken Bradley. Without Ken there would have been no case to study. His leadership skills and his belief in the power of organization development (O.D.) made the change strategy presented in this dissertation a reality. It was a pleasure and a tremendous learning experience to work in this organization with Ken as division general manager.

Thanks to Anne Nolan, a friend and a mentor, for taking the time to teach me and my staff both the technical side and the personal side of O.D. work. Her outstanding skills and her warmth as a human being made working with her an experience which I will always treasure.

Special acknowledgement goes to Ann Marie Spraul and Mike Norman, the other members of the Organization Effectiveness team during this intervention. In addition to all the hard work they put into the NTE-RB culture change, both of them have conducted research, in partial fulfillment for their

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respective master's degrees, which I have built upon for this dissertation. Thanks, too, to Ann Marie for her day to day support during the writing of this report.

As with any dissertation, much effort is put into preparing the manuscript for publication. A number of people at Northern Telecom have assisted me in the preparation of this manuscript, but six people stand out as making significant contribution to this effort. Thanks to Jody Greer for all the help in preparing charts, graphs, and appendices. Sue Kavis was invaluable in her assistance with the word processing software. Sue spent many hours ensuring that the final manuscript was produced in the best form and in the most efficient manner. Thanks to Jacqui Zalkovsky for her expert assistance in conducting the literature search on the subject of organizational change. A special thanks to Ed Smith and Therese Donnerbauer for their retrieval of productivity data and their assistance in the production of productivity charts. Sincere appreciation goes to Cora Pendergast for taking time out from the writing of her thesis to read this dissertation and offer suggestions for improvement.

One person who has been especially supportive of my studies, not only during the writing of this dissertation but throughout my doctoral program is my manager, Rick Ross. I sincerely appreciate his commitment to my development and the extra effort he took in removing potential barriers during my six and a half years as a doctoral student.

A special thanks to the three members of my dissertation committee - Bill Foster, Sue Zgliczynski, and Pete Gregg. These three individuals have provided exactly what I needed in a committee: enough advice to keep me on track and enough freedom to allow me to effectively complete the task. Thanks, too, to all three for their help during the course of the doctoral program.

Two fellow students in the doctoral program, Kevin Freiberg and Gloria Bader, have been invaluable to me during the writing of this dissertation as well as throughout the entire program. Kevin has given me both encouragement and his personal time to help me out on many occasions throughout the doctoral program. Gloria has served as a source of inspiration over the years as she has cheered me on to completion and shared stories of her experiences as she completed each milestone of the program.

Special thanks to my parents who have encouraged me to complete this degree in the same quiet, low key manner in which they have encouraged me in all my endeavors. Somehow, they have always managed to allow me to decide on my goals, then get behind me 100 percent in their accomplishment. Thanks, Mom and Dad, for always being there for me.

Last, but certainly not least, are my several friends who love and support me in my every day life. They will be as happy as I am for this project to end. Unfortunately, I cannot mention all the friends who have inspired me to

continue on this project - some of whom have accused me of working on my second dissertation! A big thank you to four special friends, Scott Ehrlich, Frank DiPalermo, Margy Hillman, and Caren Montgomery for their long term friendship and their constant vigilance on my progress of this dissertation.

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CHAPTER 1

STATEMENT OF THE ISSUE

Introduction

The study of organizational change has for some time been
of interest to academics as a subset to the study of
organizations and how they function.   Theories of
organizational change have become an important part of the
field of organization theory. As is true with many fields of
study, the impetus behind understanding the phenomenon of
organization change has been a combination of intellectual
curiosity and a desire to exert an influence or to effect
change. The field has progressed from a highly theoretical
perspective toward a more practical perspective as more and
more people recognize the potential utility of the ideas to
impact today's organizations. As a result of increasing
international competition and a decline in past productivity
gains, the United States business community has become
fascinated with the potential to understand and possibly
influence organizational change.

Some researchers in the field of organizational change
theory have distinguished between organizational adaptation

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and planned change. Adaptation is change within an organization as a response to changing internal and/or external forces while planned change is change that is strategized by an organization's management, often with the assistance of other "change agents" (Goodman, et. al. 1984 and Lifson, 1984). Planned change can include the decision to acquire or merge with another organization, to expand into new markets, to undergo a structural change, to attempt to increase productivity through a change in management practices. Planned changes such as the last two, where the internal functioning of the organization is changed, usually involve an organization development (O.D.) intervention. O.D. is a means whereby management, often in partnership with external and/or internal consultants, attempts to improve an organization's effectiveness through the management of culture (French and Bell, 1978 and Burke, 1982). The culture of an organization consists of the values and beliefs held by the organization. The culture is reflected through artifacts, including the behaviors of organizational members or norms. Norms are demonstrated through rules of conduct, rites, rituals, stories, language, policies, and practices. (This definition is adapted from Deal and Kennedy, 1982, Dyer, 1984, Schein, 1985, Siehl, 1985 and others.)

As managers of organizations within the United States and around the world attempt to understand organizational change and attempt to improve organizational effectiveness through

culture change, questions regarding potential impact of management and leadership on organizational change arise. In answering these questions, the fields of management science and organization change begin to merge. The study of leadership within a context of organizational change becomes key to understanding the potential for organizations to effect culture change and consequently improve organizational effectiveness.

Recently, there has been much in the literature of organizational change theory, management science and leadership theory about organizational culture, its significance in the success or failure of organizations, about productivity and the multitude of methods being tried to boost U.S. productivity, and about organizational change and suggestions on how leaders and O.D. practitioners can improve organizational effectiveness. However, there is less about how these concepts fit together to demonstrate what leaders and other change agents can actually do to improve organizational effectiveness. There are few published case studies which present methods organizations have used to attempt culture change and even fewer studies that have evaluated the effects of culture change interventions on organizational effectiveness (Mroczkowski, 1984-85 and Spraul, 1987).

Purpose of the Study

This case study seeks to contribute to the ideas of organizational change theory, leadership theory and management science. In the study, the experiences of an organization which has attempted to improve effectiveness through a cultural change intervention are presented. The study describes the change process used and presents the results of an investigation of the successes, the failures, and the lessons learned in the process of implementing the change.

Specifically, this case study examines the experiences of the Rancho Bernardo Division of Northern Telecom, Electronics (NTE-RB) in its long-term cultural change intervention begun in 1984 and continuing today. This study 1) reviews the steps of the intervention from its beginning through today (future plans are also presented) and 2) examines the effects of the intervention on both organizational culture and on organizational effectiveness. This study adds to the work contributed by Spraul (1987) in which this same organization was studied during the initial stages of the cultural change intervention. In her study, Spraul 1) outlined the steps the organization used in the intervention during the first two and a half years, 2) reported observations regarding the culture change as a participant observer, and 3) reported outcomes as measured by trends in specific productivity indicators over the two and

a half year period. This study builds upon Spraul's initial study encompassing her recommendations for further research.

This study uses evaluation research methods, combining both qualitative and quantitative data sources. Certain quantitative data were collected by the organization during the course of the intervention. This researcher has relied primarily upon field methods to add to these data in order to evaluate the intervention. Field methods used include participant observation, interviewing, and document analysis. These evaluation methods, derived from anthropological research methods and qualitative approaches from sociology and phenomenology, are described further in Chapter 3, Research Design and Methodology.

Research Questions

In this study, a set of research questions about the strategies used in Northern Telecom's cultural change intervention and the usefulness of the strategies to improve overall organizational effectiveness are explored. Below are four basic research questions to be answered by the study.

1) What were the strategies used by the NTE-RB division to attempt to change organizational culture?

2) To what extent did the culture change at NTE-RB between 1984 and 1988?

    a)   As measured by perceptions of organizational members.

    b)   As corroborated by corporate officers and representatives of customer organizations.

3) In what ways did organizational effectiveness change between 1984 and 1988?

4) What was the relationship between any changes in organizational culture and any changes in organizational effectiveness?

    a)   As measured by perceptions of organizational members.

    b)   As corroborated by corporate officers and representatives of customer organizations.

During the course of this study, these research questions are answered through the analysis of both quantitative and qualitative data. Research question 1 is answered by summarizing the related findings from the review of physical artifacts from the organization. Research question 3 is answered by summaries of employee survey data and interview data from organizational members, corporate officers and customer representatives and by graphs and tables depicting data trends in organizational effectiveness measures over the four year study period. Organizational

effectiveness measures include product yield, average outgoing quality, production cycle time and employee job satisfaction. Research questions 2 and 4 are answered by employee survey data and by summaries of interviews with organizational members and with corporate officers and customer representatives. During interviews, organizational members were asked for their perceptions regarding the extent of culture change at NTE-RB between 1984 and 1988 and their perceptions regarding a relationship between any culture change and any change in organizational effectiveness. (They were shown organizational effectiveness data during the interviews.) Subsequently, corporate officers and customer representatives were asked to review organizational effectiveness data, employee survey data, and summaries of organizational member interviews, and asked to either corroborate or refute the conclusions drawn by organizational members regarding the extent of culture change and the relationship between culture change and changes in organizational effectiveness.

Significance of the Study

This study builds upon the literature in the fields of organizational change, management science, and leadership studies. The potential for planned change efforts and specifically for O.D. interventions to successfully work to

transform organizational culture continues to be argued. This case adds to other studies in the literature to demonstrate the extent to which such interventions can impact organizational effectiveness. Although this study does not go so far as to answer once and for all the questions regarding the potential for improving organizational effectiveness through culture change interventions, the intricacies and nuances within this particular case will be examined and the subtleties will be discussed so that patterns can begin to be seen by students of organizational change. These patterns can be used to build ideas and theories around the ingredients needed for successful interventions. In this manner, as other such case studies are reported, the body of knowledge related to organizational change can grow. Additionally, because this case study involves the work of the organizational "leader" and the actions he took (in partnership with O.D. practitioners) to attempt a cultural transformation, observations regarding management and leadership can be made. These observations can be used by students of management science and leadership theory to add to the body of knowledge regarding the role of managers and leaders in impacting organizational culture.

Definition of Terms

The following terms are referred to and used throughout

the course of this research.

Change Agent: Any person or team who acts as a catalyst of change in an organization. This person or team may be external to the organization or internal and may or may not include a manager or leader within the organization. (This definition is adapted from writings by French and Bell, 1978, Dyer, 1984, and others).

Intervention: The planned actions of change agents for the purpose of improving an organization's effectiveness (from Kilmann and Hernden, 1976).

Leader: A person (often in a position of formal authority, but not necessarily) who articulates a vision and moves followers (within an organization) toward that vision. This vision is shared by both leader and followers and is representative of their mutual wants, needs, and expectations. A leader helps shape the preferences of followers. He/she mobilizes resources (psychological, social, political, and economic) in an arena of conflict, competition, and compromise toward the vision. (NOTE: this definition is adapted from writings by Burns, 1978, Bennis and Nanus, 1985, and Schein, 1985. The term leader is often used by other writers to mean simply the positional head of an organization. The researcher has made every effort to distinguish this use of the term from the above definition when presenting the ideas of such writers.)

Organizational Culture: See Chapter 2, Review of

Literature, for an extensive discussion on the many definitions of culture. For the purposes of this research, organizational culture will mean the values and beliefs held by an organization. Culture is reflected through artifacts, including norms such as rules of conduct, rites, rituals, stories, language, policies, and practices. (This definition is adapted from Burke, 1982, Deal and Kennedy, 1982, Dyer, 1984, Schein, 1985, Siehl, 1985 and others). Culture is measured in this study by behaviors which reflect the organizational values articulated by the NTE-RB management and by behaviors which reflect organizational climate factors assessed through the NTE-RB climate survey.

Organizational Effectiveness: Kilmann and Hernden (1976) have found that the many uses of the term "organizational effectiveness" fall into four major categories: 1) internal efficiency - the traditional notion of productivity, 2) external efficiency - acquisition of resources and distribution of products and services, 3) external effectiveness - environmental or societal satisfaction, and 4) internal effectiveness - factors relating to individual motivation. For the purposes of this study the term "organizational effectiveness" draws from both internal efficiency and internal effectiveness. Organizational effectiveness in this case study is a measure of productivity (product yield, average outgoing quality, and production cycle time), and employee job satisfaction.

Organization Development (O.D): A planned effort to improve organizational effectiveness and health through planned interventions in the organization's processes, using behavioral science knowledge (adapted from Beckhard, 1969). As discussed in the review of literature, many authors view O.D. as necessarily involving a change to the organizational culture (French and Bell, 1978 and Burke, 1982).

CHAPTER 2

REVIEW OF LITERATURE

A review of the literature on the subject of organizational culture and the changing of organizational culture to improve organizational effectiveness was conducted. The literature on this subject fell naturally into five categories: 1) the definition of culture, 2) the feasibility of changing organizational culture, 3) organization development (O.D.) strategies and technologies in changing and managing culture, 4) the role of leadership and management in changing culture, and 5) case studies of O.D. interventions in changing organizational culture. This summary of the literature review is divided into five sections representing these five topics regarding changing organizational culture to improve organizational effectiveness.

Definition of Culture

The term culture as it is used today has developed slowly over the last century. Kroeber and Kluckhohn (1952) have traced the history of the concept of culture as it has

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evolved from the fields of anthropology, sociology, and psychology. One of the first and most often quoted definitions of culture came from the early anthropologist E.B. Tylor (1871): "Culture, or civilization, ... is that complex whole which includes knowledge, belief, art, law, morals, custom, and other capabilities and habits acquired by man as a member of society" (quoted in Kroeber and Kluckhohn, 1952, p. 81). The uses of the word culture later used by Benedict (1931), Kluckhohn and Kelly (1945) and other anthropologists are reflections of Tylor's.

Symbolic interactionism, a concept from the field of sociology, has significantly impacted social scientists' view of culture. The term "symbolic interaction" was coined by Blumer in 1937, but the development of the concept owes much to scholars such as George Herbert Mead, John Dewey, William James, Louis Wirth and others. This concept puts forth the notion that man's reality is socially constructed. In other words, the meaning of everything in a person's world - physical objects, other human beings, institutions, ideals, events - "is derived from, or arises out of, the social interaction that one has with one's fellows" (Blumer, 1972, p. 67). Symbolic interactionism is clearly reflected in the definition of culture by Dollard (1939): "Culture is the name given to the abstracted (from men) inter-correlated customs of a social group" (quoted in Kroeber and Kluckhohn, 1952, p. 118).

The field of psychology has contributed to the concept of culture through a focus on human behavior, through development of learning theory, and through the ideas of mutual influence between man and his environment [Erik Erikson (1964) is one of several psychologists who have advanced the notion of the interdependence of man and his culture.] The influence of psychology on the concept of culture is evidenced in anthropologist Margaret Mead's (1937) definition: "Culture means the whole complex of traditional behavior which has been developed by the human race and is successively learned by each generation" (quoted in Kroeber and Kluckhohn, 1952, p. 90).

The concept of culture has recently begun to be applied toward the understanding of organizations and organizational change. Van Maanen and Barley (1985) have noted that "the notion that organizations have cultures is an attractive heuristic proposition, especially when explanations derived from individual-based psychology or structural sociology prove limiting" (p. 31). The terms "corporate culture" and "organizational culture" are often used today as theorists and practitioners seek to understand and influence organizations. The definition of culture given by Edgar Schein (1985), one of today's most renowned writers on the subject of organizational culture, clearly reflects the influence of both psychologists and sociologists. He defines culture as "a pattern of basic assumptions - invented,

discovered, or developed by a given group as it learns to cope with its problems of external adaptation and internal integration - that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems" (p. 9).

Deal and Kennedy (1982), popularizers of the term "corporate culture," have described a number of specific elements that make up organizational culture: values, business environment, heroes, rites and rituals, and cultural networks - or organizational communication. They believe that the values of an organization determine corporate culture. Another simpler definition offered by Deal and Kennedy is "the way we do things around here" (p. 4). This definition implies that culture is the observable behavior of organizational members, reflecting their deeply held values. Tichy (1983) also sees values as the essence of culture. He summarizes the cultural view of organizations as being one of "cultural systems of values with shared symbols and shared cognitive schemes which tie people together and form a common organization culture" (p. 7).

Burke (1982) believes that culture consists of many elements, but emphasizes norms as the primary element which defines culture. He views norms as standards or rules of conduct to which members conform. Other significant elements of an organization's culture, according to Burke, are its

authority structure, its rewards, its communication patterns, the way power is exercised, and the values that are unique to the organization.

Baker (1980) believes that norms and values together make up the essence of culture. He summarizes social scientists' view of culture as "the underlying set of informal norms and values that govern employee behavior" (p. 8). Baker believes that every organization has a culture and goes on to define culture as "some interrelated set of beliefs, shared by most members, about how people should behave at work and what tasks and goals are important" (p. 8). He believes that the often-used definition of the "social glue that holds an organization together" reflects this view of culture (p. 8). French and Bell (1978) also view culture in terms of both values and norms. Norms are viewed as behaviors reflective of one's values. French and Bell also include feelings, informal actions and interactions as important elements to understanding culture.

Bennis and Nanus (1985) use the term social architecture instead of culture, but also define this concept as the norms and values "that shape behavior in any organized setting" (p.111). The elements that define the social architecture of an organization are: the organization's basic operating principle, the nature of the work, the management of information, decision-making, power, influence, and status.

Siehl's (1985) review of the definitions of culture

suggests that most researchers view culture as primarily consisting of values and beliefs. She summarizes culture as values and beliefs that some groups of organization members come to share. These values are expressed through a variety of different means, including language, organizational stories and scripts, rituals and ceremonies, and organizational practices such as recruiting, training, and rewards.

Boyle (1985) combines a number of the ideas presented above and defines culture as: "the system of values, beliefs, myths, tools, and practices through which we respond to our environment" (p. 180). Boyle believes that regardless of what is printed in policies or handbooks, culture is what tells organizational members what is permitted and what is taboo.

As a summary to his review of the literature on organizational culture, Schein (1985) has noted several chief concepts found in the definition of organizational culture. These concepts include: 1) the rules of the game for getting along in the organization, "the ropes" that a new member must learn in order to become accepted in the organization, 2) the beliefs and attitudes of employees and/or customers, as reflected in organizational policies, 3) the dominant values held by an organization, such as product quality or price leadership, 4) the norms that represent the members of a group or of the organization, 5) behaviors observed when

people interact, including the language and rituals used, and 6) the climate that is experienced within an organization by members which includes such factors as the physical layout and the interactions between organizational members and between members and customers or other outsiders (p. 6).

Some researchers have argued that the various definitions of culture reflect the writers' views as to the nature of culture change. After reviewing many researchers' views on culture, Siehl (1985) points out that many definitions tend to reflect a view of culture as something that organizations have. She agrees with researchers who object to this view and argues that culture is what organizations are, not what they possess. Weick (1983), for example, states that "organizations don't have cultures, they are cultures, and this is why culture is so difficult to change" (p. 125 in Siehl, 1985). Fombrun (1986) also agrees with this view of culture. He believes that many academics and practitioners today see culture as something to be manipulated by managers - something that can be used to make employees produce more. His view - purported to be the view of the anthropologist - is that culture is not something that leaders or managers create or manage but something that organizational members create on their own. Therefore, true culture change can only occur from the bottom up.

Both Dyer (1984) and Schein (1985) believe that many definitions of culture, including some of those described in

the discussion above, are reflections of the organization's culture, but do not truly define the term. Schein states that the definition of culture must "be reserved for the deeper level of basic assumptions and beliefs that are shared by members of an organization, that operate unconsciously, and that define in a basic 'taken-for-granted' fashion an organization's view of itself and its environment. These assumptions and beliefs are learned responses to a group's problems of survival in its external environment and its problems of internal integration" (p. 6). He believes that "artifacts" and "values" are manifestations of the culture, but not the essence of culture. He views three layers of elements related to culture: artifacts, values, and basic assumptions. Basic assumptions make up the real culture of an organization. He sees values at a level higher in awareness to the organization than basic assumptions. Artifacts are at a higher level still in terms of organizational awareness. Artifacts are the most visible, but are often not decipherable. Artifacts include physical space, the technological output of the organization, and the behaviors of the members. Dyer (1984) agrees with this layered view of culture and views artifacts as including socially shared language, stories, myths, rituals, ceremonies, behavioral patterns, art, physical environment, and technology. Dyer (1984) adds another level to Schein's description of culture: perspective. Perspectives are the

"socially shared ideas and actions used by members of an organization to deal with problematic situations" (p. 154). Both Schein and Dyer view basic assumptions as the core of an organization's culture and the foundation of values, perspectives, and artifacts. Schein has proposed five "categories" of beliefs, or assumptions, around which cultural paradigms form: 1) humanity's relationship to nature, 2) the nature of reality and truth, 3) the nature of human nature, 4) the nature of human activity, and 5) the nature of human relationships.

From the above discussion, it can be seen that the meaning of the term organizational culture has evolved over the last century from the broad societal perspectives of anthropologists such as Tylor, Dollard, and Mead to the specifically organizational perspectives of Burke, Deal and Kennedy, Bennis and Nanus, Siehl, Tichy, Dyer, and Schein. In an attempt to merge the several useful definitions of organizational culture into one definition applicable to this case study, the following definition is used: Culture is the values and beliefs held by an organization. Culture is reflected through artifacts including norms such as rules of conduct, rites, rituals, stories, language, policies and practices. Culture is measured in this study by behaviors which reflect the organizational values articulated by the NTE-RB management and by behaviors which reflect organizational climate factors assessed through the NTE-RB

climate survey.

The Feasibility of Changing Organizational Culture

Why do managers want to change the culture of their organizations? Peters and Waterman (1982) in their study of seventy-five "excellent" companies in the United States, concluded that understanding and focusing on beliefs and values was the single most important area that correlated with success for these organizations. Pascale and Athos (1982) also concluded that values, purpose, and meaning are a central theme within the most successful companies, both eastern and western. Given this relationship between culture and organizational performance, managers are naturally motivated to use culture as a means to improve organizational effectiveness.

There is much debate among both academics and practitioners regarding the feasibility of changing organizational culture (Siehl, 1985). Golembiewski (1979) points out that first order change (change directed at a particular unit or subsystem) due to O.D. interventions is accepted as achievable, but that there is little evidence published in the literature regarding second- and third-order changes. Second-order change is defined as change directed at a system or set of subsystems removed from the initial target, while third-order change is directed at entire

organizational processes (Kimberly and Neilsen, 1975).

According to Siehl (1985), most researchers who believe that culture is impossible or at least difficult to change view culture as what an organization "is" rather than something that it "has" and such researchers tend to view culture as a "socially constructed system of shared beliefs and values" (p. 125). Researchers who are more optimistic about the ability to manage or control culture change tend to see organizations as possessing culture and view culture as the "social or normative glue that holds an organization together" (p. 125).

Schein's (1985) perspective is that real fundamental change in assumptions (the real culture) of an organization is rare. He believes that because culture is what an organization is, not what it has, managers cannot easily change culture. Schein calls the change in the organization's fundamental assumptions a "paradigm change." He believes that organizations change behaviors, values and possibly a few assumptions more often than they change the true culture - the basic underlying assumptions (or beliefs). He points out that behaviors (artifacts), values, and certain assumptions can change without the real underlying assumptions of the organization changing. Schein sees culture as "being" the organization and existing as changes evolve or are imposed.

Sathe (1985) extends Schein's discussion regarding the

feasibility of changing culture and states that "culture is subject to development and change because of the learning going on in the organization as it copes with its problems of external adaptation and internal integration" (p. 14). He too does not believe that existing basic assumptions change readily. He views change as "incremental and evolutionary" rather than "radical and revolutionary" (p. 15). He believes that the roots of an organization's culture are in the cultures from which the people in the organization come and, therefore, the content of an organization's culture will always be a variation on the themes of the cultures of the organizational members. Sathe asserts that culture change is called for whenever current organizational culture is fundamentally misaligned with the behaviors needed to achieve "the desired level of organization effectiveness and satisfaction" (p. 401).

Schein's and Sathe's distinction between evolutionary change and change planned by management is similar to Goodman's (1984) "adaptation" and "planned change." Goodman has described change that occurs as a response to shifting external or internal forces "adaptation" and change that occurs as a result of management planning "planned change." Lifson (1984) believes that adaptation is the key to organizational success and therefore, the important type of change that managers must understand and effectively use in order to create and maintain success. He defines adaptation

as "the systematic change of practice as informed by on-going developments in the environment" (p. 37). Tichy (1983), too, views organizational change as falling into two categories and chooses the terms "evolutionary change" and "strategic change." Strategic change is change that is non-routine, non-incremental, and discontinuous. Strategic change, by definition, can be managed. Tichy believes (as do Beckhard and Harris, 1977) that strategic change is necessary when crisis or opportunity emerges. Such crises or opportunities include: changes in the environment, diversification, rapid changes in the technology of the organization, or a change in the people (the skills or knowledge of the people; the expectations of the people; or mix of people).

Gilbert and Roberts (1984) have examined two broad views regarding the meaning of organizational culture and the feasibility of culture change and labeled as the "instrumental view" the belief that culture is "an instrument, a collection of techniques in general management's hands, for organizational change" (p. 11). This view holds that "levers" - symbols, myths, heroes, rituals, sagas, and so forth - can be manipulated to mold the "cultural fabric" of the organization to conform with management's desired culture change. Gilbert and Roberts, like Schein, believe that these "levers" are manifestations of culture and not culture itself. Their view of

organization culture change is that: "organization culture cannot be managed in a conventional, 'instrumental' sense; the most managers can expect to accomplish is to cajole, persuade, channel, nudge, and guide organization culture in a strategically desirable direction" (pp. 16-17). Gilbert and Roberts note that Martin and Siehl (1983) refer to this as influencing the trajectory of organization culture. Gilbert and Roberts have labeled their view of culture change as the "navigational" view as opposed to the "instrumental" view. The navigational view addresses management's role of "steering the organization through the largely self-propelled currents of culture" (p. 17). Their summary on culture change is that culture can and should be managed, at strategic change points, using the navigational view of change rather than the instrumental view. The party capable and responsible for nudging the culture change - the uprooting of the organization's assumptions - is the "institutional leader."

Many researchers who believe in the importance and feasibility of planned or strategic change in an organization's culture (albeit with much understanding and patience) believe that such change is more likely at certain choice points in the history of the organization (Kanter, 1983; Gilbert and Roberts, 1984; Bennis and Nanus, 1985; Lundberg, 1985; Sathe, 1985; Schein, 1985; Siehl, 1985). Lundberg (1985) believes that the choice points in an

organization's history at which culture change is possible correspond to particular triggering events: environmental calamities and opportunities, internal and external revolutions, and managerial crises. Such triggering events set up an organizational dynamic that makes culture management possible. Siehl (1985) has used the work on organizational life cycles by Adizes (1979), Cameron and Whetten (1981) and others to study culture management relative to particular stages in the life of an organization. Cameron and Whetten (1981) have described the beginning stage of an organization as the "creativity and entrepreneurship stage." At this point, the organization marshals resources, determines its ideology and its place in the world. The second stage is called the "collectivity" stage in which organizational members feel a deep sense of commitment to each other and to the organization. This stage is characterized by informality and a collective mission. The third stage is "formalization and control" and includes the development of policies, procedures, and goals. Siehl (1985) believes that the most opportune times to manage a culture change is during the transition between any two of these organizational life stages. Schmenner (1983) and Schein (1985) have also developed three phases of an organization's life. Schmenner's three phases are: start-up or early years, the mature years, and the failing years. Schein's three "growth stages" are: birth and early growth, mid-life,

and maturity and/or decline.

Schein believes that the function of culture varies according to the stage of an organization's development. Managers may influence culture (or more often, the behaviors, values, and some assumptions) in varying ways according to the growth stage. In the early growth stage, "culture is a distinctive competence and source of identity" (p. 271). Culture is the glue that holds the organization together; it is a positive growth force, which needs to be elaborated, developed, and articulated. In organizational mid-life the culture becomes diverse and one of management's toughest issues is deciding which elements need change and which need preservation. Schein believes that planned change including O.D. may be most appropriate and successful during this stage of an organization's life. In the mature stage, culture often becomes partly dysfunctional and must change. Schein believes that elements of the culture - including behaviors, values, and some assumptions - may be changed at any one of the three major growth stages, but that real fundamental paradigm change is most likely at organizational maturity, during the "destruction option" - when the organization faces drastic choices such as bankruptcy, takeover, or merger.

From the ideas of the several theorists and researchers discussed above, some common threads regarding the feasibility of organizational culture change emerge. Organizations do change and that change comes about as a

result of both external and internal forces. Change can occur in an evolutionary fashion or in a more abrupt fashion, depending on the dynamics of these internal and external forces. Management may influence the culture of an organization by managing the opportunities throughout the evolution and/or by intervening at particular choice points in the life of the organization - or both.

It seems likely that managers can influence culture in different ways depending on the particular stage in the life of the organization (Adizes, 1979; Cameron and Whetton, 1981; Schein, 1985; and Siehl, 1985). It also seems likely that the extent to which management can change culture depends on the definition used for culture. As Schein points out, artifacts, values, and some assumptions (beliefs) are changed more readily than are the set of fundamental assumptions by which the organization lives. According to Schein's definition of culture, true culture change - or a paradigm change - is unlikely except at extreme junctures in the life of an organization. In summary, it seems likely that changing an organization's artifacts, values, and some beliefs is possible, at least at certain points in an organization's life.

This case study serves as an example of an attempted culture change during the early growth stage of one organization's life. (The organization being studied is one division of a large mature corporation). The organization,

though in its early growth stage, was readied for change due to rapid changes in market demand, a sharp increase in employee population, a significant drop in productivity and a subsequent change in senior management. This "crisis" state is described by Schein as the transition phase of early growth (p. 274).

Culture change is not an all or nothing phenomenon. This culture change effort will be examined relative to the definition previously presented (p. 12). The study will include discussions regarding the extent to which values and beliefs have changed, as evidenced through changes in artifacts, as a result of the cultural change effort and the extent to which the change effort has impacted organizational effectiveness.

<center>Organization Development Strategies and Technologies
in Changing and Managing Culture</center>

The field of Organization Development (O.D.) has always held the basic belief in the feasibility of successful planned change. Bennis, Benne, and Chin's (1969) book <u>The Planning of Change</u> is replete with strategies for planned change presented by a variety of theorists and practitioners. Lewin's (1958) model of "unfreezing, moving, refreezing" has served as the basic model for O.D. over the past thirty years. The definition of O.D. given in two classic books on

the subject of O.D. - French and Bell's <u>Organization</u> <u>Development:</u> <u>Behavioral Science Interventions for</u> <u>Organizational Improvement</u> (1978) and Burke's <u>Organization</u> <u>Development: Principles and Practices</u> (1982) state that improvement happens principally through the process of managing organizational culture. French and Bell define O.D. as "a long-range effort to improve an organization's problem-solving and renewal processes, particularly through a more effective and collaborative management of organization culture - with special emphasis on the culture of formal work teams - with the assistance of a change agent, or catalyst, and the use of the theory and technology of applied behavioral science" (p. 14). This change agent or catalyst is often seen as an O.D. consultant or a person within the organization, often a person with positional power, or both. Burke's definition for O.D. is a "planned process of change in an organization's culture through the utilization of behavioral science technology, research, and theory" (p.10). According to Burke, for organizational change to be true O.D., three criteria must be met: the change must "(1) respond to an actual and perceived need for change on the part of the client, (2) involve the client in the planning and implementation of the change, and (3) lead to change in the organization's culture" (p. 9).

Over the years, O.D. has moved from a focus on interpersonal, team, and intergroup effectiveness toward more

work at an organization-wide level. Beckhard offered the following definition of O.D. in his 1969 book, Organization Development: Strategies and Models: "an effort planned, organization-wide and managed from the top, to increase organization effectiveness and health through planned interventions in the organization's processes, using behavioral-science knowledge" (reprinted in Beckhard & Harris, 1972, pp. 2-3). Beckhard and Harris note that in the short time since this definition was first presented in 1969 and their book was published in 1972 a significant shift had occurred away from the interpersonal and team level toward the organization-wide level.

As the field of O.D. has evolved, many intervention technologies have developed and are used by O.D. practitioners in their work within organizations. Burke (1982) and Dyer and Dyer (1986) have summarized the major technologies described by theorists and practitioners in publications regarding O.D. Below is a combined list of these technologies with explanations, as needed: 1) strategic planning, 2) survey feedback (a survey to all members of an organization or unit, analyzing results, feeding back results, and involving organization members in action planning for change), 3) Quality of Work Life (QWL) processes (any number of programs to improve working conditions, interpersonal relationships, and to distribute power more evenly throughout the organization); 4) structural

interventions (including organizational re-design to match the organization's structural design with the technical and administrative systems), 5) management by objectives, 6) human resources planning, 7) altered reward systems (pay and promotion), 8) team management and team-building, 9) interteam development, 10) the confrontation meeting, 11) job redesign, 12) flex-time, 13) job sharing, 14) employee involvement teams, and 15) process consulting. Even these technologies represent only some of the many used by O.D. practitioners today.

The number of these technologies employed for any O.D. intervention may range from one to many. An overall strategy for change is usually utilized to serve as a road map to guide the O.D. intervention. Burke (1982) has developed a seven-stage change model to be used by the O.D. consultant. The seven stages are: 1) entry, 2) contracting 3) diagnosis, 4) feedback, 5) planning, 6) intervention , and 7) evaluation. This model has evolved from the work of Lewin (1958), Lippitt, Watson, and Westley (1958), and Kolb and Frohman (1970). While steps 1 and 2 represent the O.D. consultant's perspective, the remaining five steps are taken by the consultant and the client jointly. Dyer and Dyer (1986) have presented a similar change model starting with the work to be done after Burke's contracting step. The steps in Dyer and Dyer's model are: 1) problem identification, 2) data gathering, 3) data analysis, 4)

action planning, 5) action taking, and 6) evaluation.

Although most writers do not specifically distinguish between a "systems" perspective versus a "cultural" perspective of organizations, many practitioners do tend to view organizations from one framework more than the other and consequently focus their change efforts using either a systems orientation or a cultural orientation. The "systems" school views the organization as a large complex, open, social system (Katz & Kahn, 1966; Beckhard & Harris, 1977; Nadler & Tushman, 1981; and Ackerman, 1982). The "cultural" school views each organization as possessing or "being" its own unique culture (Deal and Kennedy, 1982; Miller, 1984; Sathe, 1985; Schein, 1985). Some writers consider cultures to be systems and systems to be cultures (Kroeber and Kluckhohn, 1952 and Burke, 1982) while others view systems as a subset of culture (Tichy, 1983 and Dyer and Dyer, 1986).

Dyer and Dyer (1986) distinguish between systems change and cultural change and believe that the majority of O.D. work is systems change, not culture change. They argue that most O.D. work focuses on the social, technical, or administrative systems within an organization - not on the underlying pattern of assumptions held by the organization - a requisite for true culture change. They present models for both systems change and cultural change (Dyer and Dyer, 1986). Their model for systems change involves effecting change upon the three major organizational systems. They

define the social system as the climate, the communication network, the status or role structure, the pattern of management (authoritarian versus participative management), decision-making method, and individuals. The technical system is the method for getting work done, "its unique arrangement of equipment, material, people, and processes" (p.137). The administrative system includes wage and salary administration, hiring, firing, promoting, report making/auditing, fringe benefits, and budgets.

In addition to Dyer and Dyer's model for changing systems, organizational interventions from a systems perspective are presented by both Beckhard and Harris (1977) and Ackerman (1982). The Beckhard and Harris model advocates defining the present state and the desired future state, then the transition state ("the new state or condition between the present and the future"), developing and implementing a strategy for change, and stabilizing the new state. Their model emphasizes the need for senior management developing and implementing a change plan. The status of change must be monitored and evaluated continually. Ackerman (1982) has extended Beckhard and Harris' model by adding an "impact analysis" step. Beckhard and Harris as well as Ackerman propose a transition management structure to manage the transition state. This management structure may be in the form of a separate structure that runs parallel to the pre-change structure, it may entail additional responsibilities

for those in the hierarchy, or a special project manager or managers may be appointed or allowed to naturally evolve.

Miller (1984), Deal and Kennedy (1982), and Sathe (1985) present change models representing primarily a cultural view. Miller believes that developing a strategy for changing the culture is essential to successfully creating a desired change. The strategy includes defining the current culture, defining the desired future culture, then utilizing appropriate tactics to move from the current to the desired culture. These tactics may include leadership (setting an example), training, coaching, reinforcement, and setting up systems to support new behaviors. Deal and Kennedy's (1982) recommendations for successful culture change include: 1) positioning a hero in charge of the process; 2) recognizing real threats from outside; 3) using transition rituals as the pivotal elements of change; 4) providing the organization with transition training in new values and behavior patterns; 5) bringing in outside consultants as "shamans"; 6) building tangible symbols of the new directions; and 7) insisting on the importance of security for organizational members during the transition. Sathe (1985) believes that successful culture change requires intervening in each of the basic processes that cause culture to perpetuate itself: behavior and its justifications, cultural communications, the hiring and socialization of the members who "fit in" with the culture, and the removal of members who deviate from the

culture.

Dyer and Dyer (1986) and Tichy (1983) present change models which view cultures as containing systems. Dyer (1984) presents seven steps for successful culture change: 1) conduct a culture audit, 2) determine a need for change, 3) assess the cultural risk - determine success potential based on the current culture versus the needed culture, 4) unfreeze the culture pattern, 5) elicit support from the cultural elite - top management or other opinion leaders, 6) select and implement intervention strategies, and 7) monitor and evaluate. Dyer believes that intervention technologies designed to reorient employees to new cultural elements include "extensive training, new reward systems, new structures...team-building, role negotiation, bargaining interventions, and the replacement of key individuals who hold the 'old' beliefs..." (pp. 161-163).

Tichy (1983) views an organization as a culture made up of systems and sub-systems. He believes that an organization's culture must match the political and technical systems of the organization. He believes that culture must be considered in developing the organization's mission and strategy. A number of methods that the change manager (Tichy believes that this must be the top executive of the organization or the management directly below this executive in the hierarchy) can use to shape and reinforce the desired culture include: person-to-person interactions, the use of

symbols and the use of rituals and myths to communicate the desired culture. The culture must be reinforced by the organization structure and by subcultures within the sub-components of the organization. Also, a strong human resource management system (including selection and training of employees, performance appraisal, and compensation systems) must support the culture.

While some O.D. academics and practitioners distinguish between systems change and culture change, it can be seen from the above discussion that in either case the strategies employed for change are essentially the same. In choosing O.D. strategies and technologies to attempt a culture change, the organization in this case study borrowed from the ideas of several of the writers discussed above, including some who distinguish between systems change and culture change and some who do not. The models of Lewin and Beckhard and Harris served as primary models for the change effort. The Beckhard and Harris model was used throughout the organization as a means to communicate the change effort. The ideas of Deal and Kennedy (1982) also significantly influenced the change strategy. Although they were not consciously incorporated into the change strategy, the ideas of Miller, Dyer and Dyer, Tichy and Sathe include methodologies and views that were used in this long term change effort.

The Role of Leadership and

Management in Changing Culture

Leadership is seen as one of the most, if not the most, crucial factors in changing a culture. Katz and Kahn (1966), Beckhard and Harris (1977), Miller (1984), Schein (1985), Dyer and Dyer (1986) and many others include leadership as an essential component in successful organizational change efforts. Despite this belief in the power of leadership to transform cultures and change systems within organizations, an agreement on the definition of leadership has been difficult. Bennis and Nanus (1985) have found over 350 definitions of leadership in the literature. They conclude that "never have so many labored so long to say so little" (p. 4).

One of the difficulties in agreeing on the concept of leadership seems to be the indefinite use of the term "leader". This term is often used in the literature interchangeably with chief executive, general manager, unit or group manager, and so on. Similarly, the word "leadership" is sometimes used interchangeably with these same terms, extending as far as the entire management structure of an organization. A number of researchers have called for a distinction between the term management and leadership (Burns, 1978; Bennis and Nanus, 1985; Peters and Austin, 1985; Schein, 1985).

Bennis and Nanus, in their study of 90 successful "leaders," found leadership to be very different than management. They saw true leaders as exhibiting "transformative" leadership. Transformative leadership is essentially the same as "transforming" leadership as defined by James MacGregor Burns (1978): "the reciprocal process of mobilizing, by persons with certain motives and values, various economic, political, and other resources, in a context of competition and conflict, in order to realize goals independently or mutually held by both leaders and followers" (p. 425). These goals represent the values and motivations - the wants and needs, the aspirations and expectations - of both leaders and followers. Burns distinguishes "transforming" leadership from "transactional" leadership, the exchange of goods or services for the mutual benefit of both parties. Bennis and Nanus appear to view "transactional leadership" the same as "management."

Among organizational change theorists who believe that management - especially senior management - is responsible for creating real change to an organization's culture and/or systems are Beckhard and Harris (1977), Baker (1980), Ackerman (1982), Peters and Waterman (1982), Kanter (1983), Gilbert and Roberts (1984), Hickman and Silva (1984). These theorists do not necessarily distinguish between management and leadership, though many of the behaviors expected of management to create change would be called leadership

behaviors.

Hickman and Silva (1984) believe that organization managers and executives are the key to creating excellence in organizations. They believe that excellence "emanates from personal effectiveness and efficiency" and that excellent organizations are created by the simultaneous matching of strategy and culture. Managers must combine strategic thinking, culture assessing, and strategy-culture matching in order to change organizational culture.

Though she describes a change master as essentially any person within an organization "with the ideas that move beyond the organization's established practice, ideas they can form into visions," Kanter (1983) views corporate executives as the "ultimate change masters." Similarly, Beckhard and Harris (1977) base their change model on the belief that the executive manager of an organization is the one person that creates change. Both Baker (1980) and Ackerman (1982) refer to the chief executive officer and/or other top managers as the creators and monitors of culture.

Peters and Waterman (1982) present the chief executive as the one responsible for managing and shaping the values of the organization while Gilbert and Roberts (1984) refer to the "general management" as the proposer and leader of organization- wide change.

Although Schein believes that true organizational culture change is difficult to accomplish, and can happen

only at particular points in an organizational life, he does believe that the chief function of "leadership" is the manipulation of culture. (He uses the term leadership to describe situations in which managers exhibit behaviors aligned with the concept of transforming or transformative leadership.) In the early stages of an organization, the leader (often the founder) externalizes his own assumptions and embeds them into the organization as that organization's culture. Schein describes five primary and five secondary mechanisms through which leaders transmit and embed their assumptions. The five primary mechanisms are: 1) what leaders pay attention to, measure, and control; 2) leaders' reactions to critical incidents and organizational crises; 3) deliberate role modeling, testing, and coaching; 4) criteria for allocation of rewards and status; and 5) criteria for recruitment, selection, promotion, retirement, and excommunication. The five secondary mechanisms must be aligned with the five primary mechanisms. They include: 1) the organization's design and structure; 2) organizational systems and procedures; 3) design of physical space, facades, and buildings; 4) stories, legends, myths, and parables about important events and people; and 5) formal statements of organizational philosophy, creeds, and charters. Schein believes that the role of the leader at organizational mid-life is to understand the power of culture and to intervene when appropriate. At this stage, there is an opportunity to

manage the direction of culture change. Leadership can allow cultural diversity across the organization or work to unify diverse cultures (usually across organizational units at different geographical locations, or with different functions or divisions). Later, during organization maturity, when culture may become dysfunctional due to failure to adapt to a changing environment, the organization has two options: transformation or destruction. For transformation to occur, "leadership is needed to help the group unlearn some of its cultural assumptions and learn new assumptions." The leader must "break the tyranny" of the old culture. Even with transformation, culture change is necessary and inevitable, but not all elements of the culture can or must change. The destruction option may include bankruptcy or takeover with reorganization or merger with assimilation of the two or more cultures. With the destruction option, fundamental paradigm changes do occur.

Bennis and Nanus believe that leaders can transform the social architecture of an organization by using three principles: "1) create a new and compelling vision capable of bringing the work force to a new place; 2) developing commitment for the new vision; and 3) institutionalizing the new vision" (p.141). Institutionalization of the new vision is accomplished by changing such elements as management processes, organizational structure, and management style in alignment with the new vision. Also, words, symbols,

recruiting and training are seen as important to the transformation.

Of the perspectives from the several authors discussed above, ideas from Peters and Waterman and Kanter were consciously used by the organization in this case study. The three principles for transforming social architecture presented by Bennis and Nanus and the mechanisms for embedding culture discussed by Schein closely parallel the leadership principles followed by the General Manager of this case study organization.

Case Studies of Organization Development Interventions
in Changing Organizational Culture

In order to better understand the phenomenon of culture change and to assess the effectiveness of culture change interventions, researchers look to examples where interventions have been attempted. The field of O.D. continues to search for examples. Parras and Berg wrote in 1978 that "Organization Development, still an embryonic field, has produced relatively little systematic evidence about its efficiency" (p. 263). These researchers analyzed thirty-five empirical studies on O.D. interventions and found as a result that no definitive statement could be made about the effectiveness of such interventions. The researchers were left with more questions regarding O.D. effectiveness

than answers. Most interventions reported in the literature used the group as the primary mechanism of change. One finding in this study was that O.D. affects both organizational processes and outcomes (or results) equally but that the individual is impacted more than either organizational processes or outcomes. Parras and Berg's statement regarding little evidence of O.D. effectiveness still holds true today - especially in regards to organization wide change.

Many of the case studies regarding organization-wide change efforts published in the 1970's were about companies who were undertaking changes in work design. While work re-design is not culture change, interventions designed to effect culture change often include work design as a component. Companies known to implement work re-design programs include: Procter & Gamble, AT&T, General Electric, Mead Corporation, General Motors, Corning, TRW and Shell Oil (Walton, 1975). Two of the best known case studies of attempts to effect organization-wide change with a focus on work re-design are Volvo's Kalmar plant and General Foods' Topeka pet food plant (Walton, 1975). Both cases have been viewed as successful. Both cases used a socio-technical approach to work design; that is, they focused on combining technology with the human needs of employees in designing work processes within the plant. Increased productivity was always a desired outcome, though initially both companies

were hoping for productivity levels to just remain constant in the early stages of the changes, while the quality of work life (QWL) increased. In the General Foods plant, 35% fewer employees produced the equivalent output of traditionally structured plants due to yield improvements and waste reduction. Also, employee absenteeism and turnover were reduced. Volvo, who started its major organization changes with one plant in Kalmar, then expanded to other plants, significantly increased productivity over five years to become the third highest ranked company in the automotive industry as measured by volume of sales. In the process, employees were freed from constant attention to an assembly line, the physical working conditions improved significantly, jobs were organized toward job enrichment utilizing the work team concept, and certain mechanized job tasks were eliminated due to automation (Jonsson and Lank, 1975; Gyllenhammer, 1977).

Much of the increased level of interest in organizational change during the 1970's and 1980's has come from a need to improve productivity, largely as a result of competition in the global marketplace. Japanese competition, in particular, has sparked much interest in the idea of organizational change to achieve higher productivity. The American Productivity Center estimates that 90 percent of U.S. companies have implemented some type of productivity program (as of the mid-80's).

Although many organizations have implemented productivity improvement programs, fewer have concentrated on organization-wide culture change as the mechanism for such improvement. Of the organizations that have attempted cultural transformation efforts, few have shared their experiences of their processes or their outcomes. Only recently have such case studies begun to appear.

Unfortunately, a number of these "case studies" are primarily testimonials by executives of organizations that are implementing cultural change interventions. Examples include Reed's (1984) article on the U.S. Copyright Office, Boyle's (1985) article on Honeywell's Defense and Marine Systems Groups, and Powell's (1986) report on Reichhold Chemicals, Inc. While these writers have shared some lessons learned, not enough information about the processes used is presented to add significantly to the body of knowledge regarding organization change. Other recently published studies, however, present more information regarding the methodologies employed and the "lessons learned" in using these methodologies to contribute to the practitioners' and theorists' knowledge base.

Kanarich and Dotlich (1984) have reported on Honeywell's long-term corporate-wide effort to overhaul the corporation through a cultural change effort. This effort, with no apparent beginning or ending date, included the articulation of the company philosophy, managerial role modeling, a five-

year management development strategy, employee involvement teams (both quality circles and ad hoc task teams), human resource subsystems - communications, training and development, selection, performance appraisal, and rewards - and the use of a learning model (piloting new ideas and programs). No assessment of the impact of the change effort was presented.

Mroczkowski (1984-85) has presented a case study on General Electric's Video Products Division's turnaround strategy. The strategy was seen as a multi-dimensional culture change building upon American work values (purposely staying away from Japanese methods). The strategy included capital investments, departmental re-organization, administration of management's commitment to quality and excellence, multiple means of communication with employees regarding management's philosophy, and changes to the employee rewards system. No assessment of the change effort was presented.

Four case studies of corporate transformation using cultural interventions are reported in a book by Kilmann, Covin, & Associates (1988): <u>Corporate Transformation</u>. In this book, Love, Bennett, & Ozley (1988) reported on the case of the on-going change effort at National Intergroup - formerly National Steel. In 1981, the corporation was suffering from the economic downturn in the steel industry caused by inflation, slow economic growth, foreign

competition, and a move away from tin cans. Howard Love, the newly appointed Chairman and CEO, aided by external consultants, launched a transformation strategy that began with senior management's development of a mission statement and statement of management philosophy. This statement of mission and philosophy was then communicated throughout the corporation in three phases: to upper level managers reporting to senior management, to other managers, then all employees. Each business unit function then developed its own mission. All 33,000 employees became involved in this effort. A special parallel structure was set up for the transformation. National has undergone many changes since the beginning of the transformation - some due to the strategy change and some due to external factors. The case study authors present the lessons learned in the transformation process in terms of progress made and setbacks incurred.

The cultural change effort of Lutheran Health Systems - one of the oldest and largest health care providers in the nation - has been presented by Michael Bice (1988) President and CEO. The effort was begun in 1983 and is seen as a seven-year process. Bice began the transformation by presenting his vision for the organization and forming a Management Development Committee to provide leadership and gain support for the transformation. In 1985, a Corporate Culture Steering Committee was formed to oversee the

implementation of ten interventions laid out by Bice. The interventions were: recruitment, management orientation, continuing education, incentive compensation, reorganization, an innovation audit, corporate communications, personnel policy administration, norm management, and value management. While Bice states that objective measurements are used whenever possible to assess the progress of the transformation, no data are presented. A discussion of lessons learned is presented.

The on-going effort of Westinghouse to build a quality culture is presented by Thomas Murrin (1988), President of the Energy and Advanced Technology Group. The emphasis on quality evolved out of efforts to improve productivity beginning in 1979. Quality Circles, Value Analysis teams and other tools were already in place, but the corporation found that it had far to go to surpass its foreign and domestic competitors. Four methods were used to embed the quality philosophy into the organization: communications, top management support, comparison with other companies, and training. Murrin presents the problems that have faced Westinghouse and the insights gained to date in this change effort.

The transformation process begun by the Minnesota Department of Labor and Industry in 1983 is described in a case study by David Renz (1988). The case is described from the perspective of key managers who have guided the change

process. The concepts and theories used in the change process came primarily from Beckhard and Harris (1977), Nadler (1981), Tichy (1983), and Nadler and Tushman (1986). The transformation began with a strategic planning process which involved all employees. A number of strategies were employed to gain commitment of all employees (e.g. training and education programs, group events to identify future conditions for industry units, changing components of the reward system, policy changes, celebratory events). To date, there have been dramatic successes in some areas, including increases in effectiveness and productivity gains of up to 40 percent; however, "it is too early to draw conclusions about the organization-wide impacts of the process." Renz reviews problems with the change process and makes suggestions for management of the future - for this organization as well as others.

These recently published case studies are helpful in beginning to build a base of knowledge that theorists and practitioners of organization change can use to gain more understanding of the realities of applying theory to practice. While no case study can provide conclusive evidence regarding change methodologies, lessons can be learned about what may or may not work and within which settings. These lessons can then be added to the base of knowledge for adjustments to the concepts and theories to be made. While the case studies presented above have included

discussions of lessons learned, of problems and successes, they are all in the midst of the transformation process and therefore cannot present the complete story of the change process. Unfortunately, these case studies do not include presentations of performance data during the interventions so that the reader can understand the effectiveness of the change efforts.

The Relationship of the Literature
Review to the Study

The literature review discussed above has examined the variety of definitions of organizational culture, the feasibility of changing organizational culture, the many O.D. strategies and technologies recommended by organizational change theorists, and the role of leadership and management in changing culture. Additionally, the few case studies regarding organizational culture change that have been reported in the literature were reviewed.

At the end of each of the five subsections within the literature review, a summary of that section has been presented. Within each summary, the literature particularly related to this case study has been highlighted. A more detailed analysis of the relationship between the literature review and this particular case study is presented in Chapter 7, Summary, Conclusions, and Discussion.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

The Evaluative Case Study Approach

A case study is a descriptive and interpretive study of
a social issue. The case study examines the "how" and "why"
of a phenomenon, a person, group, organization, or other
unit. Stone (1978) ascribes the following characteristics to
the case study: "1) the researcher intensely examines a
single unit (e.g., person, group or organization), 2) data
are often collected by multiple means, 3) no attempt is made
to exercise experimental or statistical controls, 4)
phenomena are studied in natural settings, and 5) the
strategy is suited more to the generation of hypotheses than
their testing" (p. 136).

The case study is only one of several strategies one can
employ in conducting research in the behavioral sciences.
Other strategies include experiments, surveys, histories, and
archival analyses (Yin, 1984). According to Yin, a case
study is most appropriate when "a how or why question is
being asked about a contemporary set of events, over which
the investigator has little or no control" (p. 20).

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Yin argues that a case study can consist of either quantitative or qualitative evidence, or both; research strategies are not determined by the type of evidence or data used. Smith (1978) believes there is a trend in educational research to collect both qualitative and quantitative data.

Patton (1980) describes qualitative data as "detailed descriptions of situations, events, people, interactions, and observed behaviors; direct quotations from people about their experiences, attitudes, beliefs, and thoughts; and excerpts or entire passages from documents, correspondence, records, and case histories...." (p. 22). Qualitative evidence is collected in the raw form, or given by the informant(s), without the researcher fitting the information into predetermined categories. Quantitative measurements use instruments to "provide a standardized framework in order to limit data collection to certain predetermined responses or analysis categories" (p. 22).

One of the best rationales for including qualitative evidence in a study in order to understand the whole truth about something was written by John Steinbeck in his 1941 chronicle, The Log From The Sea Of Cortez as he described his and his partner's thinking about how to best understand the sea:

> We wanted to see everything our eyes would accommodate, to think what we could, and, out of our seeing and thinking, to build some kind of

structure in modeled imitation of the observed
reality. We knew that what we would see and record
and construct would be warped, as all knowledge
patterns are warped, first, by the collective
pressure and stream of our time and race, second by
the thrust of our individual personalities. But
knowing this, we might not fall into too many holes
- we might maintain some balance between our warp
and the separate thing, the external reality (p.
2).

Steinbeck then offers an example to his point of view.

The Mexican sierra has 'XVII-15-IX' spines in the
dorsal fin. These can easily be counted. But if
the sierra strikes hard on the line so that our
hands are burned, if the fish sounds and nearly
escapes and finally comes in over the rail, his
colors pulsing and his tail beating the air, a
whole new relational externality has come into
being - an entity which is more than the sum of the
fish plus the fisherman. The only way to count the
spines of the sierra unaffected by this second
relational reality is to sit in a laboratory, open
an evil-smelling jar, remove a stiff colorless fish
from formalin solution, count the spines, and write
the truth 'D.XVII-15-IX' (pp. 2-3).

Steinbeck then concludes with his summary of the problem

of dealing with research in the quantitative manner.

> There you have recorded a reality which cannot be assailed - probably the least important reality concerning either the fish or yourself. The man with his pickled fish has set down one truth and has recorded in his experience many lies. The fish is not that color, that texture, that dead, nor does he smell that way (p. 3).

To use Steinbeck's ideas on research to investigate a phenomenon one would examine quantitative evidence that may exist or that may be gathered about the phenomenon, put this evidence into context of the environment, and then use the evidence and the context to further investigate and subsequently understand the phenomenon.

This is Yin's perspective on the case study. He views the case study as an empirical inquiry that "investigates a contemporary phenomenon within its real-life context when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used" (p. 23).

Yin believes that case studies play an important role in evaluation research. One of the most important roles of the case study in evaluative research is to explain "real life interventions" that are too complex for other strategies, such as survey or experiment. The case study can describe the context of the intervention, the intervention itself, and

explore the outcomes of the intervention.

The case study presented in this paper is an evaluative case study. It is a description of an intervention (a cultural change effort) in a context (the organization) and an evaluation of the effects of that intervention on the organization.

Patton (1980) has examined the case study as a useful method of evaluative research in the field of the social services. He presents an argument for utilizing multiple or "mixed" methodologies in evaluating social phenomena. He sees two ways to achieve methodological mixes: 1) triangulation and 2) mixing approaches to the design, data collection, and analysis of a study. Data triangulation is the use of a variety of data sources in a study. Patton presents a continuum of choices in approach from a pure qualitative (holistic-inductive) approach made up of naturalistic inquiry, qualitative data collection, and content analysis to the pure hypothetical-deductive approach consisting of experimental design, quantitative data collection, and statistical analysis. He recommends that mixing the approach and data sources are often the most effective in understanding a phenomena in the real world of the social services.

This study uses a naturalistic inquiry design, both qualitative and quantitative data collection methods, and both content and statistical analyses. Quantitative data

used in this study include productivity measures and survey data. The researcher has used field methods in combination with these data to evaluate the intervention. Field methods used, derived from anthropological, sociological, and phenomenological research, include participant observations, interviewing, and document analysis (Patton, 1980). Dyer's (1984) suggestions for appropriate sources of data to be used in studying the culture of an organization include participant observation, interviews with key inside informants and outside informants (including customers, suppliers, external consultants, etc.), and analysis of internal documents (including annual reports, histories, memos, and operational data), and external documents (including newspaper reports, industry publications, etc.). This study uses sources of data which follow very closely Dyer's suggestions. (Each of these sources are described in the section on Research Design.) The documentation of the research findings are presented in a case study narrative.

Description of the Subject Organization

Northern Telecom, Limited, headquartered in Toronto, Ontario, Canada is the world's leading supplier of fully digital telecommunications systems and a major supplier of information systems. The company operates twenty-four manufacturing plants in Canada, thirteen in the United

States, and four outside North America. Research and development activities are conducted within manufacturing plants and by Bell Northern Research, Limited, a subsidiary. Bell Northern operates four locations in Canada, five in the United States and one in the United Kingdom. Northern Telecom has been in a period of steady growth over the last several years with an annual growth rate of 10 percent, reaching five and a half billion dollars in revenues for 1988. The corporation is competing to be the worldwide leader as a supplier of telecommunications equipment by the year 2000. Revenues from the United States represent 62 percent of the corporation's world-wide revenues. There are approximately twenty-two thousand employees across the United States and fifty thousand worldwide.

Northern Telecom, Electronics is a wholly owned subsidiary of Northern Telecom, Limited. Its 1988 revenues were approximately 230 million dollars. Corporate headquarters are also located in Toronto, Ontario, Canada.

The Rancho Bernardo division of Northern Telecom, Electronics is located in San Diego, California. It is one of four divisions within Northern Telecom, Electronics. Its 1988 revenues were 54 million dollars. The plant was built in 1980 and began its production of custom in-house integrated circuits in 1981. As a start-up operation, the division was deemed a tremendous success - the first circuits completing production ahead of schedule and with higher than

expected quality. A positive trend continued for more than two years.

In late 1983, the division began to receive a sharp increase in product orders. Management responded to the increased demand in product by increasing the employee population, under the assumption that a larger labor force could produce the needed volume of product orders. (The population doubled from mid-1983 to mid-1984.) Unfortunately, the rapid increase to the labor force brought about a decline in product quality and productivity at a time when customers were demanding higher quality and lower cost.

An audit team from the corporation concluded that the division's management style was impeding the organization's ability to respond and remain successful during this high-growth phase. The results of this evaluation prompted division management to contract with internal and external O.D. consultants to help change the course of the division toward improved productivity and overall organizational effectiveness. This began the partnership between the division's General Manager and his senior staff and O.D. practitioners to transform the culture and to change the support systems within the organization in alignment with the new culture. A strategic planning model was used as a framework to provide structure for the change and as a vehicle to communicate the change effort to organizational members.

The change strategy was designed in late 1984: a three phase organization development plan evolved as the change process moved forward. Major intervention steps began in January, 1985.

This study will outline the change process over the four year period between 1984 and 1988 and evaluate the results of the change effort as measured by changes in the organizational culture and in the organization's overall effectiveness.

Research Design

It is believed that the case study is the most appropriate design to answer the research questions of the investigation due to the descriptive and interpretive nature of the issues. The researcher has used a variety of evidence including both quantitative data (employee opinion surveys and organization performance data) and qualitative data (interviews, historical documents, and observations) to fully explore this case in order to add meaningful information to the body of knowledge regarding organizational change interventions.

The methodology used in presenting this case includes a description of the strategies used in the attempted culture change, presentation of data regarding the extent of culture change, presentation of data regarding organizational

effectiveness, and information showing relationships between culture change and changes in organizational effectiveness. A discussion and summary of the findings are presented. The report concludes with an analysis of the relationship of the findings from this case to the literature on organizational culture and organizational culture change, strengths and weaknesses of this study, and suggestions for future research.

A variety of investigative tools are used to answer the research questions. A description of each of the tools used in this research study is given below.

Participant observation: The researcher has been an employee of the subject organization throughout the intervention. He was the Manager of Human Resources Development in the beginning of the change effort, then was named Manager of Organization Effectiveness, and later Manager of Training and Education. In the role as Manager of Organization Effectiveness, he managed the internal O.D. consulting staff for this intervention. The staff worked in partnership with the organization's General Manager and his senior staff during the planning stages of the intervention and until the General Manager's departure from the organization 3 1/2 years into the intervention. In the initial phases of the intervention, an external consultant was employed to lead the consulting effort and to mentor the researcher and his staff in O.D. consulting methods. The

researcher's role in the organization has served as an advantage to conducting a thorough analysis of this case study since he has access to the division's management and other organizational members, corporate officers, and customer representatives for interviews and to archival records and data. As a participant in the change process, the researcher has gained insights into the usefulness of particular strategies as well as observations regarding the nature of the culture at different stages throughout the process. The researcher has been able to use his knowledge of the organization and its members to move around the organization to better discover the answers to the research questions, with a full appreciation of the significance of behaviors, events, activities, statements, discussions, and so on.

A potential disadvantage to the researcher's affiliation with the subject organization could be researcher bias. Extra precautions have been taken to overcome this potential bias. Methods utilized to overcome bias are described in the section on Data Analysis.

Archival records: Archival records have been pulled from the organization and include formal strategic plans, reports, memoranda, newsletter articles, meeting agenda, financial reports and statements, productivity data, employee population data, survey results, notes and agenda from formal presentations, and the researcher's own notes.

Physical Artifacts: Physical artifacts used in this study include a formal handbook called the "Human Resources Strategic Document" (Appendix A) which was distributed to all NTE-RB employees as a definition of the desired culture; curricula used in conducting orientation on the desired culture to management and other employees; slide shows from division-wide "State of the Plant" meetings; as well as other evidence of the intervention and of the culture and productivity changes.

Employee survey: An employee opinion survey was administered to all NTE-RB employees in April, 1985 and again in November, 1987. The survey was designed to assess organizational culture by measuring organizational behaviors relative to both NTE-RB values and a set of eight factors reflecting organizational climate. The survey instrument, using a Herzbergian theoretical model, was designed to measure the most salient dimensions of organizational climate. The survey has been validated and tested for reliability using 140 companies, representing various types of industries and including 30 high tech companies. Questions related to NTE-RB's nine values were added to the survey for administration in both 1985 and 1987. A trend analysis is used to compare organizational culture as measured by the survey between early 1985 and late 1987. Appendix B presents the survey instrument as it appeared in 1987 (slight modifications were made between 1985 and 1987).

Newly generated statistics: While archival records are used to show productivity trends for particular time periods, new statistics were generated for other time periods. These statistics have been calculated for product yield, production cycle time, and average outgoing quality levels.

Interviews with internal staff: An important data collection tool used in this case study is the interview. Interview data are used to substantiate and supplement data from employee surveys and from archival records and newly generated statistics. Interviews were held with 12 NTE-RB employees. These employees represent a cross-section of the organization, with proportional representation from the various departments, work shifts, and job categories. Employees chosen for interviews were also representative of the gender mix of the organization. All interviewees were working within the organization throughout the four years of the study period. A semi-structured, open-ended approach was used in the interviewing process (Borg and Gall, 1983). This entailed use of an interview guide with general questions covered in the interview (Patton, 1980). Descriptive, structural and contrast questions were incorporated into the interview guide (Spradley, 1979). Data on changes in organizational effectiveness measures (research question 3) were given to interviewees. Questions regarding the extent of organizational culture change (research question 2) and the relationship between the cultural change process and

organizational effectiveness (research question 4) were asked of the interviewees. The interview guide is presented as Appendix C. The interviews were designed to be conversational in tone to allow interviewees to provide their own color and depth regarding the change process and its outcome. Information obtained from each interview was used to shape and strengthen subsequent data collection. This approach utilizes a combination of the Interview Guide Approach and the Informal Conversational Approach (Patton, 1980). The interview guide and the interviewing process were piloted with two Northern Telecom employees prior to beginning the twelve interviews.

In order to capture complete information during the interview and simultaneously engage the informant as a co-investigator, the interview process was audiotape recorded. The researcher was then able to replay the tape as needed during analysis to capture complete information.

Interviews with corporate officers and customers: Northern Telecom employees internal to the subject organization are able to provide internal insights to the cultural intervention and its effects on both culture and organizational effectiveness; however, given the possibility of the case organization's employees being motivated toward or against success of the intervention, and to obtain a more global view of the phenomenon, other sources familiar with the intervention, have been tapped. Two corporate officers

familiar with the Rancho Bernardo division, including its culture and its organizational effectiveness, were interviewed. Additionally, key representatives from each of the Rancho Bernardo division's two largest customers (in terms of volume of sales) were interviewed. These two groups (corporate officers and customer representatives) were first given a summary of data gathered from within the NTE-RB organization: employee survey, organizational effectiveness measures, and internal interviews. The researcher asked the interviewees for any agreements or disagreements with the opinions of organizational members regarding culture change or its impact on organizational effectiveness. Appendix D presents the interview guide used for these "external" interviews. This triangulation process (or cross-checking using an outside source) served to provide additional confidence in the meaningfulness of the research results. This paper reports both a summary of interview data collected from internal sources and a summary of external interviews along with an analysis as to their agreements or disagreements with the internal data sources.

In addition to the data sources outlined above, information presented in Spraul's thesis (1987) on the same organization is used, particularly in the description of the cultural change process used by the NTE-RB organization.

Data Analysis

Information obtained from participant observation, archival records, artifacts, and newly generated statistics are organized in such a way as to provide support toward answering the four research questions. Where large volumes of information exist, summary text of the integrated information from the various sources are presented. Pertinent charts and graphs as well as this summary text are presented in this report.

The employee survey results showing employee opinions regarding organizational values and overall organizational climate are reported in summary format in this report. A trend analysis comparing 1985 and 1987 survey results is reported.

The audiotape recordings from interviews were used to summarize the interview data. This summary is presented in this report. As previously described, the internal interview data were analyzed first, then presented along with organizational effectiveness data to the external interviewees. The external interview data were used in order to corroborate or refute the internal data gathered. To protect the integrity of the research due to possible researcher bias, especially in light of the fact that the researcher is a member of the subject organization, a triangulation process (or cross-checking by an outside

source) was established. An independent investigator was asked to review a random sampling totaling one-third of the interview tapes and to corroborate the summaries of each interview and the summary of the total interviewing process. The findings of this triangulation process are presented. The independent investigator is a professional in the field of O.D. with training in qualitative research.

Organization of This Report

The final product of this research consists of a documentation of the cultural change intervention and an evaluation of the impact of this intervention on organizational effectiveness. This documentation and evaluation together answer the four research questions of this case study. Each of the four research questions are repeated below followed by an explanation as to the data that are reported for each question and where that data are presented within this report.

1) **What were the strategies used by the NTE-RB division to attempt to change organizational culture?**

The study will report the steps taken over a four-year period (1984-1988) to alter the culture of the organization and to institutionalize the new culture into the organization. [While certain

strategies were planned from the outset (1984-1985), much of the O.D. technology used to impact culture evolved during the four year intervention.] The documentation of these culture change strategies is presented as Chapters 4 and 5 of this report. Archival records from the organization and physical artifacts used by the organization in the process of the intervention are described in the report. When appropriate, these records and artifacts are included as part of the report. Information from Spraul's thesis (1987) and from the author's participant observation notes are also be used to complete the description of strategies used in the intervention.

2) **To what extent did the culture change at NTE-RB between 1984 and 1988?**

    a)   As measured by perceptions of organizational members.

    b)   As corroborated by corporate officers and representatives of customer organizations.

In Chapter 6, this paper reports summaries regarding the extent of culture change by presenting employee survey data results including trend analyses, summaries of interview data from organizational members, and summaries of interviews

with corporate officers and customers. In Chapter 7 the researcher presents his own participant observations regarding culture change seen within the organization between 1984 and 1988.

3) **In what ways did organizational effectiveness change between 1984 and 1988?**

   Also in Chapter 6, this paper reports four-year trends in indicators of organizational effectiveness for the NTE-RB division. These indicators include productivity measures (product yield, average outgoing quality, and production cycle time) and employee job satisfaction, reported as both employee survey data and interview data.

4) **What was the relationship between cultural change and organizational effectiveness?**

   a) As measured by perceptions of organizational members.

   b) As corroborated by corporate officers and representatives of customer organizations.

   In Chapter 6, this paper presents summaries of interview data from organizational members and summaries of interviews with corporate officers and representatives of customer organizations.

In Chapter 7 an analysis is presented which includes a discussion on the meaning and relevance of the findings, as well as the overall lessons learned and ideas contributed to the literature through the study. The paper concludes with a discussion regarding the strengths and weaknesses of the study and the researcher's suggestions for further research.

CHAPTER 4

CONTEXT OF SUBJECT ORGANIZATION

This chapter will provide the setting for this case study by describing the parent corporation of the subject organization, reviewing the history of the semiconductor industry, and describing the subject organization prior to the culture change intervention. A discussion of the need for change will also be presented.

Much of the information presented in this chapter and in Chapter 5 parallels the description of the subject organization and of the change intervention discussed by Ann Marie Spraul in her master's thesis (1987). Her thesis described this intervention from its beginning in late 1984 through late 1986. Ms. Spraul was a member of the NTE-RB Organization Effectiveness department at the time this author was manager of the department. Research on the NTE-RB organization was conducted by Ms. Spraul, E. Michael Norman (referenced in Chapter 6), and the author during their work on this culture change effort.

Description of Parent Corporation

As noted previously in Chapter 3, the subject organization is a division within a multi-national corporation, Northern Telecom, Limited. Headquartered in Toronto, Ontario, Canada, Northern Telecom is currently the world's leading supplier of fully digital telecommunications equipment and is striving to be the leading supplier of all telecommunications equipment by the turn of the century. Entering the U.S. market in the mid-1970's, the company now operates thirteen manufacturing plants across the country. Revenues from the U.S. represents 62 percent of the corporation's five and a half billion dollars in revenues.

The Rancho Bernardo plant is one of four divisions within Northern Telecom, Electronics - one of the five wholly owned subsidiaries within Northern Telecom, Limited. The facility was built in 1980 in Rancho Bernardo, a community of San Diego, California. Production of custom in-house integrated circuits began in 1981.

Description of Semiconductor Industry

This description of the semiconductor industry is adapted from Spraul's thesis (1987). She had conducted interviews with two Northern Telecom managers, Leslie Davis and Leo Pachek.

The semiconductor industry's roots are tied to the invention of the transistor in 1947. The first integrated circuits were developed in the early 1960's by Texas Instruments and Fairchild Industries.

The complexity of manufacturing integrated circuits dictates that highly sophisticated, capital intensive facilities are used for their production. Ultra-clean environments are essential to the production of circuits. Such "clean room" areas can cost over $750 per square foot, with support areas costing between $100 to $200 per square foot. As much as $60 million is required to build and equip a facility capable of processing ten thousand four-inch silicon wafers per week. Equipment alone would cost approximately $30 million.

In the early years of the semiconductor industry, manufacturing plants were concentrated in Texas and in Northern California in what has become known as Silicon Valley. The industry is known to be highly competitive and dynamic. Employee turnover has been high relative to other industries with employees with technical skills (chiefly engineers and technicians) moving from one company to another when dissatisfied or attracted by money from emerging companies. In such a highly competitive, dynamic environment employees were often expected to work long hours but were compensated with high wages and the excitement of such a highly charged work environment. In these entrepreneurial

organizations, an atmosphere of informality and camaraderie prevailed. Organizational cultures were heavily influenced by the manager(s) in charge.

The semiconductor industry maintained this sense of successful, highly competitive, entrepreneurial spirit until the 1970's when world-wide competition resulted in a loss in the market share by U.S. companies. Several manufacturing plants were closed as increased pressures forced reduced costs. Managers focused on high outputs and low costs. Such bottom line orientation created, in some cases, climates of hard work with little attention to employee needs. Such facilities became known as high-tech "sweatshops."

In the 1980's, the economic importance of the semiconductor industry has been recognized by management, government, financial, and academic communities. This industry is seen as a driving force behind the electronics revolution, creating new industries such as robotics and aiding older industries to compete in today's marketplace through microelectronic technology.

Description of NTE-RB Before the Intervention

History

The Rancho Bernardo facility was built in 1980 as a class 100 cleanroom facility. (Class 100 means that a cubic

foot of air contains no more than 100 particulates larger than one-half micron in size.) Its role was to serve as a high volume supplier of custom integrated circuits to Northern Telecom's divisions chartered with manufacturing telecommunications equipment. As a strategic in-house supplier of circuits, the division was somewhat protected from the semiconductor industry's large fluctuations in market demand. For the first two years, the organization was small with an employee population between 50 and 100. The management style was primarily entrepreneurial with high employee commitment and a high degree of hands-on management. Communications were informal and information flowed with relative ease. 1982 through 1984 saw an enormous increase in the demand for telecommunications products. As a result, Rancho Bernardo sales grew rapidly. Figure 1 depicts the Rancho Bernardo sales in dollars from its founding through 1988. As sales almost tripled between 1982 and 1984, the employee population more than tripled. Figure 2 shows the employee population from 1980 until 1988. With such high demands placed on an organization with a new, unseasoned workforce managed in an entrepreneurial style, production suffered, with significant drops in cumulative product yields (percent of good circuits at the end of the production line).
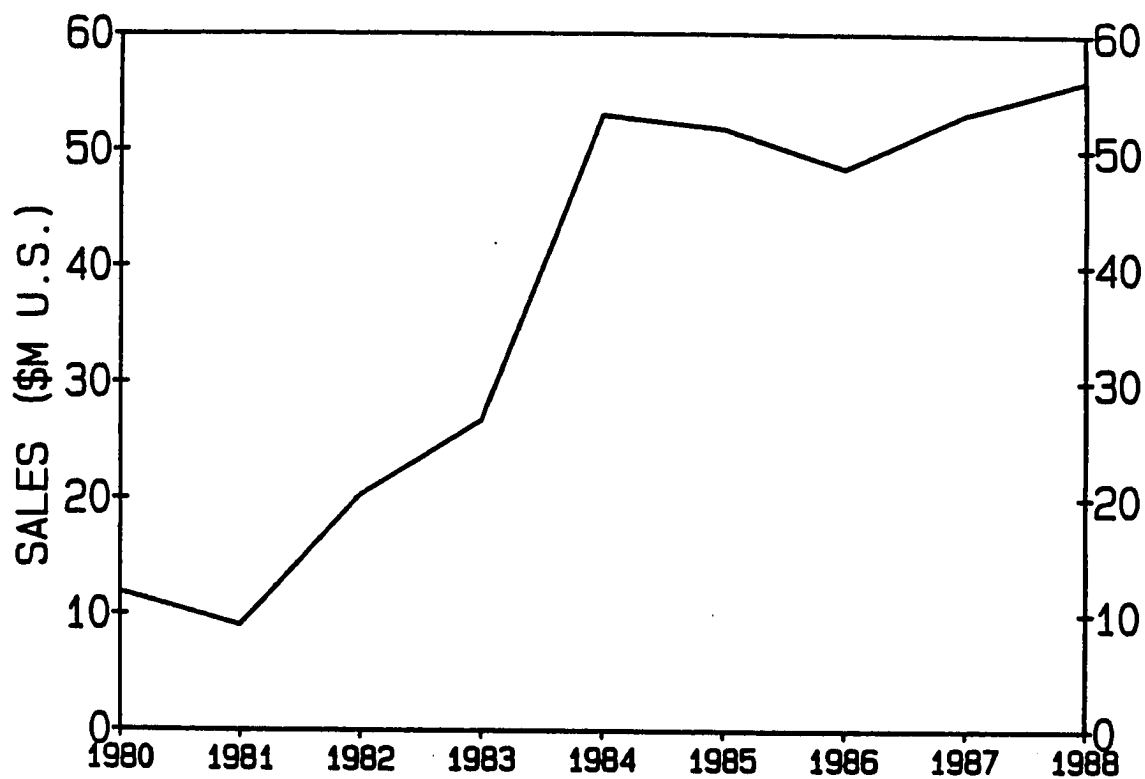
Figure 1. NTE-RB total sales: 1980 - 1988.
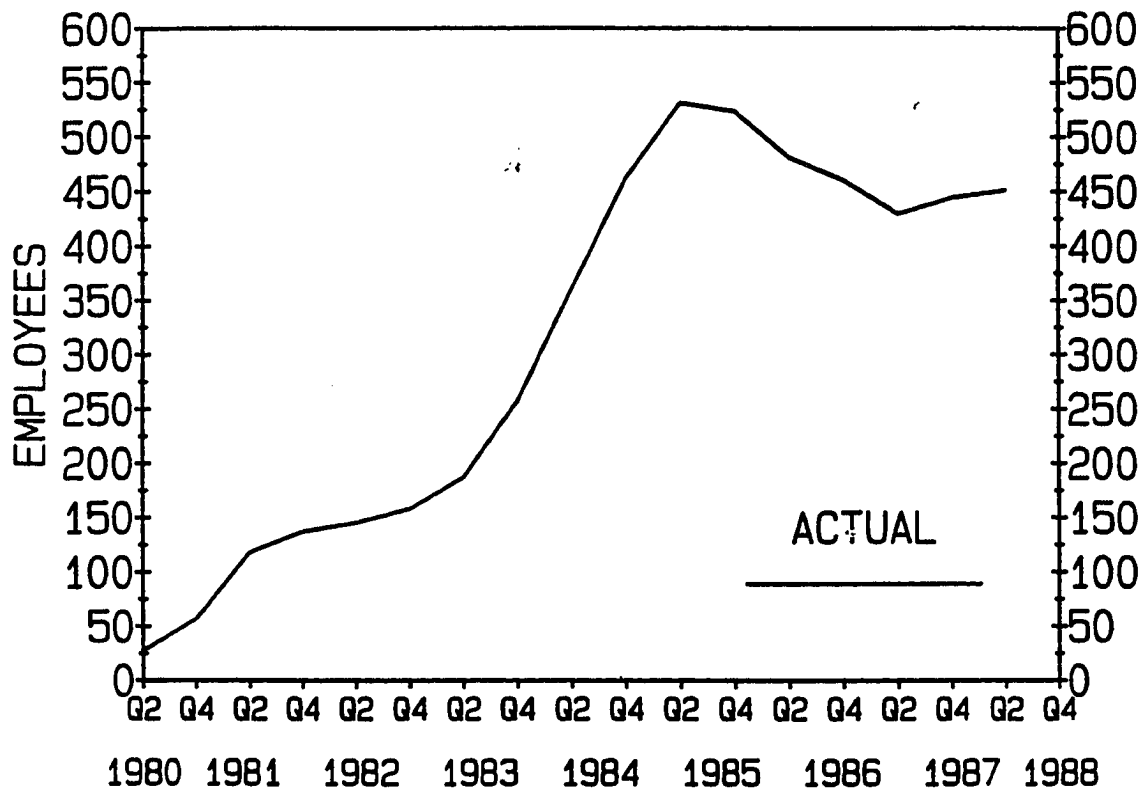
Figure 2. NTE-RB employee population: 1980 – 1988.

Organization Culture

The organizational culture of the Rancho Bernardo division during the 1984 time frame is revealed through an examination of the division's structure and systems. NTE-RB was originally designed as a functional organization and maintained this structure throughout the rapid growth of 1982-1984. Figure 3 illustrates the organization chart as of fourth quarter, 1984. As the organization grew, this functional organization stood in the way of communication and problem-solving. Day to day decisions were made at the top of the organization with little participation from middle and line managers or from the larger workforce. The eight functional directors, the controller, and the General Manager made up the "cabinet" - a term used throughout the corporation. The cabinet essentially ran the business, with mid-managers and first line managers acting as implementers.

Few formal systems were installed to assist in the management of the organization's human resources. The entrepreneurial attitude perpetuated the belief that the fewer formal systems the better. One of the few guidelines in place with which managers were to manage human resources was the "Standards of Conduct" (Figure 4), distributed to all employees during employee orientation. The Director of Human Resources approved all performance reviews, salary, or position changes.
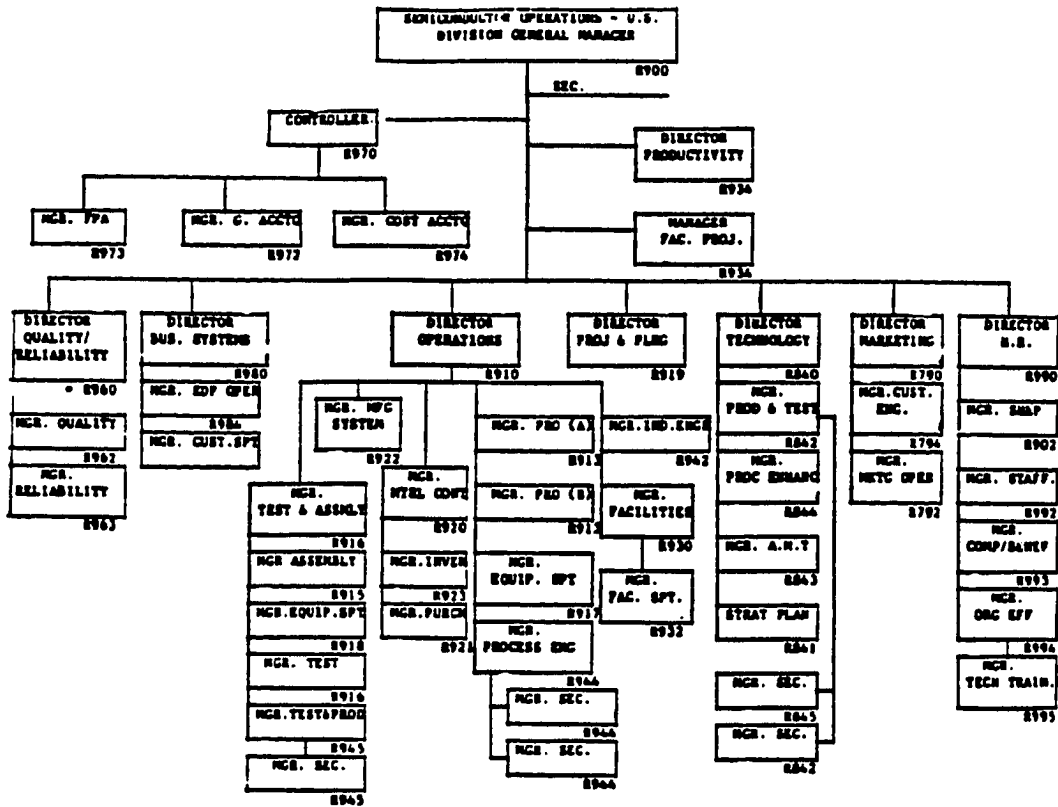
Figure 3. NTE-RB organizational chart: December, 1984.

Standards of Conduct

The following Standards of Conduct have been adopted in an effort to define the rights and duties of all employees in the Semiconductor Division.

Should disciplinary action become necessary in applying these rules, it will only result after full consideration of the nature of the offense, and facts surrounding it and the work history of the individual. Disciplinary action may range from verbal and written reprimand and warning to immediate discharge. Should disciplinary action be required, it is intended to be corrective rather than punitive.

I. Attendance and punctuality are important to the efficient operation of the facility. The following standards govern matters of attendance.

A. Each employee is expected to be at his or her work station on time.
B. Absence for three consecutive days without notice will be considered as a voluntary termination on the part of the employee.
C. Each individual must complete only his or her time card or record.

II. Good housekeeping practices are to be observed by all employees. A clean and orderly plant contributes to pleasant working conditions, safety and efficiency.

A. Each individual is responsible for maintaining his or her work place or equipment in a clean and orderly fashion.
B. Food and beverages may be obtained during break and lunch periods. Food items should be consumed in the cafeteria or break areas and refuse placed in the appropriate containers.
C. Smoking is permitted in designated areas only.

III. Your safety and that of your fellow workers and the security of the plant requires constant attention. The following standards are for your protection.

A. Everyone is expected to follow instructions and good judgment regarding the safety of others,

Figure 4. Standards of conduct: prior to 1985.

the safe operation of their machine or equipment, and all safety devices.

B. Operate only machines, tools or equipment for which you are trained or authorized, and report to your supervisor any damage to plant materials or equipment.

C. Physical violence, verbal abuse, sexual harassment, threats, intimidations or weapons are not permitted on company property.

D. Unauthorized use or removal of and/or destruction of any property (i.e. tools, equipment, personal property, records, confidential information) is prohibited.

E. Possession of consumption of any alcoholic beverage while on company property, or reporting to work under the influence of alcohol is not permitted.

F. Possessing, using, distributing or selling narcotics, drugs, marijuana, or the like, on company premises, or reporting to work under the influence of narcotics, drugs, marijuana or the like or otherwise in a condition which makes work performance doubtful or hazardous, is not permitted. Possession or use of narcotic or drug while on company premises pursuant to a doctor's prescription and with the advance approval of the Health Department shall not constitute a violation of this standard.

G. Gambling is prohibited.

H. Visitors are permitted in the plant with prior approval only.

I. Work related injuries must be reported immediately to your supervisor.

J. Sleeping on the job and/or performing work of a personal nature during working hours is not permitted.

IV. Communications by and between employees and the company are important and should be conducted within the following procedure:

A. Posting or removal of notices signs, or written material of any form on bulletin boards or company property at any time must be authorized in advance by the Human Resources Department.

B. Distribution of written or printed matter of any description in the plant during work time is not permitted without specific written authorization from the Director, Human Resources.

Figure 4 (continued). Standards of conduct: prior to 1985.

Formal communications consisted of a corporate newsletter and a quarterly division newsletter. Information flowed from top to bottom, with decisions made by the cabinet often not reaching the factory floor.

Some management training was provided to mid-level and first line managers, but reinforcement of skills taught was not provided by senior management. Technical skills training for the many manufacturing "operators" entering the division in 1983-84 was provided through a one-week orientation by an outside agency sponsored by a government-industry consortium and through a "buddy" system of on-the-job training.

Production records of equipment maintenance, operator efficiency, and equipment utilization were unreliable, or did not exist.

Need for Change

As described previously, the Rancho Bernardo Division's quality and productivity suffered in 1984 when the demand for product (sales) increased dramatically. The volume of product manufactured increased from 2.8 million units in 1983 to 4.6 million units in 1984. The management staff countered this challenge with a rapid increase in employee population (the direct labor population grew from 80 to 210 in 1984) and with a media and rewards campaign to attempt to motivate employees. By mid-1984 yields had dropped well below

industry standards and shipments to customers were missed or delayed.

Audit Team Diagnosis

In the face of these missed commitments to the customer on the part of the Rancho Bernardo division, corporate management requested a study be conducted to account for the decline in productivity. In June, 1984 an audit team from the division's sister plant in Ottawa conducted a two week study of the problems within Rancho Bernardo. The team consisted of managers, engineers, technicians, and an internal organization development (O.D.) consultant. Methods used by the audit team included interviews with a cross section of the employee population, review of production records regarding planning, reporting, manufacturing procedures, and observations of meetings and work in process on the factory floor.

The study concluded that while certain technical problems existed these problems were symptoms of deeper problems in management style reflected by the overall organizational climate. The team reported poor information flow from management to production workers, fear and distrust among management, and a lack of strategic planning. As a result of the audit team study, the corporate management drew up a change plan. Part of this plan was a directive for the

Rancho Bernardo management to develop their own plan to resolve the issues of management style and organizational climate. The Rancho Bernardo plan included using an organization development model to change the culture to a more participative workplace in an attempt of improve overall effectiveness. While the Rancho Bernardo management began taking action on this new plan, corporate management completed plans to move Rancho Bernardo's general manager to a new division and to assign Ken Bradley, the former director of operations from the Ottawa facility as new general manager.

CHAPTER 5

CULTURAL CHANGE PROCESS

This chapter tells the story of the cultural change intervention begun in late 1984 and continuing today. The chapter begins with the story of the development of the change strategy, then presents the components of each of the three phases of the change process. The chapter concludes with a description of plans to continue phase III of the change strategy beyond 1988.

Strategy Development

Ken Bradley began work in the Rancho Bernardo facility in August, 1984 as Group Director of Manufacturing (both Rancho Bernardo and Ottawa divisions). He began his job as Division General Manager as of January 1, 1985. An external organization development (O.D.) consultant, Dr. Anne Nolan, was contracted to serve as mentor to the internal Organization Effectiveness staff and to consult along with the internal staff with Bradley and his "cabinet" (made up of functional directors). Nolan, the Organization Effectiveness staff, and Bradley developed and recommended an intervention

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strategy to attempt to change the organizational culture from a largely autocratic culture to a more participative culture. The intervention strategy was first presented to the cabinet for their enrollment in the process. The first step in the strategy was called the "executive development" program. The program actually began in August, 1984 while Bradley was Group Director of Manufacturing. The executive development program lasted seven months and consisted of an examination for the need for cultural change, team building, and the development of a vision for the future regarding organizational culture. This program was the first of three phases of the overall cultural change strategy utilized by the division. The three-phase strategy, labeled the "Division Development Plan," is presented as Figure 5. The plan was not laid out from the outset, but evolved as phase 1 of the plan progressed. This evolution in the development of the overall strategy reflects the process of gradual "buy in" on the parts of members of the cabinet. This cultural change process was led by Bradley and his staff in partnership with the organization development (O.D.) consultants - Nolan and the Organization Effectiveness staff.

The three phases of the Division Development Plan correspond in a general way with Lewin's three stages of unfreezing, change, and refreezing. Phase I was designed to create understanding by the cabinet for a need for change and then to provide education and personal insights in order to
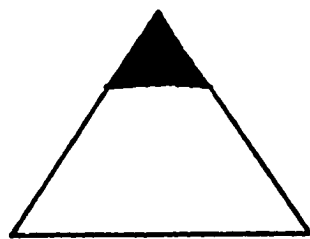
PHASE I: 1985

<u>Executive Development</u>
- Team Building
- Values Clarification
- Vision
- Employee Survey
- Strategic Planning
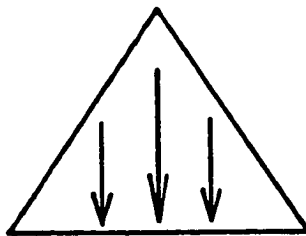
PHASE II: 1985-1986

<u>Awareness & Alignment</u>
- Employee Involvement
  Teams
- Management Development
- Policies & Procedures
- Communication Efforts
- Employee Orientation
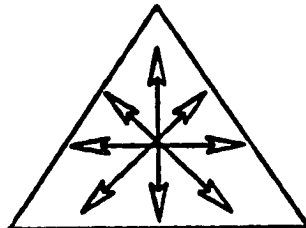
PHASE III: 1987 -----\>

<u>Institutionalization</u>
- Structure
- Systems
- Skill Building

<u>Figure 5.</u> Division development plan: The change strategy.

provide a fundamental shift in beliefs about management, ultimately leading to a change in management practices.

Phase II included the education and alignment of the remainder of the management staff and all division employees. This involved major changes in management policies and practices designed to shift the power distribution from a concentration at the top of the organization to a more even distribution across the division. Change efforts were focused at this phase from mid-1985 through 1986.

Phase III, designed to refreeze or institutionalize the change, included a complete restructuring of the organization using a socio-technical design, changes to support systems such as the reward system, the information system, financial procedures, and extensive training and education for all employees to provide knowledge and skills to succeed in the new culture. Phase III began in early 1987 and continues today.

Figure 6 outlines the chronology of events throughout the three phases of this organizational change.

Cultural Change Process - Phase I

Bradley was committed to the process of cultural change from the very beginning; however, several members of the cabinet were not. They had been a part of the management group in power and were accustomed to this style of manage-

Executive Development (HRSD)

Management Development

Employee Orientation

Employee Involvement Teams

Communication Efforts

Policy Development & Training

Manufacturing Restructuring

Support Group Restructuring

Reward System Redesign

Skill Building

Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4

1 9 8 4   1 9 8 5   1 9 8 6   1 9 8 7   1 9 8 8
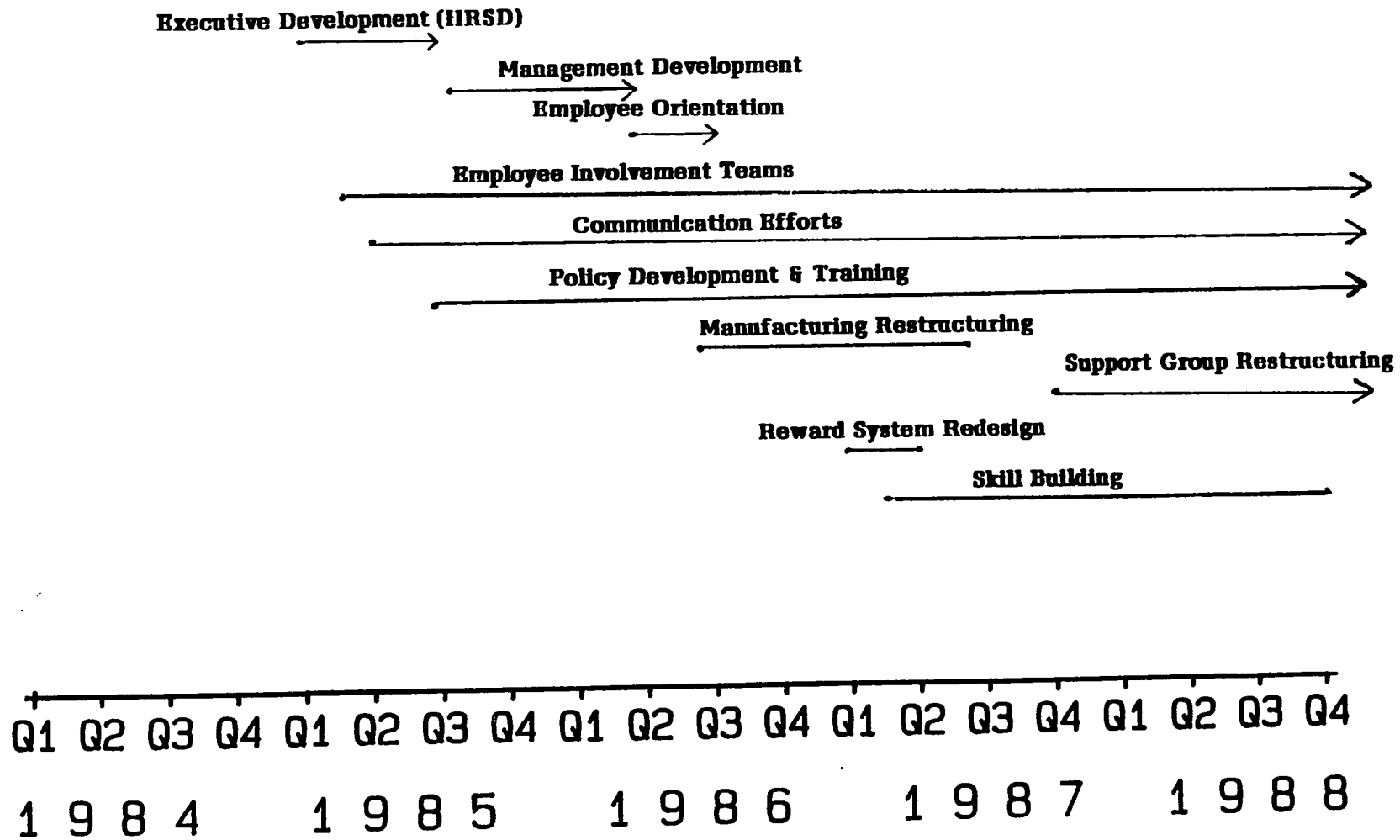
Figure 6. Timeline for culture change.

ment. Many of the activities of the executive development program were focused on educating the cabinet as to a need for change. This education process was designed to examine the following:

1. each director's management style and value system,

2. the management style and value system of the cabinet as a group,

3. contemporary ideas in management theory,

4. the current culture of the organization,

5. the comparison between NTE-RB's culture and the cultures of some other high-tech organizations, and

6. business and economic trends related to the division's long-term future.

In addition to this education component, the executive development program included team building and the development of a Human Resources Strategic Document (the HRSD), a book used throughout the change effort as a statement of the desired culture - a vision of the future. The HRSD includes a description of the strategy to be used to create this future state. This strategy, coined the Human Resources Strategic Plan, essentially outlines the three phases of the Division Development Plan. The HRSD was developed step-wise over the seven-month long executive development process. Education, teambuilding, and the development of the HRSD occurred simultaneously. Much of the cabinet's development activities occurred in a group setting

in one and two day off-site sessions facilitated by Nolan and the internal O.D. consultants. In February, 1985, the cabinet underwent extensive examination of both personal and organizational values resulting in the development of a list of nine core values to be used by the division in the future. These nine values and their definitions are presented as Figure 7.

When these values were presented to segments of the organization, the cabinet received feedback that current practices reflected values very different from these. After some resistance to this feedback, the cabinet decided to accept the consultants' recommendation to administer an organization-wide employee survey to determine the current organizational culture. This survey was conducted in April, 1985 by an external consulting group. The survey instrument, using a Herzbergian theoretical model, measured eight factors considered to be the most salient dimensions of organizational climate. These eight factors, or scales, were subdivided into subscales. The same survey had been administered to 140 companies, representing various types of industries and including 30 high-tech companies; therefore allowing normative comparisons to a large data base. In addition to these eight factors the NTE-RB survey included a number of custom questions including a set of questions designed to measure employee feelings regarding the nine newly published organizational values. The survey was administered to all

VALUES FROM HRSD

PARTICIPATIVE MANAGEMENT:

We believe in a management approach that fosters an environment characterized by:

- ° open, interactive communication
- ° decision making at appropriate level
- ° full awareness of division values and goals
- ° teamwork

INTEGRITY:

Our business and interpersonal relationships are carried out with words and actions that are consistent with our beliefs. We treat all people fairly. We respect the rights of the individual. We believe the ethics of the division are based on honesty, trust, and equality for all employees.

COMMITMENT TO QUALITY:

We believe in building quality into every product and service we provide. We do this by fostering an environment where all people are responsible for the quality of their work. In·this environment quality is built in, not inspected in.

INNOVATION:

Innovation is the creativity that leads to the development and implementation of beneficial change.

Innovation is encouraged by recognizing new and diverse ideas and opinions, and encouraging "possibility thinking." Intelligent risk taking is supported - and we learn from our mistakes.

DEVELOPMENT AND GROWTH OF INDIVIDUALS:

In keeping with our beliefs that people are our prime resource, we foster an environment for individuals to achieve their potential, while balancing the needs of the individual with the needs of the organization. This is characterized by:

- ° job satisfaction
- ° training and development
- ° internal opportunities and promotions
- ° challenging objectives
- ° recognition of the whole person
- ° fun

Figure 7. Organizational values as stated in the HRSD.

RECOGNITION OF ACHIEVEMENT:

By recognizing contributions, we create an environment that encourages the growth and development of both the individual and the group. Through frequent and timely feedback, we acknowledge individual and group contributions.

RESULTS ORIENTATION:

Results orientation describes a motivation and commitment to achieve a set of objectives supporting division goals in a timely manner. Results orientation means "we do what we say we will do" - on time.

CUSTOMER ORIENTATION:

Anyone who receives the output of our work is a customer. Therefore, everyone has a customer.

A customer can be either internal or external to the division. Our commitment is to deliver products and services that fully satisfy our customers' needs.

RESPONSIBILITY TO THE COMMUNITY:

As a corporate citizen, we desire to be a positive economic, intellectual, and social influence in our community. We foster active participation within these areas.

We believe in the dignity of the individual. We are committed to the fair, honest, professional, and equal treatment of all individuals and organizations with whom we come in contact. We protect all human and natural resources by maintaining a well trained and educated work force and by employing the best engineering safeguards and controls.

Figure 7 (continued). Organizational values as stated in the HRSD.

available employees over a two-day period. Four hundred fifty-nine employees, or ninety percent of the employee population, completed the survey instrument. A summary of the results of the survey are presented as Figure 8. The summary presents the percent of favorable employee responses - that is, the percent of "agree" or "strongly agree" response or the percent of responses in the "four" or "five" categories on a Likert scale of one to five. In comparison with other "high tech" companies in the database (collected by the consulting firm conducting the survey), the Rancho Bernardo division employees rated the organization significantly lower than the employees of the other companies on all factors, except two: "sense of accomplishment" and "pay." The values scales reflected the same negative feeling by employees regarding the current state of the organization (See Figure 9). This employee survey was a powerful tool in demonstrating to the cabinet a need for change.

The executive development plan continued with the cabinet meeting regularly off-site for more team building and developing of the HRSD. In separate sessions, the cabinet completed work on the organization's mission and role, vision statements reflecting the future culture, statements of management philosophy, and a "Roadmap to Vision." The roadmap to vision was a set of boundaries, guidelines, and expectations regarding organizational structure and practice,

	PERCENT FAVORABLE
TOPICS	
MANAGEMENT	
OPENNESS OF MANAGERS	62
MANAGERIAL COMMUNICATION	65
MGRS. HANDLING OF SUGGESTIONS	50
MANAGERIAL LEADERSHIP	51
MGR. RELATIONSHIP WITH SUBORD.	67
MANAGERIAL PLANNING	55
MANAGERIAL DELEGATING	64
MANAGERIAL DECISION MAKING	55
MGR. DEVELOPMENT OF SUBORD.	56
COMMUNICATION	
UPWARD COMMUNICATION	51
DOWNWARD COMMUNICATION	49
INTERDEPARTMENTAL COMM.	25
OPENNESS OF COMMUNICATION	50
ADVANCEMENT	
TRAINING AND DEVELOPMENT	30
ADVANCEMENT CRITERIA	42
WORK ITSELF	
WORKLOAD	62
TASK STRUCTURE	62
INTEREST IN THE JOB	73
SENSE OF ACCOMPLISHMENT	88
WORKING CONDITIONS	
DEPARTMENTAL CLIMATE	72
OVERALL CLIMATE	49
PART. IN DECISION MAKING	33
JOB SECURITY	73
PHYSICAL ENVIRONMENT	53
RECOGNITION	
PAY	31
PRAISE	47
PERFORMANCE REVIEWS	
PERFORMANCE REVIEWS	42
TURNOVER	
TURNOVER	47

Figure 8. 1985 employee survey results: climate factors.

VALUES	PERCENT FAVORABLE
Participative Management	43
Integrity	51
Commitment to Quality	32
Innovation	34
Development and Growth of Individuals	36
Recognition of Achievement	35
Results Orientation	50
Customer Orientation	49
Responsibility to the Community	42

Figure 9. 1985 employee survey results: values.

management and employee behavior, and organizational respons-
ibility in various interface relationships. A very important
off-site session during the executive development program
consisted of an exercise called "wild carding." In this
exercise, the consultants presented hypothetical scenarios to
the cabinet and asked members to respond. This exercise
served as a test and as a reinforcement of the cabinet's
belief in the values and philosophy previously created. The
HRSD was completed and published in July, 1985. The complete
HRSD is presented as Appendix A.

Cultural Change Process - Phase II

The Executive Development Program resulted in a more
cohesive senior management team with a belief in the need for
change and commitment to the principles of the HRSD. Visible
changes in behaviors and language by senior management were
met with skepticism by other organizational members. The
cabinet understood the need to align the remainder of the
management team and all employees to the vision of a new
culture described in the HRSD. The need for change was
reinforced by the publication of the employee survey results
in May, 1985. The organization awaited direction from senior
management.

The cabinet worked in partnership with the O.D.
consultants to provide the division with awareness regarding

the new cultural vision and to align the organizational membership to the mission of working to achieve the culture. The steps taken to provide this awareness and alignment are outlined in Phase II of the Division Development Plan (refer to Figure 5).

Employee Involvement Teams

The division's rapid growth throughout 1984 created needed changes in particular organizational policies and a need for documentation of policies in general. The cabinet's work on the HRSD illuminated the potential for employees from across the division to make decisions and solve organizational problems. Two task teams were formed in early 1985: the pay practices task team and the career development task team. Both teams used a cross-functional, multi-level membership to encourage representative involvement of all employees.

The pay practices task team addressed issues of inequity in certain pay practices between exempt and non-exempt employees. The team worked with the Human Resources department to create several policy changes. The most dramatic changes concerned adjustments to overtime pay practices, creation of a shift transfer policy, biweekly paychecks for both non-exempt and exempt employees, and paid time off for non-exempt employees as well as exempt employees during times of illness or personal needs. A performance

problem due to absenteeism was henceforth managed as a performance issue just as had been done with exempt employees all along.

Prior to 1985, the employee population had given continuous feedback concerning dissatisfaction with the "Promotional Opportunity Program." The career development task team was formed to respond to this feedback. After reviewing the career development policies of several other companies as well as the academic literature on career development programs and soliciting input from across the division, the team recommended a new program. The new program was implemented immediately. The program included an emphasis on career development as a shared responsibility of the employee and his/her manager; a belief in internal promotions with a job posting system designed to promote openness, fairness, feedback and traceability; and a belief in the need to move up, down, or laterally within the organization in order to align personal values with career. The program provided for a review board to ensure that all hiring decisions were fair and within the guidelines of the new policy. A career resource center was also created to provide easy access to job postings, lists of all jobs within the division, job descriptions, salary information, college catalogues, and information on internal and external development opportunities.

By the time the employee survey results were published

in May, 1985, employee involvement teams were becoming a norm within the division. When the survey results were published, the division took several days to process the data during special departmental meetings held at a local high school and facilitated by department managers, O.D. consultants, and Human Resources personnel. The survey provided another opportunity for senior management to demonstrate their belief in the problem solving ability of employees at all levels. One of the most difficult problems raised by the employee survey was that of substance abuse. A multi-level, cross-functional task team was formed to investigate this problem.

The substance abuse task team members received extensive training on the subject of substance abuse in the workplace. They then set a goal to establish an organization-wide substance abuse program. The result was the provision of a confidential help line for employees to call regarding any issue related to substance abuse. Subsequently, the team worked with the Human Resources department to establish an Employee Assistance Program though a contract with a local employee assistance agency. Through the program, any employee or household member can receive free confidential counseling regarding substance abuse, stress, legal, financial, or relationship concerns.

Since these task teams were organized in 1985, task teams have been formed for organizational decision making and problem solving as needs arise. The teams are disbanded once

recommendations are accepted and institutionalized.

Management Development Program

A management development program was designed by the O.D. consultants and senior management that would provide all NTE-RB managers with enough understanding of the process that the cabinet had experienced to establish "buy in" to the change process. The program was also designed to provide managers with skills needed to manage in the new culture.

Primary components of the program included participation by each manager in a one-week off-site workshop held at a resort 35 miles away from the plant, follow-up consulting with internal O.D. consultants to assist in the application of the management concepts learned during the workshop, and skill building using a variety of internal and external resources. Offsite workshops were held in August and September, 1985 and February and March, 1986 with mid-level managers attending first, followed by first-level managers. Workshops for mid-level managers were facilitated by teams of senior managers and O.D. consultants. Workshops for first-level managers were facilitated by teams of mid-level managers, senior managers and O.D. consultants.

The contents of the workshops were similar to the off-site sessions experienced by the cabinet, except that it was made clear that the direction established by the senior

management was now an expectation for the division. The purpose of the experiences in the management workshops was to provide understanding of the meaning of the HRSD and an appreciation for its formulation. The training design included large group lectures, films, small group discussions, structured exercises, and social time together during meals and late in the evening. Appendix E presents the agenda for the workshops. Values clarification and visioning exercises were used to facilitate integration of concepts at a personal level. Team building exercises were used to begin the process of developing a more cohesive division-wide management team.

These management development workshops proved to be powerful forces in the process of changing the existing culture of the organization. Managers challenged their managers with past behaviors and management practices which were not aligned with the new values. Managers learned the importance of consistency and the alignment of behaviors with values. Bradley made it clear that the culture change that the division was pursuing was at least a three to five year effort and that the process would require systems change, not quick fixes.

Concurrent with these workshops, training sessions were held in-house on newly developed policies. Managers attended a total of five days of training on these policies.

Following the management workshops, each manager (including directors) was assigned an O.D. consultant who was

available to provide consulting services while the managers sought to apply participative management principles. A key consulting strategy used was the administration of a management skills assessment inventory (Appendix F) to peers, direct reports, and supervisors. Feedback from this inventory was given to managers and management development plans were created to aid in skill development. Managers received coaching and/or attended internal and/or external seminars to address areas of need identified by the inventories.

Communications problems between and within departments were addressed. Teambuilding programs were implemented to clarify goals and roles and to establish operating procedures to be used. The Management Development Program was a powerful force in the process of cultural change. Managers committed to making personal changes in the way in which they managed. Supervising managers as well as peer managers held these managers accountable to follow through on such changes. There were substantial changes in a number of organizational norms. Communication of information at all levels increased dramatically; employee involvement in decision making and problem solving was perpetuated; and monthly forecast meeting, traditionally a very formal, antagonistic setting, became more relaxed with an air of joint problem solving.

Beginnings of Structure Changes:

A Demonstration of HRSD Values

By May, 1986 a number of management positions had changed. Bradley reduced his number of direct reports. The Director of Marketing and the Director of Business Systems left the division. Marketing became a corporate function, while Business Systems and Quality were combined with Human Resources under one director. The new function became known as Quality and Productivity Systems. This change, among other things, reflected the new philosophy that quality was a value, not a function; that quality is to be built in, not inspected in. A new Director of Operations was hired from the outside with careful attention to selecting someone whose personal values were aligned with the new set of organizational values.

Earlier in 1986 the Semiconductor Components Group of NTE (which included the Rancho Bernardo and Ottawa plants) experienced a downturn in expected revenue caused by decreased product demand by customers and a twenty percent reduction in pricing forced by competition. The corporation requested a reduction in employee population at both Semiconductor Components Group divisions in order to reduce overall operating costs. The Rancho Bernardo senior management's response to the situation was to utilize the HRSD values in seeking a solution to the cost problem. This required viewing

the employee population as a highly valued resource; therefore, the preferred solution would include no employee lay-offs. This situation happened to coincide with a scenario used during a "wildcarding" exercise in the executive development program (Phase I). Wildcarding was an exercise wherein the consultants created various hypothetical business scenarios in which values conflicts occurred. The senior staff would work on the solution to each scenario using the HRSD values as guidance. This exercise was designed to test the group's commitment to the nine HRSD values.

In this "real life" problem the NTE-RB division was able to reduce costs to the necessary level by redeploying thirty wafer fabrication employees and four first line managers into the assembly area and consequently reducing the level of work contracted to off-shore assembly houses. Expenses incurred in moving these employees were further offset by a state retraining contract in which these employees plus others throughout the division were trained in new skills needed for either new jobs or changes in skills requirements (including computer skills for managers and other professional employees). By shifting employees into other jobs instead of laying them off, the division was able to position itself for increased business expected in the future.

Bradley and his management team communicated their entire problem solving process to all employees as it occurred. The openness with which management dealt with this business

dilemma and the importance placed on employees and on the future convinced many employees that management was truly committed to the values stated in the HRSD.

Policy Changes

Few formal policies existed within the NTE-RB division prior to 1985 due to the philosophy that the more flexibility managers had in managing human resources the better. After the employee survey in April, 1985, the Human Resources department began developing written policies to reflect the values adopted by the cabinet earlier that year. By mid-1985, approximately 45 policies were developed, approved by the cabinet, and distributed to all managers in a management handbook. Some of theses policies were developed by task teams as previously described. Training was conducted for all managers on key policies as a part of the management development program. The five training days covered policies on employee development, equal employment opportunity, compensation, attendance, corrective action, and educational assistance.

Increased Communication

A lack of communication division-wide was a major concern identified in the employee survey. In a renewed effort to

provide employees with information regarding the business, several formal communication efforts were begun in mid-1985. Both a weekly and a bimonthly newsletter are now published to inform employees of division projects, business updates, departmental activities, recreational activities, and so on. State of the Plant meetings were begun on a quarterly basis to inform all employees of the division's performance and of the contributions the division and subsidiary make to the corporation as a whole. Monthly meetings were begun with all manufacturing employees to discuss performance to goals and to address problems within the manufacturing area. At first, these meetings were essentially one-way, with managers presenting information. Employees did not have an understanding of the new language the managers used, the new behaviors managers exhibited, or the new roles that they, the employees, were expected to play. Over time, however, the meetings have become two way, informative, problem solving meetings.

Employee Orientation Program

Over a three week period in June, 1986 all nonmanagerial employees participated in a one day orientation program on the HRSD. This step in the overall change strategy was to enroll all employees in the change effort.

Approximately 375 employees participated in the eleven

orientation sessions conducted by two teams of five facilitators. Each facilitator team was composed of a cabinet member, mid-level managers, first level managers, and an internal O.D. consultant. These sessions were held at the training center of a local management consulting firm.

Major topics of the agenda (Appendix G) included a review of the history of the R.B. division from 1980 through the development of the HRSD in July, 1985; an exploration of the meaning of culture and R.B.'s need for cultural change; an examination of current values, beliefs, norms, rituals, language, behaviors; personal values clarification; a discussion of the concept of vision, using a video tape of the Martin Luther King "I Have a Dream" speech; an overview of the contents of the HRSD with emphasis on expectations of employees; and a team exercise to demonstrate the power of teamwork.

A special all-management meeting was held after the employee orientation sessions to feed back to managers the outcomes of the sessions. The overall feeling from the orientation sessions was that employees shared in the belief of a need for cultural change, that employees believed in the potential for change, and that employees were excited to be a part of the change effort. Employees expressed satisfaction with certain efforts already underway, such as increased emphasis on teamwork, a technical skills training program underway for manufacturing employees, and an alignment of

departmental and division goals. Employees targeted a number of problems with the current culture. These problems included a lack of communication from top to bottom, lack of confidence in management competence, fear of reprisal if management behaviors were questioned, confusion regarding accountability, and lack of follow-through on managerial commitments. This feedback to managers provided incentive for them to work more closely with their teams to eliminate such problems.

Cultural Change Process - Phase III

The strategy to institutionalize the R.B. division's culture change consisted of three major interventions: reorganization, systems alignment, and skill building.

Re-organization

As previously described, a number of changes to the division's senior level reporting structure were made during 1986. Bradley eliminated the positions of Director of Business Systems and Director of Marketing. A new department, Quality and Productivity Systems, was created to combine the former departments of Quality, Business Systems, and Human Resources. The restructuring of the remainder of the division began with the formation of a "senior design team." This team, composed of the cabinet, the Human Resources manager,

an O.D. consultant, and two higher level mid-managers, was chartered to serve as a steering committee to the restructuring of the division. Bradley issued a memorandum informing all managers of the formation of this team. In this memorandum, Bradley presented the objectives and boundary conditions of organizational redesign (Figures 10 and 11). The redesign began with the operations department.

In August, 1986 the Director of Operations formed a multi-level, cross-functional task team to recommend a new operations structure. The team was composed of the Director of Operations, an O.D. consultant, production operators, engineers, technicians, and trainers. The team followed the objectives and boundary conditions issued by Bradley as guidance in their task. The vision of organizational structure from the HRSD (Figure 12) served as a major focus for the team.

The operations redesign team spent thirteen weeks off-site analyzing the technical workflow of the manufacturing processes and searching for the most appropriate structure to integrate the technical requirements with the human and social needs of the workplace. This "socio-tech" approach to redesign was the essence of the team's proposal back to the senior design team. Key concepts of the proposal were a focus on the customer (the receiver of products or services, internal or external), job enrichment and job enlargement for Manufacturing positions, formation of semi-autonomous

OBJECTIVES OF ORGANIZATIONAL ANALYSIS AND DESIGN

The objectives of the organization analysis and design fall into four categories. 1) Revitalization 2) H.R.S.D. 3) Staff Development and 4) Operational

1. **Revitalization Objective:**

   * Increase responsiveness, efficiency and effectiveness of Rancho Bernardo.

   * Balance structural component with culture and technology to achieve a more productive operating point.

   * Achieve understanding and commitment to organization and objectives.

2. **H.R.S.D. Objectives:**

   * Promote movement towards H.R.S.D. vision.
   * Clearly define roles.
   * Reduce redundancy.
   * Promote decision making at appropriate level.
   * Provide clear accountability.
   * Improve communications.
   * Be change-ready or adaptable to change.

3. **Staff Development Objectives:**

   * Stretch and Provide opportunity for growth.
   * Encourage job renewal and expansion.
   * Increase effective use of talent.
   * Identify areas requiring new talent.

4. **Operational Objectives:**

   * Size organization to business demand going forward.
   * Be prepared (operational & debugged) prior to next round of growth.
   * Have an analysis of current systems successes and problems.
   * Demonstrate stability to ground rules (H.R.S.D.).
   * Avoid negative short term impact on productivity.

Figure 10. Objectives of organizational redesign written and published by

Ken Bradley.

<u>BOUNDARY CONDITIONS</u>

Boundary conditions are defined as a set of operating limits in which all energy and activity are maintained. These conditions are particularly useful in this type of endeavor because they promote critical thinking and focus discussion. The items listed below are the internal and external factors that comprise our boundary limits as we move forward. Note: These items <u>must</u> be addressed in the design analysis of our organization.

A new organization design <u>must</u>:

<u>EXTERNAL:</u>

* Have a Control function. (Finance)

* Align with traditional NT benchmarks.
    * job grades/levels of responsibility
    * compensation structures
    * functional accountability
    * department names (Quality, Operations, etc.)

* Require external approval (Group V.P.)

* Respond appropriately to communication/reporting requirements.

* Align with NTE/SCG strategy thru 1988.

* Have credible personnel in key positions.

<u>INTERNAL:</u>

* Conform in practice and philosophy to H.R.S.D.

* Consistent with RB operational strategy and business conditions.

* Span of control 5-8 (ideally).

* Have fewest management levels as appropriate.

* Have capable people in key positions.

* Stretch achievers.

* Provide challenge/job expansion.

* Not be limited to personnel currently within the organization.

<u>Figure 11.</u> Organizational redesign boundary conditions written and published by Ken Bradley.

* Support succession planning and organizational
  reward.

* Withstand critical analysis:
  * from representatives of all levels of
    organization.
  * from wild carding scenarios

* Have unresolved content issues remain
  confidential until final decision is
  communicated.

Figure 11 (continued). Organizational redesign boundary conditions written

and published by Ken Bradley.

ORGANIZATIONAL STRUCTURE

● We are an organization that promotes involvement of all employees and encourages decision making at the lowest appropriate level.

● The hierarchical structure becomes more horizontal, as a team approach towards problem solving is implemented and accepted.

● We have the flexibility to manage change by utilizing a structure that minimizes barriers and functional boundaries. This structure promotes communication networks.

● The organizational structure integrates the concept of quality as a value rather than as a function.

● Job designs are flexible to accommodate changing needs. Most jobs are becoming more complex and challenging as technology increases. Training is provided to ensure that employee skills continue to match job requirements.

● Our structure provides the means for good communication with the customer, the corporation, and the community.

Figure 12. Statements on organizational structure from HRSD.

workteams, formation of three separate "business units" within the Manufacturing department (Wafer Fabrication, Test, and Assembly), and empowerment of individuals, teams, and business units to make appropriate decisions and take appropriate actions without management interference. The proposal called for the elimination of separate departments of production workers, engineers, and technicians and for each workteam to be composed of all three of these jobs. Each workteam was to be responsible and accountable for a measurable piece of work - or output. The task team also proposed the formation of councils made up of managers and employee representatives to replace the usual department staffs made up of managers only. Councils were proposed at the division level, Manufacturing department level, and for each business unit.

The task team's proposal was presented to the senior design team in November, 1986. After approval of the proposal, the task team presented the new design to all manufacturing employees (the "Operations department" was changed to the "Manufacturing department" upon the elimination of an engineering function as a separate entity). The team received much feedback regarding the difficulty of implementing some of the proposed changes. This feedback became part of the implementation process. The team's recommendations were implemented during the first quarter 1987 (a ninety day transition period was declared in which changes were implemented under the direction of the Director of

Manufacturing). The recommendation to divide the workteams in a manner that would provide for measurement of output was not implemented immediately due to cost of additional equipment required for such an arrangement. (The manufacturing organization still holds as a goal the achievement of this change as soon as possible.) Also, the idea of councils to replace department staffs has been only partially implemented. The "cabinet" has become known as "division staff" but the council concept has not been used. The manufacturing department and each business unit uses the term "council," but does not yet include nonmanagerial representatives to the meetings.

In addition to changes to the structure of the manufacturing department, many changes occurred in the personnel holding management positions. A selection process using an assessment center approach was used to fill all manufacturing management positions. The new positions were open to bid across the division and several of the managers in the former operations department were not selected for the new positions. These managers were all eventually assigned to nonmanagerial jobs or successfully bid on other management jobs within the division. While this selection process was underway, Bradley assigned the former Director of Operations to head the Technology Department and the former Director of Technology to head the new Manufacturing department.

Upon completion of the manufacturing reorganization,

functional support groups were tasked to reorganize following the same objectives and boundary conditions used for the Manufacturing department (refer to Figures 10-12) with the additional stipulation that each function was to organize in a manner to best support the Manufacturing department. The senior design team continued to oversee the reorganization. Each functional manager (the term "director" was dropped) was given the latitude to use whatever process appeared best for his own situation. Each functional manager used a process which included input from all employees within the function. By third quarter, 1987 all functions had completed their reorganization within the boundary conditions established. In the end the division's structure was substantially different than in mid-1986. The number of management positions had decreased from 86 to 50.

In March, 1988 Ken Bradley was moved by the corporation to the Ottawa division. This move was viewed by NTE-RB employees as a positive move for Bradley and a reward for his success at R.B. Bradley had come from the Ottawa division and Ottawa had been his long term home. Denis Colbourne was moved from Ottawa to head the R.B. division. While Colbourne had held a number of executive positions within the corporation, this was to be his first executive "line" position. The R.B. senior management quickly enrolled the new general manager in the need to continue the culture change effort begun by Bradley. This proved to be an opportunity for

the R.B. senior managers to recommit to the culture change and to take responsibility in managing the transition from one general manager to the other.

Systems Alignment

Throughout the years in which the cultural change efforts described above were being executed, a number of systems were designed and implemented to support the culture change. Foremost among these systems were manufacturing systems, human resource management systems, a financial measurement and monitoring system, and an enhanced communication system.

Systems installed to improve quality and productivity within the manufacturing area include a preventative maintenance program with an equipment repair tracking system, statistical process control (SPC) methods designed to monitor and improve quality, a "just in time" type inventory management system, a finished goods tracking system to monitor and control inventory, a vendor certification program to ensure high quality of incoming materials, and improved methods to measure production efficiency. Other systems being introduced in late 1988 and 1989 are an operations audit system for improving existing programs and systems and a change management model to be used to introduce organizational change, whether it be new product or a change to an existing program, product, or system.

Human resource management systems were being enhanced throughout the culture change effort. As previously described, many new policies were written and a number of existing policies were documented beginning late 1985. A management handbook was distributed to all managers in January, 1986. Policies contained in the handbook provided guidelines for performance management, employee development, salary administration, benefits, safety, and communications. Additionally, an administrative handbook was published containing such procedures as employee travel, expense reimbursement, cash requisitions, and work order requests. Since the publication of these handbooks, both human resource management and administrative policies have been periodically reviewed for alignment with the HRSD and the current state of the business.

The organization's reward system was studied by a task team beginning in late 1986. The team examined ways to enhance the reward system beyond the changes made by the pay practices task team in 1985. As previously described, in 1985 the division diminished differences in pay practices between exempt and nonexempt employees by paying all employees on a biweekly schedule and by providing equal sick leave to exempt and nonexempt employees. In early 1987 the reward system task team made several recommendations to the division staff. These recommendations related to four components of a reward system (see Figure 13). As a result of these recommendations,

REWARD SYSTEM

COMPENSATION

- PAY STRUCTURES
- EXTRINSIC

FORMAL RECOGNITION

- AWARDS
- EXTRINSIC

JOB DESIGN

- WORK FLOW
- DECISION MAKING
- CHALLENGE
- INTRINSIC

ACCOUNTABILITY

- PERF. PLANNING
- PERF. EVALUATION
- INTRINSIC
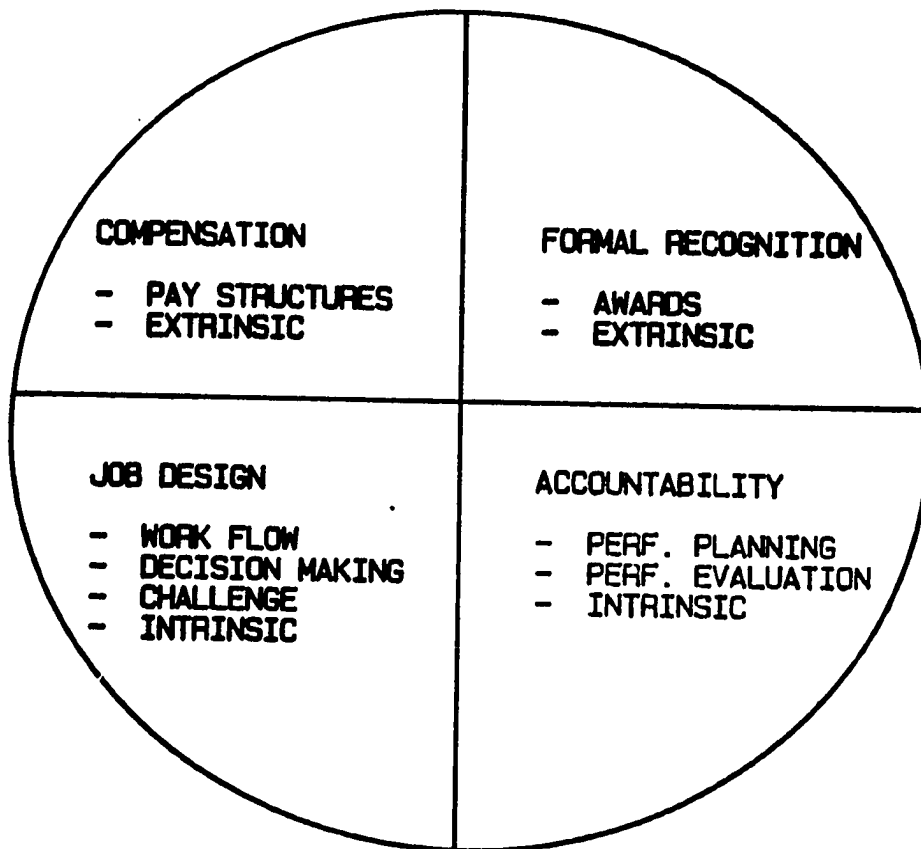
Figure 13. The four components of a reward system addressed by task team: 1987.

the exempt and nonexempt job and salary structures were combined into one structure. In 1988, nonexempt employees began using the same performance planning tool as exempts. Exempt employees had been using a corporate-wide modified MBO (Management by Objectives) program since 1981. This program, called MFA (Managing for Achievement), was introduced to nonexempt employees in 1988. The program has been altered substantially for 1989. The changes are designed to incorporate operating plan objectives, strategic objectives, and organizational values into the objective setting process and to place more emphasis on employee development than in the past. In addition to these changes in compensation structure and accountability (refer to Figure 13) other reward system changes are planned for 1989. Compensation is expected to change further with knowledge based pay as a current consideration. Methods of formally rewarding employees for teamwork as well as for individual contribution are also being considered. Such changes are expected to address both job design and compensation issues. Formal recognition programs are also being considered.

In 1987 and 1988 the Control function redesigned the financial measurement system to align with the needs of the changing R.B. division. These changes were made with careful consideration of the needs of the corporation as a whole. Changes were made to the internal expense and capital budgeting and expenditure methods, to the profit and loss

statement, and to several other internal reports and documents.

As previously described, the communication system changed greatly during 1985 and 1986. Enhancements have continued to be made in 1987 and 1988. Both weekly and quarterly newsletters are published for all employees. Regular state-of-the-plant meetings are held at which the general manager informs all employees of the status of the division relative to stated goals and objectives and of prospects for the future. Bulletin boards throughout the facility contain information regarding job openings, employee development and recreational activities, and announcements. All departments hold regular meetings at which divisional and departmental news is shared and certain problems are solved or discussed. Production workers participate in monthly meetings to review manufacturing performance and to address problems.

Skill Building

As the change effort progressed, so did the division's recognition of the need for a strong on-going skill building program to address both technical and non-technical skills. With the restructuring of the support groups in early 1987, the Organization Effectiveness department which had consisted of O.D. consultants, technical training and non-technical

training was disbanded. It was believed that the need for two full time O.D. consultants was past and that most technical training would be better sponsored by the manufacturing business units. A Training and Education department was created within the Quality and Productivity Systems function to provide division-wide management and employee development programs. An employee development program was begun in 1987 to ensure that managers and other employees have the opportunity to acquire the skills needed to excel in the new participative environment. Assessment instruments are used to determine needs. Both internal and external courses are offered to address needs identified in the needs assessment process. Other development methods are also encouraged, including mentoring, special projects, and job rotation. The library serves as the access point to a number of development activities. In addition to information on internal and external courses, the library contains audio and video tapes, books, journals, a data based literature review and retrieval system, college catalogues, and career development information.

While the Training and Education department provides courses in technical and nontechnical topics, each business unit within the manufacturing function provides training on the jobs specific to that department. The Wafer Fabrication business unit now has a department of trainers to provide skills training to operators and technicians as new employees

are hired and as cross-training is needed. Both the Test and Assembly business units now have part time trainers who provide skills training to operators and technicians.

Continuation of Phase III Beyond 1988

The NTE-RB management recognizes that, while much effort has been put into this cultural change effort to date, there is still much effort to go. Reward system changes begun as early as 1985 and continuing through 1988 will continue at least into 1989, when it is expected that the most dramatic changes will be made. The organizational restructuring done in 1986 and 1987 is seen as an improvement over the former structure, but perhaps still not ideal. In late 1988 senior management began a review of the organizational structure relative to the proposals made to the senior design team in 1986 and 1987. As previously stated, several recommendations made by the work flow analysis team regarding the Manufacturing organization were not implemented. Management is reviewing the potential for continuing to implement these recommendations plus any other changes to enhance the achievement of organizational goals.

Much work continues in building employee skills. A management team development workshop series was begun in fourth quarter 1988 and will continue into 1989 and beyond. This series began with a three day off-site course called

"Managing at NTE-RB" and is planned to be held semi-annually to address current management issues both through training and joint problem solving. Team building for intact work teams is planned to begin in early 1989 with all teams attending a two day workshop on "Working at NTE-RB." The course will present the company's expectations of employees with emphasis on teamwork. After teams attend the course, ongoing team development activities will be facilitated by team managers.

In addition to continuing the efforts described above, the NTE-RB division management plans to regularly review the organizational structure, all policies, and all systems to continuously improve the division's performance to corporate objectives.

CHAPTER 6

EVALUATION FINDINGS

Introduction

As has been stated previously, this research has included the use of both qualitative and quantitative data to answer the four research questions. Qualitative data used in this study include interviews, historical documents, and observations. Quantitative data include employee opinion surveys and organization performance data. Chapters 4 and 5 present information from historical documents and participant observation to describe the strategies used by the NTE-RB division to attempt to change the organizational culture (research question 1).

This chapter will present organization performance data and summaries of interviews and employee opinion surveys to begin to answer questions regarding the extent of culture change accomplished at NTE-RB between 1984 and 1988, the extent of organizational effectiveness changes in that same time period, and the relationship between any culture change and any organizational effectiveness changes in that time period (research questions 2-4). The chapter is organized by

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each of the three research questions yet to be answered. For each of the research questions the data collection methods used to attempt to answer each question and summaries of the data gathered will be presented. Discussions relative to the interpretation of the data will be reserved for Chapter 7.

To What Extent Did The Culture Change
At NTE-RB Between 1984 and 1988?

In order to answer research question 2, two types of data were gathered: employee survey data and interview data. (Additionally, the researcher has used participant observation to offer input to this research question. This input was not provided to interviewees and was not used to answer research questions 3 and 4. These participant observations are presented in the Research Summary and Conclusions section of Chapter 7.) The employee survey data were gathered twice: in April, 1985 and in November, 1987. As described previously, the survey was designed to assess organizational culture by measuring employee perceptions of organizational behaviors relative to both NTE-RB values and a set of eight factors considered to be the most salient dimensions of organizational climate. The survey instrument had been validated and tested for reliability through the repeated administration to 140 companies, representing various types of industries and including 30 high-tech companies. The instrument was

administered to 459 employees (ninety percent of the employee population) in April, 1985 and to 422 employees (ninety-seven percent of the employee population) in November, 1987.

Figure 14 presents the summary data, including trend analysis, on the eight factors, or scales, of the employee survey, both 1985 and 1987. The trend analysis was conducted using t-tests on the means of employee responses for all items included under each factor (or subscale). The trend analysis shows major improvement (meaning improvement at the .05 confidence level) for 11 of the 28 subscales; improvement (at the .15 confidence level) for six subscales; a significant decrease (at the .05 confidence level) on two subscales; and no significant change on nine subscales. It should be noted that in interpreting employee opinion surveys confidence levels of .05 and .15, instead of the usual .01 and .05 levels, are traditionally used.

The trend analysis appears to demonstrate that, overall, employees felt that there has been a major improvement in the way managers manage (with all subscales under the "Management" scale except "Manager's Development of Subordinates" showing major improvement); significant positive change in upward and downward communication; significant improvement in working conditions (except in "Job Security") ; improvement on the subscale of "Pay"; and major improvement on the subscales of "Training and Development" and "Workload." A major decline was seen on the subscales of "Advancement Criteria" and "Job

TOPICS	PERCENT FAVORABLE 1985	1987	TREND
MANAGEMENT			
Openness of Managers	62	67	++
Managerial Communication	65	72	++
Mgrs. Handling of Suggestions	50	60	++
Managerial Leadership	51	55	++
Mgr. Relationship with Subord.	67	69	++
Managerial Planning	55	58	++
Managerial Delegating	64	69	++
Managerial Decision Making	55	60	++
Mgr. Development of Subord.	56	57	*
COMMUNICATION			
Upward Communication	51	55	+
Downward Communication	49	63	++
Interdepartmental Comm.	25	24	*
Openness of Communication	50	52	*
ADVANCEMENT			
Training and Development	30	32	++
Advancement Criteria	42	40	--
WORK ITSELF			
Workload	62	67	++
Task Structure	62	65	*
Interest in the Job	73	71	*
Sense of Accomplishment	88	86	*
WORKING CONDITIONS			
Departmental Climate	72	75	+
Overall Climate	49	55	+
Part. in Decision Making	33	38	+
Job Security	73	70	--
Physical Environment	53	56	+
RECOGNITION			
Pay	31	34	+
Praise	47	50	*
PERFORMANCE REVIEWS			
Performance Reviews	42	47	*
TURNOVER			
Turnover	47	50	*

Legend:
++ = Major Improvement
 + = Improvement
 - = Decline
-- = Major Decline
 * = No Significant Change

Figure 14. Employee survey comparisons on climate factors: April, 1985 and November, 1987.

Security." No significant changes were seen in "Interdepartmental Communication" or "Openness of Communication"; in three of four of the "Work Itself" subscales; or on the subscales of "Praise," "Performance Reviews," or "Turnover."

Figure 15 presents the summary data, including trend analysis, on the section of the employee survey regarding HRSD values. Both 1985 and 1987 data are presented. The trend analysis shows major improvement (again at a .05 level of significance) on eight of the nine HRSD values. One value, "Recognition of Achievement," showed no significant change. No value showed a decline in favorable responses by the employee population.

During November, 1988 interviews were conducted with a sample of NTE-RB employees to substantiate and supplement data from the employee survey data and other information collected in the organization. (One of the chief differences in the data from the employee survey and from the interviews is the time frame being evaluated: the survey covered the period from April, 1985 to November, 1987 while the interview data covered the period from fourth quarter 1984 to fourth quarter 1988.) Twelve employees were interviewed by the researcher, using a semi-structured, open-ended approach. The employees chosen for interviews represented a cross-section of the organization, with proportional representation from various functional departments, work shifts, and job categories. The

VALUES	PERCENT FAVORABLE		TREND
	1985	1987	
Participative Management	43	64	++
Integrity	51	57	++
Commitment to Quality	32	49	++
Innovation	34	50	++
Development and Growth of Individuals	36	44	++
Recognition of Achievement	35	39	*
Results Orientation	50	58	++
Customer Orientation	49	75	++
Responsibility to the Community	42	66	++

Legend:
++ = Major Improvement
 + = Improvement
 - = Decline
-- = Major Decline
 * = No Significant Change

Figure 15. Employee survey comparisons on values: April, 1985 and

November, 1987.

composition of the interviewee group approximated the racial and gender mix of the organization. All interviewees had worked within the NTE-RB division throughout the four years of the study period. In addition to open-ended questions without any prompts, a variety of data were presented to the interviewees for their comment. Appendix C is a copy of the Interview Guide used in gathering opinion data from these twelve employees. The Interview Guide was piloted with two NTE-RB employees prior to beginning the interviewing process. Among the data presented to the interviewees were the 1985-1987 employee survey trend analysis. This trend analysis represents employee responses to items regarding the eight organizational climate factors and the nine HRSD values (see questions 1 and 2 of the Interview Guide). The responses to questions 1 and 2 of the Interview Guide were used to answer the research question: "To what extent did the culture change at NTE-RB between 1984 and 1988?."

So that complete information could be captured during the interview process the interview sessions were audiotape recorded. The researcher also took notes during the interviews. The researcher then summarized the interviews by reviewing notes and replaying the audiotapes as needed. Appendix H presents the complete summary of the employee interviews. As described previously in the Data Analysis section of this report, a triangulation process was used in the summarization of the interview data to protect against

possible researcher bias. An independent investigator training in qualitative data collection procedures, Kevin Freiberg, reviewed a random sample totaling one-third of the audiotapes used in the interviewing process in order to corroborate both the summaries of each interview and the summary of the total interviewing process. Appendix I is a copy of a letter from Dr. Freiberg to the researcher written after his review of the audiotapes and the data summary. In the letter, Freiberg states his agreement with the researcher's summarization process.

Figure 16 presents the overall summary of responses to the question: "To what extent do you believe the R.B. division has changed relative to the HRSD values over the last four years?." As described in Figure 16, the employees generally felt that there had been a positive change in organizational behaviors reflective of HRSD values between 1984 and 1988. In other words, culture as measured by HRSD values had changed in a positive direction over the four year time frame.

Figure 17 presents the overall summary of responses to the question: "To what extent to you believe the R.B. division has changed relative to the eight organizational climate factors between 1984 and 1988?." As described in the exhibit, the employees generally felt that there had been a positive change in organizational climate as measured by the eight survey factors over the four year time frame.

During December, 1988 the researcher interviewed three

Question:

To what extent do you believe the RB division has changed relative to the HRSD values over the last four years?

Summary of Responses:

Based on both the qualitative and the quantitative summaries presented above, it is this researchers opinion that this sample of NTE-RB employees generally feel that there has been a positive change in organizational behaviors which are reflective of HRSD values between 1984 and 1988. In other words, culture as measured by HRSD values has changed in a positive direction over the four year timeframe. Specifically, there is strong agreement that positive change has occurred in the values of "Participative Management," "Commitment to Quality," "Innovation," "Development and Growth of Individuals," and "Customer Orientation." The values of "Results Orientation" and Responsibility to the Community" are also seen as changing in a positive direction over the four years by most interviewees. The values of "Integrity" and "Recognition of Achievement" are each seen as improving by less than half of the interviewees. "Integrity" is seen as changing to a lesser degree than other values due to the belief that the company has always held this value in high regard; "Recognition of Achievement", however, is seen as a value that has not been substantially practiced by the organization either in 1984 or in 1988.

Figure 16. Summary of internal interviewees' responses to questions regarding changes in organizational values.

Question:

To what extent do you believe the RB division has changed relative to these organizational climate factors over the last four years?

Summary of Responses:

Of the 333 responses given, 212 or approximately two-thirds of the responses were positive (either a + or a ++). This is interpreted that respondents felt that, overall, there has been a positive change in organizational climate as measured by these factors over the four year period, 1984 - 1988. Specifically, respondents perceive a positive change in the important areas of the way managers manage and in overall working conditions. A strong majority perceive improvements in both upward and downward communication, in training and development and in workload. Interdepartmental communication and pay are seen as improving by half of the respondents. respondents perceive little or no change in openness of communication, advancement criteria, work itself (except workload), praise, performance reviews, or turnover (meaning desire to leave).

Figure 17. Summary of internal interviewees' responses to questions

regarding changes in organizational climate factors.

representatives of customer organizations (other Northern Telecom divisions) and two corporate officers. As described in the Research Design, these interviews were conducted in order to circumvent any potential research bias resulting from the motivations of internal employees and in order to obtain a more global view of the phenomenon under study. The three customer representatives come from the two Northern Telecom divisions (Research Triangle Park, North Carolina and Santa Clara, California) which together make up 90% of the NTE-RB sales. The two corporate officers were chosen for their familiarity with the Rancho Bernardo division, including its culture and its organizational effectiveness.

These five "external" interviewees were given a summary of data gathered from within the NTE-RB organization. Appendix D is a copy of the Interview Guide used for interviewing these customers and corporate officers. Among the data given to the interviewees were summaries of internal interviews regarding the extent of culture change in the NTE-RB division between 1984 and 1988 (Figures 16 and 17). Respondents were asked to either corroborate or refute the opinions of internal interviewees regarding the extent of culture change. Appendix J presents the overall summary of the interviews with these three customers and two corporate officers. Overall, the external interviewees corroborated the opinions of the internal interviewees regarding the extent of culture change in the NTE-RB division between 1984 and 1988.

(One corporate officer did not feel qualified to evaluate the extent of culture change.)

In What Ways Did Organizational Effectiveness
Change Between 1984 and 1988?

Organizational effectiveness as defined in this study is measured by productivity (including product yield, production cycle time and average outgoing quality) and employee job satisfaction. Productivity data were collected from the subject organization and organized into graphs depicting trends from first quarter 1984 through third quarter 1988. Job satisfaction data were collected using the employee opinion survey administered in April, 1985 and again in November, 1987 and the interviews with the sample of NTE-RB employees described above. Again, interview data were corroborated by external interviews - NTE-RB customers and corporate officers.

Figures 18 through 22 depict productivity trends from 1984 through third quarter 1988. Figure 18 shows that yields for the NMOS (N-channel metal oxide semiconductor) product lines have climbed from approximately 14 percent to approximately 55 percent over the five year period. Yields represent the percent of good circuits yielded at the end of the manufacturing process. As shown in Figure 19, yields for the CMOS (complementary-type metal oxide semiconductor) pro-
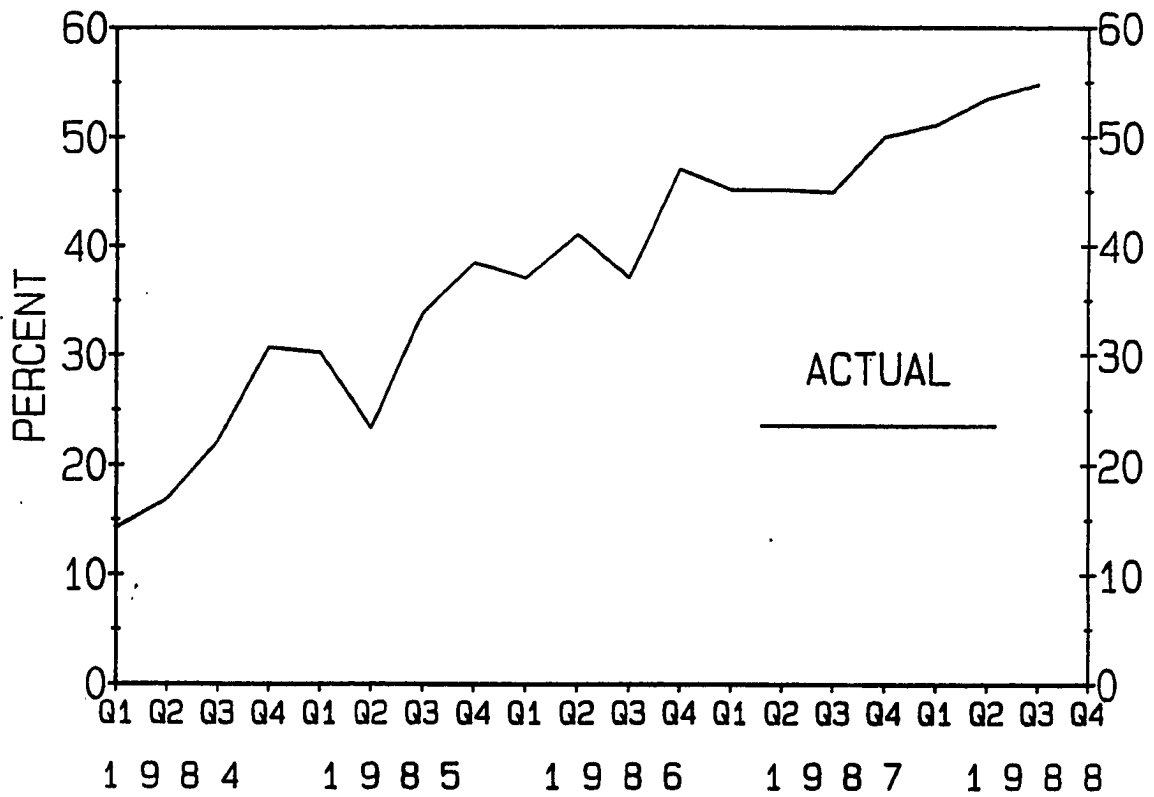
Figure 18. Yield trend for NMOS product line: 1984 - 1988.
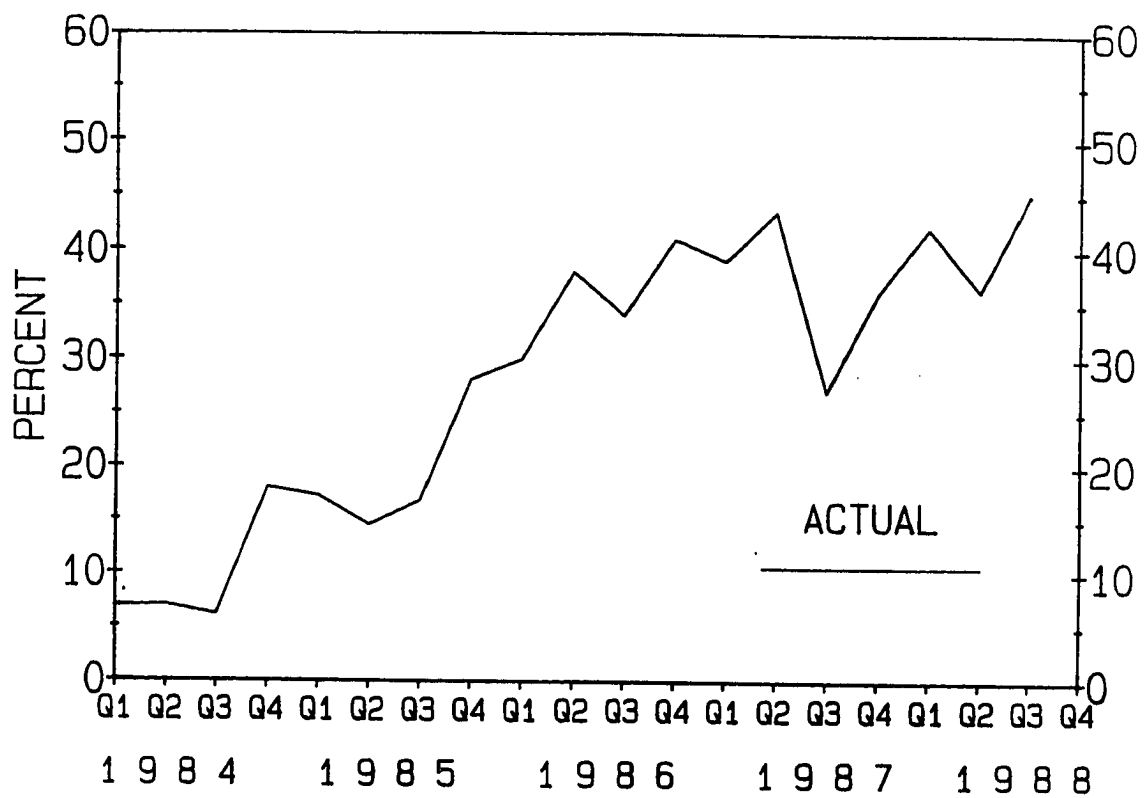
Figure 19. Yield trend for CMOS product line: 1984 - 1988.
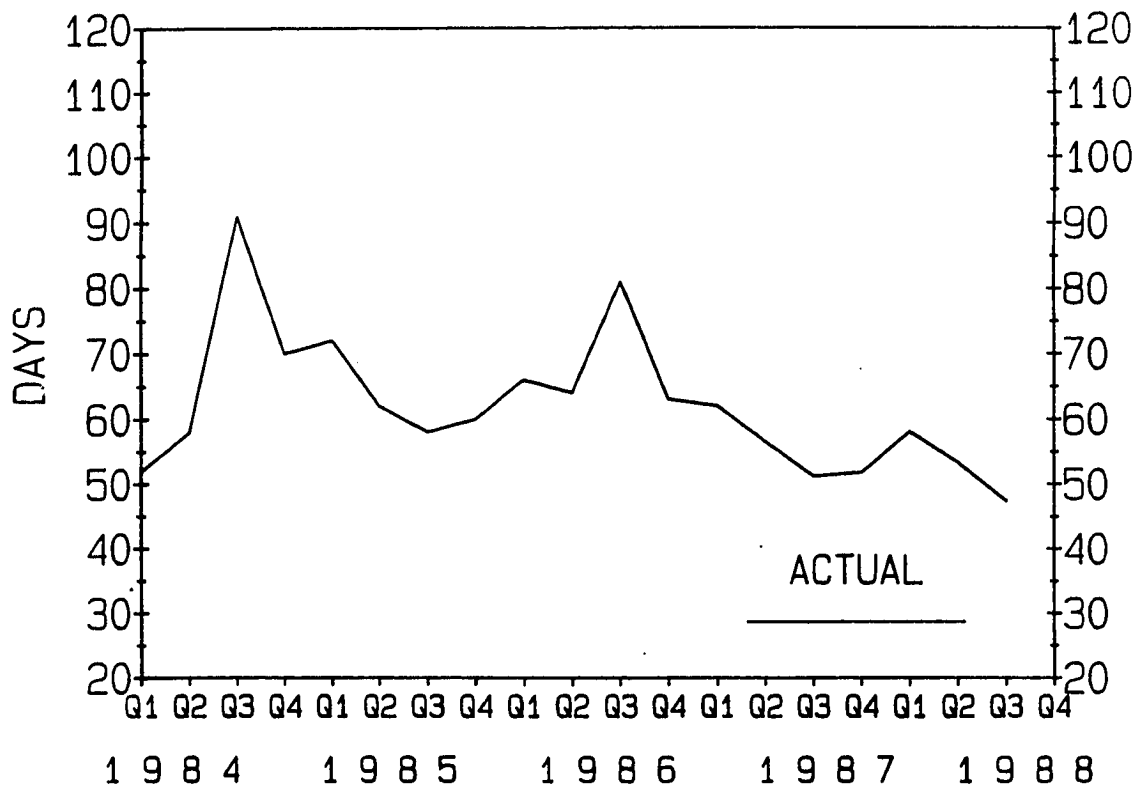
Figure 20. Cycle time trend for NMOS product line: 1984 - 1988.
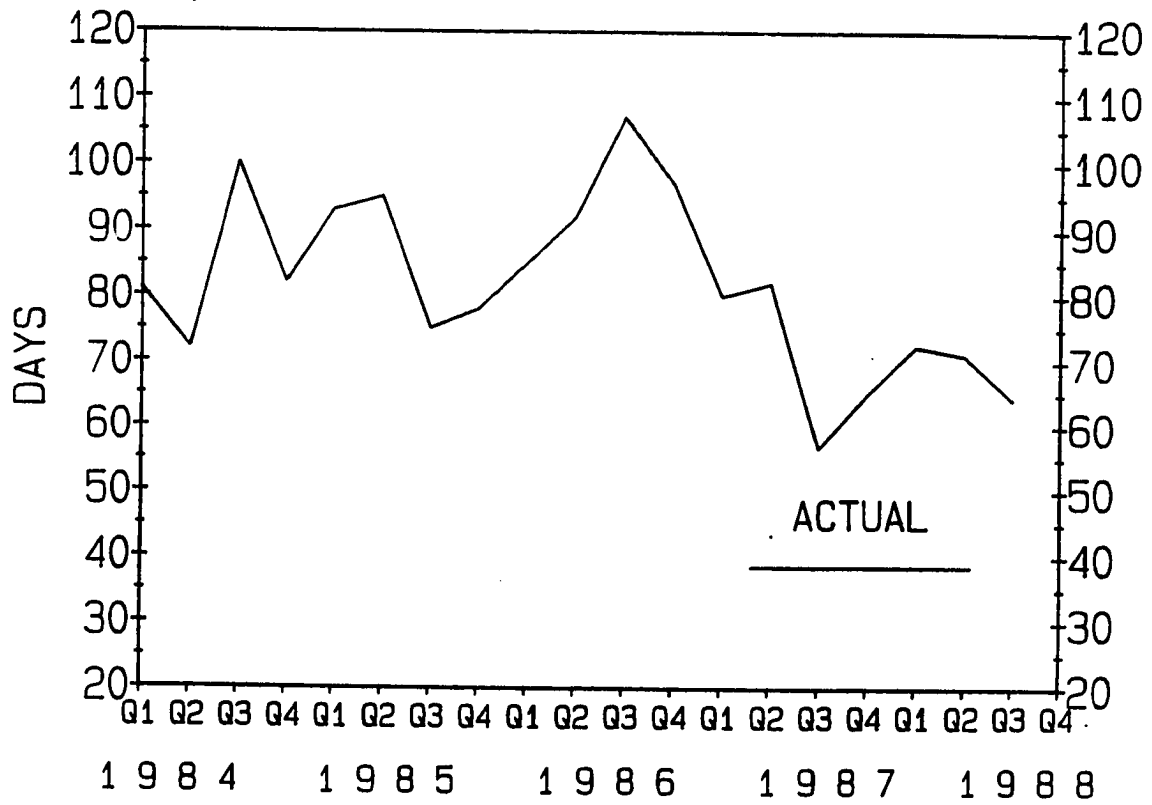
Figure 21. Cycle time for CMOS product line: 1984 - 1988.
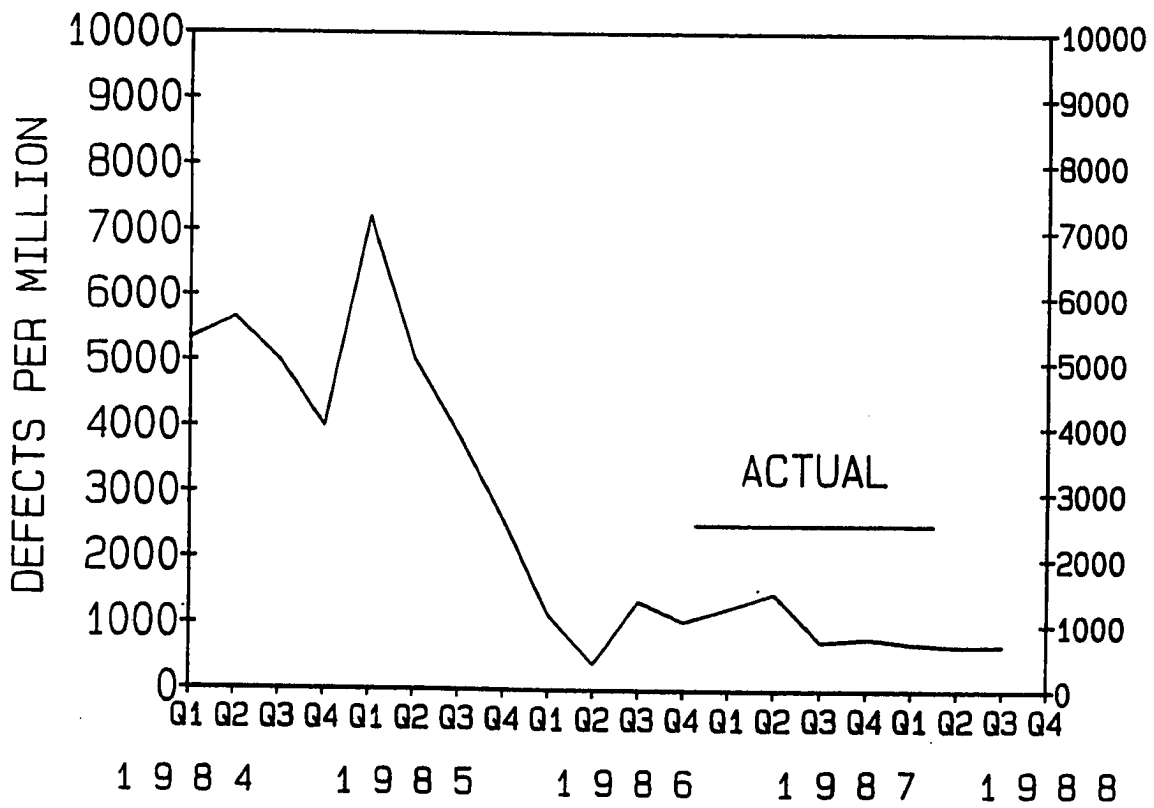
Figure 22. Trend in average outgoing quality levels: 1984 – 1988.

duct lines have climbed from approximately seven percent in early 1984 to approximately 45 percent in third quarter 1988.

Figure 20 shows that production cycle time for the NMOS product lines has been changed from a highly variable rate of between 52 days and 91 days in 1984 to a more controlled rate of approximately 47 days in third quarter 1988. Cycle times are a measure of the total number of days required from the beginning of the manufacturing process until the end. Figure 21 shows that cycle time for the CMOS product lines have gone from a fluctuating rate between 80 and 100 days in early 1984 to a still somewhat fluctuating rate between 55 and 72 days in 1987 and 1988.

Average outgoing quality of products is a measurement of the number of defects found per million units (or integrated circuits) at the end of the manufacturing line - both NMOS and CMOS products combined. Figure 22 shows that the average outgoing quality has improved dramatically from a fluctuation between four thousand and seven thousand defects per million to a more controlled level of approximately six hundred defects per million.

Examination of these data leads to the conclusion that substantial improvements have been realized by the NTE-RB division's performance as measured by product yields and product quality levels. Continuous, although less dramatic, improvements have been realized in product cycle times.

Employee job satisfaction, as a separate dimension from

other organizational climate factors, was examined in E.
Michael Norman's master's thesis (1985). In his study,
Norman extracted 53 items from the NTE-RB employee opinion
survey administered in April, 1985. These items were used to
measure employee job satisfaction. This researcher has
extracted these same items from the November, 1987 survey in
order to measure changes in overall employee job satisfaction
between 1985 and 1987. (Minor adjustments were made in items
included in the comparison, including dropping six items, due
to changes in the employee survey between the 1985 and the
1987 administrations.) Figure 23 shows the comparison between
the 1985 and 1987 means for each of the 47 items representing
job satisfaction. A trend analysis was conducted for these
two sets of data (a t-test was run on the two sets of means).
The analysis shows a major improvement (at a level of
significance less than .001) between the 1985 and 1987
ratings. The overall mean score shows an improvement from a
2.743 in 1985 to a 3.375 in 1987 (on the five point Likert
scale previously described).

Employee job satisfaction was also examined through
interviews with NTE-RB employees. Question 4 of the Interview
Guide used with internal interviewees (Appendix C) asked
respondents for their views on the changes in overall employee
job satisfaction between fourth quarter 1984 and fourth
quarter 1988 (interviewees were not shown the employee survey
data until after they responded to this question).

ITEM	MEAN	
	1985	1987
I feel the benefits program is satisfactory.	2.34	3.86
The company is a better place to work now than when I first started here.	2.83	3.47
The people in my department cooperate with each other and work together as a team.	2.47	3.50
The equipment in my department is satisfactory.	3.00	3.23
I like my physical working conditions.	2.64	3.35
I feel very secure in my job.	2.37	3.62
I am satisfied with my general working conditions.	2.51	3.57
My immediate manager tells me when I've done a good job.	2.53	3.45
Considering the skill and effort I put into my work, I am satisfied with my pay.	3.21	2.86
I am satisfied with the amount of praise I get for the work I do.	2.95	2.97
Higher management asks for suggestions from employees.	3.20	3.04
I am encouraged to help make decisions which affect my job.	2.88	3.26
When I need information, I know who to see.	2.62	3.69
Management lets me know about changes before they are made.	3.88	2.74
Management gives me accurate information.	3.02	3.22
Communication problems between departments are handled well.	3.70	2.36

(continued on next page.)

Figure 23. Trend in overall employee job satisfaction as measured by employee survey: April, 1985 and November, 1987.

ITEM	MEAN	
	1985	**1987**
My immediate manager listens to my suggestions with an open mind.	2.47	3.63
My immediate manager does a good job of handling my complaints.	2.77	3.40
I believe my immediate manager is interested in me.	2.54	3.57
My immediate manager is helping me reach my goals with the company.	2.84	3.29
My immediate manager treats employees with the kind of respect a person deserves.	2.42	3.83
I think my immediate manager is a good leader.	2.60	3.51
My immediate manager does a good job of assigning responsibility.	2.76	3.24
My immediate manager asks my opinion before making decisions which affect me.	2.97	3.25
My immediate manager tells me what he/she thinks of my work.	2.58	3.50
My immediate manager asks for suggestions from me.	2.64	3.59
My immediate manager takes responsibility for acting on suggestions I make.	2.85	3.34
My immediate manager lets me know what he/she intends to do about suggestions I make.	2.79	3.36
My immediate manager does a good job of getting answers to the questions I ask.	2.62	3.59
Changes are often made as a result of my suggestions.	3.13	3.08
My immediate manager lets me know what has been done about suggestions I make.	2.80	3.38
I am satisfied with my immediate manager.	2.40	3.69
The amount of work I am asked to do is fair and reasonable.	2.40	3.72

(continued on next page.)

Figure 23 (continued). Trend in overall employee job satisfaction as measured by employee survey: April, 1985 and November, 1987.

ITEM	MEAN	
	1985	**1987**
The number of hours I have to spend doing my job is fair and reasonable.	2.35	3.78
I usually have a clear idea of what is expected of me on my job.	2.30	3.76
I like my job.	1.93	3.94
On most days I feel I have accomplished something important on my job.	2.07	3.79
I am satisfied with the things I do on my job.	2.34	3.71
The company promotes those who have earned it.	3.15	2.60
I am satisfied with my chances for getting ahead.	3.04	2.84
I think the company's performance reviews result in the kind of recognition I deserve for my job performance.	3.02	2.84
I think the company's performance reviews are fair.·	2.99	2.88
This year I will look for a job with another company.	3.57	3.63
Safety rules are carefully observed, even if it means work is slowed down.	2.68	3.32
I understand how my job relates to the overall objectives of the Division.	2.22	3.84
I know what career opportunities are available in the Northern Telecom organization.	3.29	3.33
There is too much concern for quantity of work rather than quality of work.	2.42	3.22

Figure 23 (continued). Trend in overall employee job satisfaction as measured by employee survey: April, 1985 and November, 1987.

The summary of responses for this question is presented in Appendix H. Of the twelve interviewees, eight stated that they felt there had been an improvement in overall employee job satisfaction between 1984 and 1988. Two respondents stated that job satisfaction had improved for some and not for others and two interviewees stated that there had been no change in the four year period (one person felt that job satisfaction had always been high). Overall, these responses are interpreted as agreement that there has been a positive change in overall employee job satisfaction over the four year time frame. During interviews with NTE-RB customers and corporate officers, respondents were asked for any agreements or disagreements with this summary of internal interviews. (See question 3 of the Interview Guide for external interview, Appendix D.) All five external interviewees felt that only internal employees could accurately answer the question of how job satisfaction has changed, but all agreed that improved job satisfaction would be expected given the changes in the employee survey on other factors and the opinions expressed by internal interviewees on HRSD values and the eight climate factors. A complete summary of responses to this question is presented in Appendix J.

What Was The Relationship Between Any Changes In

Organizational Culture and Any Changes In

Organizational Effectiveness?

In order to answer research question 4, internal interviewees were asked their opinions as to what factors they believed caused improvements in productivity indicators and employee job satisfaction. NTE-RB customers and corporate officers were asked to corroborate the data gathered from internal interviews.

Questions 3 and 4 of the Interview Guide for NTE-RB employees (Appendix C) were designed to ascertain employees' opinions as to the factors causing improvements in productivity (product yields, cycle times, and average outgoing quality) and improvements in overall employee job satisfaction. (The summary data from the interviews with these twelve NTE-RB employees are presented in Appendix H.) Figure 24 presents the summary to the question "What factors do you think caused the productivity changes shown in the five graphs?." As stated in the summary, it can be concluded that the interviewees view culture change as a major factor in productivity improvements seen since 1985 and that organizational learning or maturation is viewed as another major factor in improved productivity. Figure 25 presents the summary to the question "What factors do you think caused

Question:

What factors do you think caused these changes in productivity?

Summary of Responses:

In summary, it is the opinion of this researcher that culture change is viewed as a major factor in productivity improvements seen since 1985 and that organizational learning or maturity is viewed as another major factor in improved productivity. In conclusion, it can be stated that, overall, respondents believe that culture change and organizational learning in combination were primarily responsible for the improved productivity experienced by the NTE-RB division since 1985.

Figure 24. Summary of internal interviewees' responses to question regarding causes of productivity changes.

Question:

What factors do you think caused this positive change in employee job satisfaction?

Summary of Responses:

In summary, it can be stated that most interviewees felt that culture change has been the primary factor in job satisfaction improvements seen between 1984 and 1988.

Figure 25. Summary of internal interviewees' responses to questions regarding changes in employee job satisfaction.

a positive change in employee job satisfaction?" As stated in the summary, it can be concluded that the interviewees believe that culture change has been the primary factor in job satisfaction improvements seen between 1984 and 1988.

The interviews with external personnel, three NTE-RB customer representatives and two corporate officers, were used to corroborate these data. Questions 2 and 3 from the external Interview Guide (Appendix D) were designed to elicit agreements or disagreements with internal interviewees' opinions regarding the causes of improvements in productivity and job satisfaction. Complete summaries of responses to these interviews are presented in Appendix J. All three customer representatives agreed with the opinions expressed by internal NTE-RB employees regarding the reason for improvements on the productivity charts, that being the combination of culture change and organizational learning. Of the two corporate officers, one agreed with the opinions expressed by the internal interviewees while the other officer felt that productivity improvements are not great enough to conclude that the culture change has made a significant impact. He felt that the NTE-RB division has seen continuous improvements but not the dramatic improvements he would have expected from the great amount of effort expended on the cultural change intervention.

All five of the external interviewees agreed with internal interviewee opinions that improvements in overall

employee job satisfaction had been realized as a result of the work done to change the organizational culture.

As stated in the introduction to this chapter, discussions regarding the data introduced in this chapter are presented in Chapter 7.

CHAPTER 7

SUMMARY, CONCLUSIONS, AND DISCUSSION

This chapter will review the research questions posed at the beginning of this study and examine the data presented in Chapter 6 to formulate answers to these questions. Further, lessons learned from this case study as they relate to the literature will be presented so that students of organizational change may benefit from the experiences of the subject organization. Next, strengths and weaknesses of this particular study will be explored. And finally, implications from this study for future research will be presented.

Research Summary and Conclusions

This study has examined the experiences of one organization, the NTE-RB division of Northern Telecom, in its effort to improve organizational effectiveness through a transformation in its organizational culture. The purpose of this study has been to build upon the literature in the fields of organizational change, management science, and leadership studies in the pursuit of better understanding strategies that may or may not work to transform organizational culture as

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well as understanding the potential for such organizational culture change to truly impact organizational effectiveness.

This report has reviewed the steps of the NTE-RB cultural change intervention from its beginning through today (Chapters 4 and 5) and examined the effects of the intervention on both organizational culture and on organizational effectiveness (Chapter 6).

Each of the research questions of this study are presented below followed by conclusions for each question.

Research question 1: What were the strategies used by the NTE-RB division to attempt to change organizational culture?

Chapters 4 and 5 present in chronological order the steps used by the NTE-RB organization in its attempt to change the organizational culture. A discussion regarding lessons learned from this case intervention is presented later in this chapter.

Research question 2: To what extent did the culture change at NTE-RB between 1984 and 1988?

Employee survey data, interview data, and participant observation are used in this study to answer this question. Culture was measured by behaviors which reflect the nine organizational values articulated by the NTE-RB management in the HRSD and by behaviors which

reflect the eight organizational climate factors of the NTE-RB climate survey.

The employee survey trend analysis of the nine organizational values (Figure 15, p. 132) shows major improvement on eight of the nine values between April, 1985 and November, 1987. One value, "Recognition of Achievement," showed no significant change. None of the values showed a decline. Interviews conducted in November, 1988 with a sample of NTE-RB employees, corroborated that these data hold true over the extended time frame of 1984 to 1988. Seven of the eight values were seen as improving over the four year time frame. "Recognition of Achievement" was seen as improving by fewer than half of the interviewees. "Integrity" was also seen as changing to a lesser degree than other values, but due to the belief that the company had always held the value in high regard.

The trend analysis of the eight climate factors (Figure 14, p. 130) shows major improvement in the important area of the way that managers manage as well as improvement in upward and downward communication, working conditions, training and development, workload, and pay. A major decline was seen on the "Advancement Criteria" and "Job Security" factors. No significant changes were seen in interdepartmental communication, openness of communication, work itself, praise,

performance reviews, or turnover. Interviewees corroborated these results over the extended time frame of 1984 to 1988. Again, respondents perceived a positive change in the way managers manage, in upward and downward communication, in overall working conditions, training and development, and workload. Half the interviewees believed that interdepartmental communication and pay had improved. Interviewees felt that little or no change had occurred in openness of communication, advancement criteria, work itself (except workload), praise, performance reviews, or turnover (desire to leave). Overall, interviewees did not perceive a decline in any of the climate factors over the four year time frame.

In summary, it is this researcher's opinion that interviewees felt that there has been substantial change in the organizational culture as defined by the HRSD values and the eight climate factors. Interviewees tended to place more weight on climate factors such as management, communication, working conditions, and training and development than on such factors as performance reviews and turnover. It should be noted that while "Work Itself" was rated as no significant improvement on both the employee survey and by interviewees, subscales under that heading were among the highest rated of all subscales, both on the survey

and by interviewees. Especially noteworthy is the fact that "Sense of Accomplishment" and "Interest in the Job" were rank-ordered first and second on the survey in 1985. While substantial culture change has been noted by NTE-RB employees, a degree of dissatisfaction with certain components of culture does exist. Employees perceive a need for substantial change in interdepartmental communication and praise - or better stated, recognition of achievement. It is important to understand that employees generally did not expect that the culture described in the HRSD would exist as a reality in 1988. They had been told repeatedly over the years that the desired culture was a "vision," an end state that would take years to reach. Subsequent to the interviews with the twelve NTE-RB employees, interviews were held with three customer representatives and two corporate officers. These external interviewees corroborated the opinion of the internal interviewees that there had been improvements in organizational culture as measured by the nine HRSD values and the eight climate factors. These interviewees were, if anything, more certain than internal interviewees that they had observed culture change.

Participant Observations. Below is a summary of the researcher's personal assessment of culture change seen at NTE-RB over the 1984 to 1988 time frame. This

assessment is based on the nine HRSD values.

In general, it has been observed that substantial culture change has occurred. The management style has moved dramatically from a autocratic style to a participative style. In 1984 it was quite clear that the power in the organization lay at the top - with the "cabinet." Day to day production decisions were made by the cabinet. Today, such decisions are made by the production departments, often at the operator level. With the aid of SPC (statistical process control) operators now are gaining the information as well as the power to effect changes in production. Information now flows between engineers, operators, and equipment repair technicians to a much larger extent than in 1984. Granted, improvements can still be made in the communication flow as well as in decision making at lower organizational levels. In 1984, the "cabinet" met in the "board room" which was to be used by no one without permission from the general manager. In 1988, the "division staff" meets in the "Sierra" room which is scheduled by the general manager's administrative assistant using the division-wide computerized scheduling system. Major improvements have been observed in the organization's attention to the customer and to quality. In 1984, the customer was seldom mentioned in the day to day operation. Quality was viewed as a department that

policed the activities of the production departments. Today, quality is viewed as a concept regarding products and service. The quality department has been reduced from a large staff of inspectors, technicians, engineers, and managers to a small staff of internal consultants (chiefly engineers). Quality and productivity are discussed openly and frequently as concepts to be continually embedded into the organization's work. Every department is expected to continually improve in its quality and productivity. Customers are seen in the organization as the receivers of one's goods or services - whether internal or external to the division. People throughout the organization frequently mention their customers, holding them in high regard. Satisfying the customer is seen as the goal of every department and every individual.

It is this researchers opinion that innovation and risk taking have increased substantially over the four year time frame. In the recent past, however, innovation appears to be emphasized less than in 1986 and 1987. This was the perception of several internal interviewees. Ken Bradley talked a great deal about the importance of innovation and risk taking. He also took action such as creating a technology department and fostering its growth and development. One of the roles of the technology department was to bring in new business to the division

through joint projects with customers and other external sources. In 1988 the division began to re-examine its role within the Northern Telecom corporation and began to move toward specializing in high volume manufacturing. This new role calls for less technological innovation (at the R.B. site); therefore, less of a role for the technology department. Overall, it appears that since the introduction of the culture change intervention, employees have shown an increased willingness to take risks in their day to day jobs. In May, 1986 production employees demonstrated their commitment to quality and their willingness to take risks by shutting down the production line until process specifications were revised to reflect current reality. This action received lots of kudos from Bradley as being the right thing to do. Employees were encouraged to follow this pattern in the future. Such bold action has not been observed since, however. While improvements have been made in the production area, one could question whether other opportunities for such actions have availed themselves and not been acted upon. (It should be noted that while Bradley lauded the action by operators in 1986, the employees' immediate managers did not cheer so strongly since the action was seen as a signal to senior management that all was not well in the management of the production area.)

This researcher, as manager of training and education, has observed that many improvements have been made in the area of employee development; however, still more change is desired. The organization has invested many resources into providing both technical and nontechnical training to employees. Courses have been developed and delivered on Basic Integrated Circuit Manufacturing, Statistical Process Control, Interpersonal Communication, and many more topics directly applicable to employees - from managers to operators. The organization's educational assistance policy is one of the most comprehensive in industry, providing 100 percent payment of tuition and books prior to a course. While resources are available to employees, managers have not substantially changed the way in which they manage these resources relative to the needs of the employees. In some departments, employees still receive little coaching from their managers on development, leaving employees to choose their own development activities. However, changes to the division's performance planning system (the Managing for Achievement program or MFA), scheduled for implementation in 1989 include an increased emphasis on employee development. Additionally, more coaching from senior management and human resource professionals is planned for 1989.

An increased commitment to people as the

organization's most valuable resource has clearly been seen since the beginning of this change intervention. The most outstanding example of this commitment was the decision of no lay-offs during the economic downturn of 1986, discussed in Chapter 5.

The value of "results orientation" has always been a strong one at NTE-RB. However, in 1984 this value was evidenced by a high desire to meet production schedules but with little regard to quality standards or the needs of the customer. This strong desire to "do what we say we will do" is still evident, but with the focus on the customer and his changing needs rather than on a pre-established goal. The NTE-RB division has representatives of the quality department who travel approximately 50 percent of their time to customer organizations to gather information and to provide information regarding the product.

This researcher agrees with internal interviewees regarding the values of "recognition of achievement," "integrity," and "responsibility to the community." "Recognition of achievement" has been emphasized since the publication of the HRSD. However, only small changes have been observed. Meetings such as the monthly forecast meeting have improved in that they have gone from a nonsupportive, challenging environment to a more supportive, problem solving environment. Also, some

managers and other employees have made concerted efforts to recognize other employees for positive accomplishments. Still, for the most part, there is an environment of "its expected that everyone will do his best - it's his job" instead of "congratulations on a job well done."

Integrity is a value that NTE-RB has always held in high esteem. The organization has been honest in its dealings with the community, customers, and employees. When there have been potential safety threats to either the community or to employees, the organization has always dealt with such threats openly and honestly. When problems arise with the product, customers are told about them and are involved in the problem solving. There has been a tendency for NTE-RB to involve customers even more often in more recent years compared to the 1982-1984 time frame. During the business downturn in 1986 in which the corporation turned to NTE-RB to reduce its population, employees were informed of the situation and involved in generating ideas to resolve the problem. This resulted in no lay-offs and a resolution of the problem.

Again, this researcher agrees with internal interviewees that the value of "responsibility to the community" has always been held in high regard by the organization. NTE-RB has always encouraged participation in community activities by its employees as well as

donating money and other resources to community agencies. An increase has been observed over the last three to four years in involvement with the public schools. NTE-RB has adopted a local high school which has led to many joint projects and programs involving high school teachers and students and NTE-RB employees. A second area high school has been donated personal computers and a number of joint projects between high school students and NTE-RB employees have been conducted.

In summary, this researcher as a member of the subject organization has observed substantial culture change between 1984 and 1988. Significant change has been observed in the management style: from a more autocratic style to a more participative style. Power has been redistributed from a concentration at the top of the organization to a more equal distribution across the organization as a whole. Major changes have been observed in the organization's emphasis on the customer and on quality of product. In the four year time frame as a whole, increases in innovation and risk taking have been observed, with a decrease in emphasis in recent months. Continued improvements in attention to the development and growth of individuals are expected. The values of integrity, responsibility to the community, and results orientation continue to be important to the organization. Little substantive change has been

observed in the recognition of achievement. Again it should be noted that the desired culture as outlined in the HRSD has been viewed as a "vision" to be fully accomplished over several years. While Bradley often talked of five years to fully realize this culture, it seems likely that even that estimate may be somewhat short.

Research question 3: In what ways did organizational effectiveness change between 1984 and 1988?

Organizational effectiveness has been defined in this study as productivity and employee job satisfaction. As summarized in Chapter 6 and seen in Figures 18 through 22 (pp. 139-143), productivity, as measured by product yield, production cycle time, and average outgoing quality, has improved over the four years of the culture change effort. It should be noted that both NMOS and CMOS yields were on the increase during 1984 - before the culture change effort had begun (initial strategizing began in late 1984 but too late for changes in production to be realized by year end). Cycle times were so erratic in the 1984-1985 time frame as to make it impossible to ascertain a trend. Indeed, a decrease in the variability of NMOS cycle time may be one of the significant impacts of organizational changes made over the four year study period. In summary, however, NMOS yield went from 30

percent in 1985 to 55 percent in 1988 while CMOS yield
went from 17 percent in 1985 to 45 percent in 1988. NMOS
cycle time went from 70 days in early 1985 to 47 days in
1988 while CMOS cycle time went from 93 days in 1985 to
64 days in 1988. The average outgoing quality, measured
by number of defects per million, improved dramatically
over the study period - from five to seven thousand
defects per million to less than seven hundred defects
per million in 1988. The most substantial changes were
seen in 1985 and 1986. Overall, productivity was viewed
by interviewees as having improved over the study period.

Changes in employee job satisfaction were
ascertained by examination of 47 items on the employee
survey and by interviews with the sample of NTE-RB
employees. Figure 23 (pp.146-148) presents a comparison
of means for each of the 47 items representing job
satisfaction on the employee survey. The overall mean
score was 2.743 in 1985 and 3.375 in 1987 (this is on a
five point Likert scale, 1 being low or "strongly
disagree" and 5 being high, or "strongly agree"). A t-
test run on these means reveals that this improvement is
at less than a .001 significance level. In interviews,
eight of twelve NTE-RB employees felt that employee job
satisfaction had improved over the four year time frame,
1984-1988 (interviewees were not shown survey data on
job satisfaction). Two interviewees felt that job

satisfaction had improved for some employees and not for others while two respondents felt that there had been no change (although one of these two employees stated that job satisfaction had always been high at NTE-RB). In summary, overall job satisfaction is seen as improving significantly over the four year study period.

Research question 4: What was the relationship between any changes in organizational culture and any changes in organizational effectiveness?

In order to answer this question, the twelve NTE-RB interviewees were asked what factors they believed caused improvements in the productivity indicators and job satisfaction. A separate question was asked for each of the two organizational effectiveness components (productivity and job satisfaction). As summarized in Chapter 6, interviewees felt that both the culture change efforts and organizational learning or maturation were the major causes of productivity improvements seen between early 1985 and late 1988. Most interviewees believed that the culture change effort was the primary cause of improvements in job satisfaction seen between 1984 and 1988.

External interviewees (customers and corporate officers) were asked to agree or disagree with these conclusions made by the internal interviewees. All five

of these external interviewees agreed with the NTE-RB employees that the culture change effort was the likely cause of increased job satisfaction. Regarding the cause of productivity improvements, four of the five external interviewees agreed with NTE-RB employees that a combination of the culture change efforts and organizational learning was the likely cause of improved productivity. One interviewee (a corporate officer), however, felt that the productivity improvements seen over the four year time frame are not great enough to conclude that culture change has made a significant impact. This is in alignment with the statements of one internal interviewee (a manager) who felt that the slope of the graph (showing yield trends) would be steeper starting in approximately 1986 if the culture change efforts were responsible for the (yield) improvements.

In conclusion, it can be stated that interviewees felt that job satisfaction improvements were caused by culture change efforts. Further, it can be stated that most interviewees felt that improved productivity was caused by a combination of organizational learning and culture change.

Lessons for Students of Organizational Change

As discussed in the Review of Literature of this paper,

one of the chief issues still debated in the field of organizational change is the feasibility of organizational culture change through management intervention. To a large extent, it appears that the likelihood of culture change depends upon how one defines culture. Schein (1985) and Dyer (1984), for example, both view culture as the deeper level of basic assumptions held by organizational members. They believe that while artifacts, values, and perspectives may be changed through management intervention, it is much more difficult to effect a "paradigm" change. A paradigm change involves changing basic assumptions regarding humanity's relationship to nature, the nature of reality and truth, and the nature of human nature, activity and relationships. However, it is this researcher's opinion that while changing organizational culture to the extent of a paradigm shift would almost certainly create a change in organizational output, such an extreme change may not be necessary to effect a change in organizational output. For this reason a definition for culture has been chosen for this study that reflects a belief that a true change in values, perspectives, and artifacts can result in changes in organizational effectiveness and, therefore, organizational outputs. Culture has been defined in this study as "the values and beliefs held by an organization." Culture is reflected through artifacts including norms such as rules of conduct, rites, rituals, stories, language, policies and practices. This definition

combines the ideas of Baker (1980), Burke (1982), Deal and Kennedy (1982), Tichy (1983), Bennis and Nanus (1985), Siehl (1985), and others. With this definition in mind, culture has been measured in this case study by examining organizational behaviors which reflect the values articulated by senior management in the HRSD and which reflect organizational climate factors assessed through the NTE-RB climate survey. The point here is that while the researcher has concluded that culture change was realized by the NTE-RB division between 1984 and 1988, this conclusion is dependent upon the definition of organizational culture used. This study verifies the theoretical assumption that organizational culture can be changed through management intervention, as long as the definition of organizational culture is not limited to the basic assumptions of the organization.

Changes in organizations such as those seen at NTE-RB are viewed by some theorists and researchers as caused by the actions taken by management (planned change) while others would argue that changes are just as much a result of organizational learning or adaptation (Goodman, 1984; Lifson, 1984). Sathe (1985) agrees with Schein that changing the basic assumptions of an organization is difficult and that such change occurs from the "learning going on in the organization as it copes with its problems of external adaptation and internal integration" (p.15). This view of change is aligned with the view of NTE-RB employees and

corporate officers who believed that organizational learning was a major factor in improvements seen in organizational effectiveness at NTE-RB - as much a factor as the planned change efforts of management. However, improvements in organizational effectiveness through learning are certainly more easily achieved than are changes in organizational assumptions. Sathe's view that change is usually "incremental and evolutionary" rather than "radical and revolutionary" is supported by the corporate officer's opinion that changes in R.B. output reflect continuous improvement, but not a "step function" increase that he would expect to see from a major intervention of the magnitude utilized at NTE-RB.

Tichy (1983) has labeled the two types of organizational change "evolutionary change" and "strategic change." He believes that strategic change is necessary when crisis or opportunity arises. Included in such crises or opportunities are changes in the environment, rapid technological changes, or changes in the people of the organization - the mix, the skills or knowledge, or expectations of people. The NTE-RB organization was undergoing such changes in 1984, the time when strategic change was introduced. Changes in market demand required higher product output. In response to this greater demand, the employee population was more than doubled. The instability caused by the pressures to produce more and the sudden change to the makeup of the employee population paved the way for change in the culture to occur - both

planned change and change as a result of adaptation to a new mix of people.

Gilbert and Roberts (1984) have labeled the belief that management can effect culture change through manipulation of "levers" such as symbols, myths, heroes, rituals, sagas, and so forth as the "instrumental view" of culture change. Their "navigational view" is one that says that the most managers can hope to accomplish is to "cajole, persuade, channel, nudge, and guide organization culture in a strategically desirable direction" (pp. 16-17). Martin and Siehl (1983) have called this influencing the trajectory of organization culture. Gilbert and Roberts believe that culture can and should be managed at strategic change points in the life of an organization using the navigational view of change. When examining the case at NTE-RB one could view the culture change attempted there as tending toward the navigational view. While certain actions demonstrate the belief in an instrumental view, the outcomes observed at the NTE-RB division may reflect more of a navigational model. Viewing the case from this perspective, one can see that significantly impacting the entirety of organizational culture (including all nine organizational values and all eight climate factors), from top to bottom of the organization, is taking longer than the initial projection of three to five years. The organization culture can probably best be transformed by management keeping vigil to respond to opportunity for change

across several years. Management has taken advantage of such opportunities in the past; continued action at the time of future opportunities may allow the organizational culture to be more completely transformed.

The extent to which culture change has been realized at NTE-RB may be due to the timing of the major interventions. 1984 marked a time in the life of this case organization which corresponds to Lundberg's triggering events of environmental change and managerial crisis; to transition from Siehl (1985) and Cameron and Whetten's (1981) "creativity and entrepreneurship" stage toward the "collectivity" stage; to Schmenner's (1983) "early years"; and to Schein's (1985) transition phase of the "early growth years." 1984 was a year of instability brought on by rapid changes in market demand, a sharp increase in employee population, a resultant significant drop in productivity and a change in senior management (the General Manager). Such a crisis state is what Schein refers to as the transition phase of early growth. Schein, Siehl, and Lundberg all would see 1984 as a prime opportunity for organizational change at NTE-RB.

The NTE-RB culture change intervention utilized the technologies and models of a number of O.D. researchers and theorists including Lewin (1958), Beckhard and Harris (1972), Burke (1982), French and Bell (1978), Dyer and Dyer (1986), Miller (1984), Deal and Kennedy (1982), Sathe (1985), Tichy (1983), and others. Both French and Bell's and Burke's

definitions of O.D. indicate that any true O.D. effort must include organizational culture change. Such culture change is seen as being assisted by a change agent using theory and technologies of applied behavioral science. This change agent is often seen as an O.D. consultant or a person within the organization with positional power (management) or both. Beckhard and Harris' definition of O.D. includes the assumption that true O.D. is planned, organization-wide, and managed from the top. The purpose of an O.D. intervention (which uses behavioral science knowledge) is to increase organizational effectiveness. In the NTE-RB change effort both the organization's senior management (Ken Bradley and his directors) and a team of O.D. consultants, trained in the behavioral sciences, were viewed as the change agents.

Many of the O.D. technologies outlined by Burke (1982) and Dyer and Dyer (1986) were used during the NTE-RB intervention. Some of these technologies are: strategic planning, survey feedback, changes to the organization's structure, job redesign, altered reward systems, team building, interteam development, employee involvement teams, and process consulting.

Theoretical models of organizational change include those that deal with culture change itself (Deal and Kennedy, 1982, Miller, 1984, Sathe, 1985, and Schein, 1985) while some others deal with systems that may be considered a part of culture (Beckhard and Harris, 1977, Ackerman, 1982, and Dyer and Dyer,

1986). Tichy (1983) and Dyer and Dyer (1986) present change models which view cultures as containing systems. All these models have their roots in Lewin's (1958) model of "unfreezing, change, refreezing."

The NTE-RB change agents used the theories of Lewin and Beckhard and Harris in developing change strategies and in communicating the culture change efforts throughout the organization. Phase I of the division development plan, executive development, corresponds with Lewin's unfreezing step; Phase II, awareness and alignment, corresponds with the change step; and Phase III, institutionalization, corresponds with refreezing.

The strategies employed by the NTE-RB change agents closely paralleled Beckhard and Harris' change model: define the present state and the desired future state, then the transition state, develop and implement a strategy for change, and stabilize the new state. This model was used during the change effort to communicate the change strategy to organizational members. The development of the HRSD to define the desired future state reflects the use of Beckhard and Harris' model. Both Beckhard and Harris and Ackerman (1982) propose utilizing a transition management structure to manage the transition state. In the NTE-RB case no separate structure was created, but rather management of the transition was seen as additional responsibilities of the senior management team - one of the suggestions made by Beckhard and

Harris.   It is possible, however, that during the organizational restructuring a special transition management team may have aided in making the complete set of recommendations suggested by the workflow analysis team a reality.

Dyer and Dyer's (1986) model of changing the social, technical, and administrative systems is closely aligned with the work done in the NTE-RB organization. Strategies used to impact NTE-RB's social system include enhanced communication efforts, efforts to redistribute power in the organization, changes in the decision making process such as the use of employee involvement teams to establish policy, and the training and education of individuals within the organization. Changes to the technical system were made through work redesign and the restructuring of the manufacturing department; however, changes to the technical system were not the major focus of this intervention due to the initial assessment that the organization's technology was already a strength. Changes to the administrative system were attempted through alterations to the financial methods, to the way in which employees are selected, and the way employees are rewarded for performance.

Miller's (1984) model for culture change includes defining the current culture, defining the desired future culture, then using appropriate tactics to move from the current to the desired culture. This model is quite similar

to the Beckhard and Harris model. The HRSD was developed at NTE-RB in order to define the desired future culture; the HRSP (Human Resources Strategic Plan), outlined in the introduction to the HRSD, contained tactics for moving the NTE-RB culture from the present to the desired future culture. These tactics included training on the desired culture, setting up systems to reinforce the culture, and the restructuring of the NTE-RB organization.

Most of the recommendations from Deal and Kennedy (1982) were utilized by the NTE-RB division. Recommendations used included positioning a hero in charge of the process (Ken Bradley); recognizing real threats from outside (many discussions were held regarding the work to be done by senior management in interfacing with the rest of the corporation, customers, and the community so that the changes made at R.B. were not perceived as a threat to any of these other entities); using transition rituals as the pivotal elements of change (quarterly state-of-the-plant and other meetings outlined the status of the change process); providing the organization with transition training in new values and behavior patterns (the management and employee development core programs); bringing in outside consultants as "shamans" (Anne Nolan as senior consultant); building tangible symbols of the new directions (the HRSD, distributed to all employees and referenced in all training sessions and most employee gatherings); and insisting on the importance of security for

organizational members during the transition (the policy of no lay-offs during the economic downturn demonstrated to employees that management was committed to the importance of the organization's human resources; however, during the organizational restructuring, employees displaced were not guaranteed jobs). As can be seen in the comparisons above, the NTE-RB followed Deal and Kennedy's suggestions very closely although this was not one of the theories used overtly by the organization in its communication to employees regarding the culture change effort nor was it discussed openly by the consulting team or senior management in the development of strategies for change.

Sathe's model of change calls for intervening in each of the basic processes that cause culture to perpetuate itself: behavior and its justifications, cultural communications, the hiring and socialization of the members who "fit in" with the culture, and the removal of members who deviate from the culture. The NTE-RB organization concentrated on employee behavior as a reflection of the HRSD values in an effort to move the division closer to the desired culture. Expected behaviors of management and other employees were outlined in the HRSD and these expectations regarding behaviors were discussed in training sessions as well as in most management and employee gatherings chaired by Bradley. Employee's MFA's (the division's performance planning system called Managing For Achievement) contained a statement of expectations

regarding HRSD behaviors. All communication vehicles were utilized to inform the employee population of the culture change process and of the expectations of employees. When management positions were filled, both the new Director of Operations position in 1986 and all manufacturing management positions in early 1987, the selection process used included matching the candidate's values with the HRSD values (as determined by behaviors exhibited in a management assessment center). A system was later put into place to ensure that candidates for open positions throughout the organization were screened against the HRSD values. Bradley took action to remove one senior manager from the organization who he believed blatantly modeled behaviors contrary to the HRSD values. Bradley made other position changes during his tenure as General Manager, with alignment with the HRSD values as key to his decisions. A number of managers and other employees voluntarily resigned from the organization as the culture change effort progressed due to their dissatisfaction with the direction that management was taking. In many cases, it was observed that these resignees were employees who did not exemplify the HRSD values.

Both Dyer and Dyer (1986) and Tichy (1983) present models of change which view cultures as containing systems. Dyer and Dyer's model prescribes general steps for change agents to follow in attempting to change organizational culture: conduct a culture audit, determine a need for change, assess the

potential for success, unfreeze the culture pattern, elicit support from the cultural elite (top management or other opinion leaders), select and implement intervention strategies, and monitor and evaluate. These steps are quite similar to the major steps taken at NTE-RB. The work done by the corporate audit team to assess the problems within the NTE-RB organization essentially represents a cultural audit; the recommendations of the audit team focused on the management style and culture of the organization. A formal assessment of potential success was not conducted in this case although discussions were held by corporate officers and by members of the change team (senior management and O.D. consultants) regarding the likely outcomes of a major intervention. There was an attitude by all of expected success. As has been outlined in the story of the NTE-RB intervention, there was support from the elite (senior management) from the outset; the corporation was a sponsor of the effort from the beginning, the original NTE-RB General Manager began work on this intervention, while Bradley was involved from the beginning as Director of Group Manufacturing (Ottawa and R.B.) then later as the new General Manager. One of Bradley's first acts as General Manager was to meet with the consulting team (Anne Nolan and the R.B. Organization Effectiveness department) to strategize the cultural intervention, beginning with the enrollment of the cabinet. While a formal evaluation was not conducted until this study,

Nolan was retained through 1986, after internal consultants had fully assumed the consulting role, to conduct a quarterly assessment of progress to the Human Resources Strategic Plan, or division development plan. Additionally, the senior management team, with advisement from the internal O.D. consultants, decided to conduct the follow-up employee survey in 1987 to assess movement toward the desired culture.

Tichy's model of culture change suggests a number of methods for the change agent(s) to use in shaping and reinforcing the desired culture: person-to-person interactions, the use of symbols, rituals, and myths to communicate the desired culture, alignment of the organizational structure with the desired culture, and a strong human resource management system. This model has several similarities to the Deal and Kennedy ideas discussed above. The NTE-RB intervention utilized a number of these methods: many direct interactions between Bradley and other organizational members, as well as between managers at all levels and other employees regarding the desired culture with emphasis on expected behaviors; the use of symbols such as the HRSD and rituals such as the many meetings regarding culture, especially state-of-the-plant meetings; the restructuring of the organization to align with the new culture; and work in revamping the human resource system, including many new policies, new selection procedures, much training, and changes to the reward system (with further changes planned for 1989).

Leadership

Leadership is seen by most theorists in the world of organizational change as one of the most crucial factors in successful culture change. While some theorists do not distinguish between leadership and management, almost all believe that the top level management of an organization is the one(s) who must be in charge of a culture change effort. As discussed in the Review of Literature of this paper, the idea that the institutional leader is the most likely to achieve planned culture change is espoused by Katz and Kahn (1966), Beckhard and Harris (1977), Baker (1980), Ackerman (1982), Peters and Waterman (1982), Kanter (1983), Gilbert and Roberts (1984), Hickman and Silva (1984), Miller (1984), Schein (1985), and Dyer and Dyer (1986). In the NTE-RB case Ken Bradley acted as the champion of the culture change process. He was the one who retained the services of the consulting staff (both Anne Nolan and the three internal consultants) upon his arrival to the NTE-RB division as General Manager. Bradley was responsible for the early enrollment of the "cabinet," for the development and continual refinement of a change strategy, and for the sustained hard work that was put into the long term effort. It was Bradley's abilities as a visionary leader that enabled the employee population to be energized to work for change toward the

desired culture.

Schein has stated that the chief function of the leadership of an organization is the manipulation of culture. He believes that leaders transmit and embed their own assumptions (beliefs) into the organizational culture through five primary and five secondary mechanisms. The five primary mechanisms are 1) what leaders pay attention to, measure, and control; 2) leaders' reactions to critical incidents and organizational crises; 3) deliberate role modeling, testing, and coaching; 4) criteria for allocation of rewards and status; and 5) criteria for recruitment, selection, promotion, retirement, and excommunication. Bradley established himself as a strong leader from the start of his tenure at R.B. Managers reporting directly to Bradley as well as others throughout the organization noticed and responded to his role modeling, testing, and coaching. They took note of Bradley's priorities and responded to what he emphasized as important. As mentioned previously, a number of changes were made with the senior staff soon after Bradley's arrival: two managers were terminated from the organization (one due to Bradley's observations that his behaviors were contrary to the HRSD values) and other senior managers were given development plans to move them in the direction of the HRSD. The last two of Schein's five mechanisms relate to changes to the human resource management system. As described previously, changes were made to the criteria for selection to new jobs in the

organization. A number of changes were made to the rewards system early in the change process although major changes are planned for 1989 and possibly beyond (e.g., pay for knowledge and skills, gainsharing, and so on).

Schein's five secondary mechanisms for transmitting and embedding assumptions into the organizational culture are: 1) the organization's design and structure, 2) organizational systems and procedures, 3) design of physical space, facades, and buildings, 4) stories, legends, myths, and parables about important events and people, and 5) formal statements of organizational philosophy, creeds, and charters. Bradley and his change team (senior manager and consultants) focused on four of these five mechanisms. Changes to the organization structure was a major component of the overall culture change strategy as were changes to the organizational systems and procedures. The development and publication of the HRSD fits closely with Schein's recommendation for formal statement of organizational philosophy, creeds, and charters. Some attention was paid to the design of physical space at the NTE-RB facility; however, few organization-wide changes have been made in an attempt to reinforce the values of the HRSD (teamwork, for example).

Bradley's visionary leadership closely parallels the three principles espoused by Bennis and Nanus regarding the transformation of the social architecture of an organization: 1) create a new and compelling vision capable of bringing the

work force to a new place, 2) developing commitment for the new vision, and 3) institutionalizing the new vision. Bradley and his team created such a compelling vision for the future, much of which was documented in the HRSD. Additionally, Bradley moved others to follow him toward his vision of the new culture and of new levels of competence. Many steps were taken, and are still underway, to institutionalize this vision. Several of these steps are outlined in phase III of the division development plan - the institutionalization phase.

Strengths and Weaknesses of This Study

Every year theorists from the fields of organizational change, management science, and leadership studies present new ideas regarding the feasibility of changing organizational culture and of organizational culture change impacting organizational effectiveness. Many of these ideas have been presented in this paper in the Review of Literature and again referenced in this chapter. As pointed out in the introduction to this study, few documented case studies exist to prove or disprove the utility of these theories, models, and suppositions. This case study has followed the precepts of many of the theorists in the field of organizational change. The major strength of this investigation is the fact that it puts these precepts to the test as to their viability

in the case of a real organization. This study answers the question "Can the ideas of these theorists be applied to a real organization, particularly a high-tech manufacturing organization?." The study builds upon the work of other researchers by describing how one organization attempted to change its culture and what outcomes the organization realized. Additionally, this study has examined the relationship between the attempts at culture change and organizational effectiveness. It is, after all, improvements in organizational effectiveness that most managers seek in attempting a culture change.

This study also contributes to the field of leadership by viewing the efforts of one leader, Ken Bradley, in the process of this organizational culture change intervention. It allows researchers and practitioners to examine the actions taken by this leader in this intervention through the lenses of leadership theorists.

The major strength of this study, then, is the fact that organizational change and leadership models are operationalized in this one case. This investigation provides a detailed, descriptive analysis and an evaluation of one example of the many organizations that seek improvements through culture change.

One of the reasons that this study is able to provide such details of the intervention as well as to investigate the outcomes so thoroughly is the researcher's association

with the subject organization. The researcher has served as the Manager of the Human Resources Development function (under various titles) throughout the four year period of the case study. Because of his relationship to members in the organization and his own active participation in the intervention, he has been able to observe first hand and to collect information from others both inside and outside the organization. This relationship of the investigator to the subject organization, while an asset to the study in a number of ways, could also be argued to be a weakness by hindering the objectivity of the reporting. It is believed, however, that the triangulation process used in the study ensured that little or no bias entered the interpretation of the interview data. It is not possible, however, to completely eliminate the possibility of bias in interpretation of events of the case study itself.

An additional potential weakness to this study is the possibility that other members of the organization could be motivated to present either a positive or negative view of the organizational change effort during interview due to the belief that a particular outcome could influence their future work lives or due to feelings regarding the change effort as a result of positive or negative personal experiences. The corroboration of interview data by corporate officers and customer representatives was designed to overcome this potential threat.

The major limitation of this study is the fact that it is a "one-shot case study" (Campbell and Stanley, 1963) and consequently a number of uncontrolled variables are operating (e.g., the history of the organization, the particular time period of the study, the maturation of organizational members and of the organization as a whole). Conclusions drawn from the case study cannot be generalized to other organizations in a "statistical" sense; however, the lessons learned from the study can be transferred to other organizations in an analytical sense; that is, inductive reasoning can be employed to provide meaningful ideas regarding organizational change from the information rrovided in this case.

Finally, a weakness of this study is the fact that the researcher is reporting on this case over a four year period only. Although this is a significant time period (and more than is often possible to report), the organization does continue to live and change. In general, interventions introduced after September, 1988 have not been reported in this study. Also, organizational effectiveness changes occurring after September, 1988 as a result of interventions introduced earlier have not been reported.

Future Research

After examining the strengths and weaknesses of this study, one can identify ways in which other research can

strengthen the base of knowledge in the field of organizational change. While this evaluative case study provides one example of theories of organizational change and leadership at work to create culture change, other examples are needed in order to "complete the picture." Case studies of other organizations, especially ones with evaluation components, are needed so that organizational change practitioners and researchers can qualitatively assess the strengths and weaknesses of various technologies in achieving organizational culture change.

Further research on the subject of this case study, the NTE-RB organization, would also be helpful in understanding the full potential of organizational change and leadership theories. This case study has focused on the 1984-1988 time frame only. While considerable movement has been observed in the organizational culture, it is possible and anticipated by the NTE-RB management that further movement toward the "ideal" culture will occur over the next one to three years. As other institutionalizing steps are taken, such as implementation of a new rewards system and further changes to more closely align the organizational structure to the HRSD values, it is expected that further change will be realized. Also, it is possible and even probable that further improvements in organizational effectiveness will occur as a result of culture change efforts already implemented. Documentation of this work yet to be accomplished and of the resulting effects

would serve to offer further lessons to students of organizational change.

In summary, it is recommended that 1) future research be conducted on this subject organization, the Rancho Bernardo division of Northern Telecom Electronics, to include evaluation of the culture change effort through approximately 1991 and 2) more evaluative case studies be conducted in which the strategies used in other organizations to attempt organizational culture change are presented and the effectiveness of such organizational culture change efforts are evaluated.

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APPENDICES

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APPENDIX A

HUMAN RESOURCES STRATEGIC DOCUMENT
(HRSD)

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PLEASE NOTE:

Copyrighted materials in this document have
not been filmed at the request of the author.
They are available for consultation, however,
in the author's university library.

These consist of pages: 202-248

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APPENDIX C

INTERNAL INTERVIEW GUIDE

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INTERNAL INTERVIEW GUIDE

Department:

Job title:

Hire date:

INTRODUCTION

The purpose of this interview is to get your view of overall changes that have occured in the Rancho Bernardo divison over the last four years. Any information you give me during this interview is confidential. It won't be shared with anyone else in this organization until it is combined with information from others in the form of a summary. So that I can capture everything you tell me, I would like to tape record this session and take notes as you talk. *Is this o.k? Do you have any questions or comments?*

QUESTIONS

1. Here is a list of the organizational values found in the HRSD. Below each value is the definition (Attachment 1). *To what extent do you believe the RB division has changed relative to these values over the last four years? Please describe the organization as you remember it in 1984 relative to these values and then describe the organization as you see it now in 1988 relative to these values. Give any pertinent examples to help describe the organization before and after. (If interviewee believes there has been a decline or no change in these values, show attachment 2 and ask for his/her explanation of the major improvement shown.)*

2. Here is a list of topics and subtopics that appeared in our employee survey administered in early 1985 and again in late 1987 (Attachment 3). Beside each subtopic you will notice either a "+," a "++," a "-," a "--," or an "*." A "+" means that the employee survey showed improvement in that subtopic between 1985 and 1987. A "++" means major improvement was shown. A "-" indicates that the employee survey showed a decline in that subtopic between 1985 and 1987. A "--" indicates a major decline in that subtopic between 1985 and 1987. An "*" means that there was no significant change in employee views on that subtopic between 1985 and 1987. *What questions do you have regarding this summary sheet? Which of these trends would you agree with for the 1984 - 1988 period and which would you not agree with? Please give some examples that would illustrate your points.*

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3. Here are some charts that show the trends in certain productivity indicators since 1985 (Attachments 4 - 8). *What factors do you think caused these positive changes in productivity?*

4. How do you view NTE-RB employees' overall job satisfaction today compared to 1984? (If negative answer, state "In the employee survey, certain items were compiled to define 'job satisfaction.' Job satisfaction showed major improvement between the 1985 survey and the 1987 survey.") *What factors do you think caused this positive change in employee job satisfaction?*

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VALUES FROM HRSD

PARTICIPATIVE MANAGEMENT:

We believe in a management approach that fosters an environment characterized by:

- open, interactive communication
- decision making at appropriate level
- full awareness of division values and goals
- teamwork

INTEGRITY:

Our business and interpersonal relationships are carried out with words and actions that are consistent with our beliefs. We treat all people fairly. We respect the rights of the individual. We believe the ethics of the division are based on honesty, trust, and equality for all employees.

COMMITMENT TO QUALITY:

We believe in building quality into every product and service we provide. We do this by fostering an environment where all people are responsible for the quality of their work. In this environment quality is built in, not inspected in.

INNOVATION:

Innovation is the creativity that leads to the development and implementation of beneficial change.

Innovation is encouraged by recognizing new and diverse ideas and opinions, and encouraging "possibility thinking." Intelligent risk taking is supported – and we learn from our mistakes.

DEVELOPMENT AND GROWTH OF INDIVIDUALS:

In keeping with our beliefs that people are our prime resource, we foster an environment for individuals to achieve their potential, while balancing the needs of the individual with the needs of the organization. This is characterized by:

- job satisfaction
- training and development
- internal opportunities and promotions
- challenging objectives
- recognition of the whole person
- fun

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RECOGNITION OF ACHIEVEMENT:

By recognizing contributions, we create an environment that encourages the growth and development of both the individual and the group. Through frequent and timely feedback, we acknowledge individual and group contributions.

RESULTS ORIENTATION:

Results orientation describes a motivation and commitment to achieve a set of objectives supporting division goals in a timely manner. Results orientation means "we do what we say we will do" – on time.

CUSTOMER ORIENTATION:

Anyone who receives the output of our work is a customer. Therefore, everyone has a customer.

A customer can be either internal or external to the division. Our commitment is to deliver products and services that fully satisfy our customers' needs.

RESPONSIBILITY TO THE COMMUNITY:

As a corporate citizen, we desire to be a positive economic, intellectual, and social influence in our community. We foster active participation within these areas.

We believe in the dignity of the individual. We are committed to the fair, honest, professional, and equal treatment of all individuals and organizations with whom we come in contact. We protect all human and natural resources by maintaining a well trained and educated work force and by employing the best engineering safeguards and controls.

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EMPLOYEE SURVEY TREND ANALYSIS
ORGANIZATIONAL VALUES

NOVEMBER, 1987 COMPARED TO APRIL, 1985

VALUES	TREND
Participative Management	++
Integrity	++
Commitment to Quality	++
Innovation	++
Development and Growth of Individuals	++
Recognition of Achievement	*
Results Orientation	++
Customer Orientation	++
Responsibility to the Community	++

LEGEND

++	= major improvement
+	= improvement
-	= decline
--	= major decline
*	= no significant change

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<u>EMPLOYEE SURVEY TREND ANALYSIS</u>

NOVEMBER, 1987 COMPARED TO APRIL, 1985

<u>TOPICS</u>	<u>TREND</u>
MANAGEMENT	
OPENNESS OF MANAGERS	++
MANAGERIAL COMMUNICATION	++
MGRS. HANDLING OF SUGGESTIONS	++
MANAGERIAL LEADERSHIP	++
MGR. RELATIONSHIP WITH SUBORD.	++
MANAGERIAL PLANNING	++
MANAGERIAL DELEGATING	++
MANAGERIAL DECISION MAKING	++
MGR. DEVELOPMENT OF SUBORD.	*
COMMUNICATION	
UPWARD COMMUNICATION	+
DOWNWARD COMMUNICATION	++
INTERDEPARTMENTAL COMM.	*
OPENNESS OF COMMUNICATION	*
ADVANCEMENT	
TRAINING AND DEVELOPMENT	++
ADVANCEMENT CRITERIA	--
WORK ITSELF	
WORKLOAD	++
TASK STRUCTURE	*
INTEREST IN THE JOB	*
SENSE OF ACCOMPLISHMENT	*
WORKING CONDITIONS	
DEPARTMENTAL CLIMATE	+
OVERALL CLIMATE	+
PART. IN DECISION MAKING	+
JOB SECURITY	--
PHYSICAL ENVIRONMENT	+
RECOGNITION	
PAY	+
PRAISE	*
PERFORMANCE REVIEWS	
PERFORMANCE REVIEWS	*
TURNOVER	
TURNOVER	*

LEGEND
++ = major improvement
+ = improvement
- = decline
-- = major decline
* = no significant change

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N M O S   Y I E L D   T R E N D

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C M O S   Y I E L D   T R E N D

ACTUAL

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N M O S   C Y C L E   T I M E   T R E N D

NMOS CYCLE TIME TREND chart showing DAYS on the vertical axis (20 to 120) versus quarters Q1–Q4 for years 1984, 1985, 1986, 1987, 1988. Legend: ACTUAL.

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CMOS CYCLE TIME TREND

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A V E R A G E O U T G O I N G Q U A L I T Y

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APPENDIX D

EXTERNAL INTERVIEW GUIDE

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EXTERNAL INTERVIEW GUIDE

Name:

Location:

Job Title:

INTRODUCTION

The purpose of this interview is to get your view of overall
changes that have occurred in the Rancho Bernardo division over
the last four years. Information that you give me during this
interview will be used only in summary format along with the input
of other NT employees representing both customers and corporate
officers. So that I can capture everything you tell me, I would
like to tape record this session and take notes as you talk. Is
this o.k.? Do you have any questions or comments?

QUESTIONS

1. I am going to show you summary data of NTE-RB employees'
    perceptions regarding changes in that division's organi-
    zational culture. These summaries consist of: 1) employee
    survey trend analysis of HRSD values (April,1985 to November,
    1987), 2) a paragraph summarizing interview data regarding
    these same values from a sample of NTE-RB employees, 3)
    employee trend analysis of organizational climate factors
    (also April, 1985 to November, 1987), and 4) a paragraph
   summarizing interview data regarding these same climate
    factors from the sample of NTE-RB employees. Please review
    these data summaries. **What agreements or disagreements do
    you have with the opinions summarized in the two paragraphs
    regarding HRSD values and organizational climate factors?**

2. I am going to show you some charts that show the trends in
    certain productivity indicators for the NTE-RB division since
    1984. Also, I want you to read a paragraph which summarizes
    interview data from the sample of NTE-RB employees regarding
    the relationship of the organizational culture change to these
    productivity trends. **What agreements or disagreements do you
    have with the opinions summarized in this paragraph?**

3. I am going to show you 1) the employee survey trend analysis
    of employee job satisfaction, 2) a paragraph which summarizes
    interview data from the sample of NTE-RB employees regarding
    changes in job satisfaction, and 3) a paragraph which
    summarizes interview data regarding the relationship of the

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organizational culture change to changes in job satisfaction.
**What agreements or disagreements do you have with the opinions
summarized in these two paragraphs?**

EMPLOYEE SURVEY TREND ANALYSIS
ORGANIZATIONAL VALUES

NOVEMBER, 1987 COMPARED TO APRIL, 1985

VALUES	TREND
Participative Management	++
Integrity	++
Commitment to Quality	++
Innovation	++
Development and Growth of Individuals	++
Recognition of Achievement	*
Results Orientation	++
Customer Orientation	++
Responsibility to the Community	++

LEGEND

++	=	major improvement
+	=	improvement
-	=	decline
--	=	major decline
*	=	no significant change

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To what extent do you believe the RB division has changed relative to the HRSD values over the last four years?

Based on both the qualitative and the quantitative summaries presented above, it is this researchers opinion that this sample of NTE-RB employees generally feel that there has been a positive change in organizational behaviors which are reflective of HRSD values between 1984 and 1988. In other words, culture as measured by HRSD values has changed in a positive direction over the four year timeframe. Specifically, there is strong agreement that positive change has occurred in the values of "Participative Management," "Commitment to Quality," "Innovation," "Development and Growth of Individuals," and "Customer Orientation." The values of "Results Orientation" and Responsibility to the Community" are also seen as changing in a positive direction over the four years by most interviewees. The values of "Integrity" and "Recognition of Achievement" are each seen as improving by less than half of the interviewees. "Integrity" is seen as changing to a lesser degree than other values due to the belief that the company has always held this value in high regard; "Recognition of Achievement", however, is seen as a value that has not been substantially practiced by the organization either in 1984 or in 1988.

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<u>EMPLOYEE SURVEY TREND ANALYSIS</u>

NOVEMBER, 1987 COMPARED TO APRIL, 1985

<u>TOPICS</u>	<u>TREND</u>
MANAGEMENT	
OPENNESS OF MANAGERS	++
MANAGERIAL COMMUNICATION	++
MGRS. HANDLING OF SUGGESTIONS	++
MANAGERIAL LEADERSHIP	++
MGR. RELATIONSHIP WITH SUBORD.	++
MANAGERIAL PLANNING	++
MANAGERIAL DELEGATING	++
MANAGERIAL DECISION MAKING	++
MGR. DEVELOPMENT OF SUBORD.	*
COMMUNICATION	
UPWARD COMMUNICATION	+
DOWNWARD COMMUNICATION	++
INTERDEPARTMENTAL COMM.	*
OPENNESS OF COMMUNICATION	*
ADVANCEMENT	
TRAINING AND DEVELOPMENT	++
ADVANCEMENT CRITERIA	--
WORK ITSELF	
WORKLOAD	++
TASK STRUCTURE	*
INTEREST IN THE JOB	*
SENSE OF ACCOMPLISHMENT	*
WORKING CONDITIONS	
DEPARTMENTAL CLIMATE	+
OVERALL CLIMATE	+
PART. IN DECISION MAKING	+
JOB SECURITY	--
PHYSICAL ENVIRONMENT	+
RECOGNITION	
PAY	+
PRAISE	*
PERFORMANCE REVIEWS	
PERFORMANCE REVIEWS	*
TURNOVER	
TURNOVER	*

<u>LEGEND</u>
++ = major improvement
+ = improvement
- = decline
-- = major decline
* = no significant change

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To what extent do you believe the RB division has changed relative to these organizational climate factors over the last four years?

Of the 333 responses given, 212 or approximately two-thirds of the responses were positive (either a + or a ++). This is interpreted that respondents felt that, overall, there has been a positive change in organizational climate as measured by these factors over the four year period, 1984 - 1988. Specifically, respondents perceive a positive change in the important areas of the way managers manage and in overall working conditions. A strong majority perceive improvements in both upward and downward communication, in training and development and in workload. Interdepartmental communication and pay are seen as improving by half of the respondents. respondents perceive little or no change in openness of communication, advancement criteria, work itself (except workload), praise, performance reviews, or turnover (meaning desire to leave).

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N M O S   Y I E L D   T R E N D

ACTUAL

CMOS YIELD TREND

NMOS CYCLE TIME TREND

DAYS

ACTUAL

Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4

1984   1985   1986   1987   1988

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C M O S   C Y C L E   T I M E   T R E N D

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A V E R A G E   O U T G O I N G   Q U A L I T Y

What factors do you think caused these changes in productivity?

In summary, it is the opinion of this researcher that culture change is viewed as a major factor in productivity improvements seen since 1985 and that organizational learning or maturity is viewed as another major factor in improved productivity. In conclusion, it can be stated that, overall, respondents believe that culture change and organizational learning in combination were primarily responsible for the improved productivity experienced by the NTE-RB division since 1985.

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How do you view NTE-RB employees' overall job satisfaction today compared to 1984?

Overall, responses can be interpreted as most respondents felt that there has been a positive change in job satisfaction over the four years. This is in agreement with the findings of the employee survey for the April, 1985 to November, 1987 timeframe.

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What factors do you think caused this positive change in employee job satisfaction?

In summary, it can be stated that most interviewees felt that culture change has been the primary factor in job satisfaction improvements seen between 1984 and 1988.

APPENDIX E

MANAGEMENT DEVELOPMENT WORKSHOP DESIGN

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MANAGEMENT DEVELOPMENT CORE PROGRAM
PHASE I--CULTURAL UNDERSTANDING
MARCH 15-20, 1986

AGENDA

SATURDAY, MARCH 15TH

P.M. INTRODUCTION

- Expectations
- General Information
- Roles

PURPOSE

- Why are we here?
- Ground rules
- Climate
- Intent

DINNER

KEYNOTE - Ken Bradley

SMALL GROUP SESSIONS

- Preparation for presentation

HOSPITALITY ROOM

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<u>AGENDA</u>

<u>SUNDAY, MARCH 16TH</u>

A.M. LIFE CYCLES OF ORGANIZATIONS

       - History of R.B.
       - Organization patterns
       - Stages for change

      1986 CHALLENGES

       - ROLE OF:
           - NTE - SCG
           - R.B.
           - OTTAWA

      ORGANIZATIONS AS SYSTEMS

      LUNCH

P.M. CULTURE

       - What is it?
       - How it affects us

      DINNER

EVE. SMALL GROUP SESSIONS

       - Defining R.B.'s culture

      HOSPITALITY ROOM

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AGENDA

A.M.   VALUES

- Personal
- Organizational
- Perceptions of N.T. - R.B. current values
- Values for N.T. - R.B. in the future

LUNCH

P.M.   VISION

- Concept
- Megatrends

    - Video
    - Group discussion

DINNER

- R.B.'S Vision And Values/H.R.S.D.

AGENDA

<u>TUESDAY, MARCH 18TH</u>

A.M.   GAP ANALYSIS - current culture at RB vs.
vision/values

       RIGHT VS. LEFT BRAIN THINKING

       - Approaches to management
       - Group exercise (tower building)

       LUNCH

P.M.   THREE HOUR BREAK

       - Read/review/reflect H.R.S.D.

       SMALL GROUP SESSIONS

       - WILDCARDS

       HOSPITALITY ROOM

       DINNER - GROUP EFFORT

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AGENDA

WEDNESDAY, MARCH 19TH

A.M. HUMAN RESOURCES STRATEGIC DOCUMENT/PALA
MESA I & II

- Review
- Discussion
- Share experiences

MANAGEMENT BEHAVIOR

SMALL GROUP SESSION

- Discuss management behaviors to implement
H.R. Strategic Plan

LUNCH

P.M. ROLE OF FIRST LEVEL MANAGERS

- Review of week

INDIVIDUAL ACTION PLANNING ASSIGNMENT

HOSPITALITY ROOM

DINNER - ON YOUR OWN (NT EXPENSE)

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AGENDA

THURSDAY, MARCH 20TH

A.M.   PROGRAM REVIEW

REVIEW PERSONAL ACTION PLANS

LUNCH

P.M.   H.R. STRATEGIC PLAN'S RELATIONSHIP TO
BUSINESS OPERATING OBJECTIVES

WHERE DO WE GO FROM HERE?

- Steps necessary to promote culture
awareness

REVIEW FOUR PHASE MDCP

EVALUATION

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APPENDIX F

MANAGEMENT ASSESSMENT INVENTORY

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MANAGEMENT ASSESSMENT INVENTORY
(OTHER)

PURPOSE

THIS INVENTORY ASSESSES THE DEVELOPMENT NEEDS OF MANAGERS. IT
PROVIDES FEEDBACK ON HOW A MANAGER IS PERCEIVED BY SUPERIORS,
PEERS, AND SUBORDINATES, CONTRASTED WITH HIS/HER SELF-PERCEPTION.
THE INVENTORY IS BASED ON MANAGEMENT BEHAVIORS NEEDED TO SUPPORT
R.B.'S HUMAN RESOURCES STRATEGIC PLAN. THIS INVENTORY IS NOT
DESIGNED FOR PERFORMANCE EVALUATION. FEEDBACK FROM THE INVENTORY
WILL PROVIDE A BASIS FOR PLANNED GROWTH AND BEHAVIOR CHANGES.
MANAGERS CAN EXPECT TO RECEIVE COACHING FROM THEIR SUPERIORS TO
DEVELOP ACTION PLANS FOR CHANGE.

DIRECTIONS

BEGIN BY ENTERING THE NAME OF THE MANAGER YOU ARE DESCRIBING ON
THE ANSWER SHEET. THEN PLACE A CHECK BESIDE THE WORD THAT
DESCRIBES YOUR RELATIONSHIP TO THAT MANAGER. THIS MANUAL
CONTAINS 55 PHRASES THAT APPLY TO MANAGERIAL BEHAVIOR. PLEASE
READ EACH PHRASE CAREFULLY. CIRCLE THE NUMBER ON YOUR ANSWER
SHEET CORRESPONDING WITH THE STATEMENT BELOW WHICH BEST DESCRIBES
HOW CHARACTERISTIC THE PHRASE IS OF THE MANAGER YOU ARE
ASSESSING. BE OBJECTIVE IN YOUR ASSESSMENT SINCE YOUR HONEST
FEEDBACK IS VERY IMPORTANT.

USE THE FOLLOWING SET OF GUIDELINES TO COMPLETE EACH ITEM.

1. NOT CHARACTERISTIC OF THE PERSON
2. VERY SLIGHTLY CHARACTERISTIC OF THE PERSON
3. SLIGHTLY CHARACTERISTIC OF THE PERSON
4. MODERATELY CHARACTERISTIC OF THE PERSON
5. VERY CHARACTERISTIC OF THE PERSON
6. EXTREMELY CHARACTERISTIC OF THE PERSON

EXAMPLE

IF YOU BELIEVE ITEM NUMBER 1) IS VERY CHARACTERISTIC OF THE
PERSON CIRCLE THE NUMBER (5) ON YOUR ANSWER SHEET.

(1) (2) (3) (4) (5) (6)

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PERSONAL SKILLS

1) Accurately assessing one's own performance, skills and qualities.

2) Developing and acting on plans to improve own limitations or weaknesses.

3) Admitting mistakes openly and learning from mistakes.

4) Managing pressure and stress to accomplish work in a healthful way.

5) Having fun and encouraging others to have fun.

6) Demonstrating openness and friendliness to others (approachable).

7) Constructively confronting people on inappropriate behaviors.

COMMUNICATION SKILLS

8) Candidly expressing what she/he thinks and feels when interacting with others.

9) Listening to others' ideas and opinions and being willing to change own position about an issue based on others' inputs.

10) Dealing with conflict situations in a manner that achieves positive outcomes.

11) Maintaining a continuous communication flow with others in the Division to ensure that information and resources are available to those who need it at the time it is needed (networking).

12) Orally expressing ideas clearly.

13) Making clear and interesting presentations to groups.

14) Writing clear reports, memos, documents.

TEAMBUILDING AND COACHING SKILLS

15) Setting up teams to do routine work, problem-solving and decision-making when (but only when) appropriate.

16) Establishing and clarifying roles and responsibilities of team members and of different teams.

17) Setting clear and challenging goals, priorities and deadlines.

18) Changing priorities to meet changing business needs.

19) Trusting others to act appropriately for the good of the Division.

20) Treating others with respect, fairness and equality.

21) Giving feedback, recognition, and rewards (including compensation) congruent with performance and behaviors exhibited (performance in line with goals and behaviors in line with Division values).

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TEAMBUILDING AND COACHING SKILLS (CONT'D)

DEVELOPING THE TEAM FOR GREATER EFFECTIVENESS BY:

22) Assessing needs through survey information, performance measurement, observation, informal communication, etc.

23) Creating and continually updating Individual Development Plans for each employee to address identified needs.

24) Providing formal and informal training, special assignments, coaching, resource material, and other means to fulfill the Individual Development Plans for employees.

25) Setting up and ensuring maintenance of a safe and health-oriented work environment.

26) Using existing or creating new systems to increase team effectiveness (e.g., policies, procedures, organizational design, physical spaces, workflow design, etc.).

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INNOVATION

27) Talking about, recognizing, and rewarding "possibility thinking" and intelligent risk-taking.

28) Measuring results against goals while encouraging creative methods.

29) Concentrating efforts on issues which have high impact for long-term Divisional success.

ALLOCATING RESOURCES FOR MAXIMUM ORGANIZATIONAL GAIN:

30) Selecting and matching the appropriate individual for jobs/tasks. (This includes building a team composed of a variety of cultural backgrounds as a means to stimulate innovative ideas.)

31) Budgeting and spending for maximum return on investments.

32) Using time and energy to maximum benefit.

33) Running organized and productive meetings.

34) Using office and factory automation to maximum benefit.

IDENTIFYING:

35) Potential problems and opportunities.

36) Current problems.

37) Critically examining possible actions to address problems and opportunities.

38) Implementing solutions to problems and taking advantage of potential opportunities.

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QUALITY

39) Doing work with high quality (Doing it right the first time).

40) Accomplishing work within timeframes agreed to with others in the Division. (Doing what we say we will do, when we say we will do it.)

41) Taking charge of a project or task which fits with his/her talents and with Divisional goals.

42) Measuring customer satisfaction of team's products/services.

43) Working customer satisfaction issues jointly with the customer, demonstrating trust and open communication.

SETTING UP ACCOUNTABILITY SYSTEMS FOR CONTINUOUSLY IMPROVING TEAM'S QUALITY AND PRODUCTIVITY:

44) Regularly stating, both orally and in writing, expectations for quality and productivity.

45) Regularly measuring and communicating actual quality and productivity performance.

46) Rewarding individuals and teams for taking charge of projects or tasks which fit with their talents and Divisional goals.

47) Rewarding individuals and teams for accomplishing goals within the timeframes agreed to between them and others in the Division.

48) Planning and communicating actions to correct deviations from expected performance.

49) Following through on action plans to correct deviations from expected performance.

50) Demonstrating technical competence in his/her specialty area as needed for his/her job within the organization.

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QUALITY (CONT'D)

DEMONSTRATING TECHNICAL COMPETENCE OUTSIDE HER/HIS SPECIALTY AREA TO THE EXTENT NEEDED TO FUNCTION AS A TEAM MEMBER OF THE DIVISION:

51) Semiconductor manufacturing

52) Telecommunications

53) Northern Telecom's business

54) Northern Telecom's products

55) Other appropriate areas for this manager (please list on answer sheet and assign a rating)

<u>MANAGEMENT ASSESSMENT ANSWER SHEET</u>

NAME OF MANAGER YOU ARE DESCRIBING _____

I AM THIS MANAGER'S:

    ☐ DIRECT REPORT   ☐ PEER ☐ MANAGER

USE THE FOLLOWING SET OF GUIDELINES TO COMPLETE EACH ITEM.

1. NOT CHARACTERISTIC OF THE PERSON
2. VERY SLIGHTLY CHARACTERISTIC OF THE PERSON
3. SLIGHTLY CHARACTERISTIC OF THE PERSON
4. MODERATELY CHARACTERISTIC OF THE PERSON
5. VERY CHARACTERISTIC OF THE PERSON
6. EXTREMELY CHARACTERISTIC OF THE PERSON

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54. (1) (2) (3) (4) (5) (6)
55. List other areas on back.

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APPENDIX G

HRSD ORIENTATION AGENDA

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OBJECTIVES

*   To provide knowledge and promote understanding of NTE-RB's Human Resources Philosohy as outlined in the HRSD.

*   To provide an opportunity for employees from different departments to get to know each other.

*   To Create a spirit of teamwork throughout the division.

AGENDA

*   Background/History -- Need for change

*   Culture:
    - What is it?
    - Excellent companies culture;
      - Disneyland, Dana Videos
    - NTE-RB's Culture
    - Division issues from:
      - Employee Survey
      - Pala Mesa
      - OE Sensing
    - Changes as result of HRSD:
      - Policies
      - Task Teams
      - Assembly
      - Etc.

*   Values
    - Definition
    - Personal value sort
    - NTE-RB's values
    - Philosophy

*   Vision
    - Definition
    - Structural tension
    - NTE-RB's vision

*   Roadmap to Vision
    - Expectations of Employees

*   Teamwork Exercise/Towerbuilding

*   Summary/What's Next?

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APPENDIX H

SUMMARY OF INTERNAL INTERVIEWS

SUMMARY OF INTERVIEWS WITH TWELVE NTE-RB EMPLOYEES

As could be expected, employees had different perceptions of the organization both in 1984 and in 1988 depending upon the department they were in at the time. Employees who had changed departments or managers over the last four years often noticed larger changes due to a different manager or team than changes observed due to time differences.

Question 1

Below are summaries of responses given for each of the nine HRSD values.

Participative Management

Overall, employees interviewed felt that the value of participative management had become more of a reality in 1988 than it was in 1984. One employee, a manager, felt that participative management had gone from a "2" on a scale from "1" to "10" to an "11." He felt that the organization as a whole had gone too far and needed to learn when participation is appropriate and when it is not.
Several employees chose to break this value down into component parts according to the HRSD definition.

Communication was viewed differently by different employees. Of the eight employees who commented on communication specifically, five thought that the organization had improved over the four years, two felt there was no change, and one employee had experienced a decline in openness of communication in his environment (primarily, he believed due to his changing departments and managers). One employee stated that communication is now more positive, more two-way and occurs more often than in 1984. One employee stated that managers are now more open and friendly than before; that they ask for opinions more than before. Another person stated that people's ideas are getting more attention now than in 1984. One employee stated that the restructuring of the manufacturing department had helped both communication and teamwork. Two employees felt that communications had stayed pretty much the same over the four-year timeframe. One employee stated that employees have always communicated o.k. within a shift, but that from shift to shift communication has been and remains a problem. The other employee believes that communication was not and still is not bad, but that barriers have existed all along, just different barriers now than before.

Decision making at the appropriate level was seen as improved between 1984 and 1988 by all employees who specifically addressed this item (except for one who had seen a decline due,

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she felt, to her changing to a different department and manager).
One employee stated that her department holds weekly department
meetings and that a major outcome of such meetings is decisions
regarding the functioning of the department. Another employee
(an operator) saw SPC as a viable tool for enabling operators to
make decisions regarding product. Another employee (an engineer)
felt that managers made most decisions regarding the process in
1984, and often decisions were made by Ottawa. He sees a major
improvement over the four years. Another employee (a technician)
stated that in 1984 operators weren't allowed to do equipment
set-ups, but in 1988 they do.

Of the six employees who commented on awareness of division
values and goals, five felt that there had been an improvement
between 1984 and 1988. One employee felt that some employees
understand the organization's goals and values and some do not.
Another employee felt that most people have a clear understanding
of goals and values. One employee stated that his manager
communicates company goals quite well but that he feels that this
information would be better to come from the General Manager.
The sixth employee who commented on awareness of division values
and goals stated that he was still not clear on the division
goals.

Of the ten employees who commented specifically on teamwork,
four felt that there had been improvement over the four year
period while six felt that there had been little change. One of
the four employees who felt there had been positive change in
teamwork had observed an improvement both in her own department,
a support function, and in the manufacturing unit which she
served. One employee in manufacturing stated that both
communication and teamwork were improved due to the restructuring
of the manufacturing department. Another employee, from a
support group, felt that while teamwork was pretty good, it was
due to the particular individuals who made up the group and the
fact that they naturally liked each other. One employee felt
that the SPC teams were a big benefit to manufacturing,
especially in the shift from a quantity focus to a quality focus.
Five of the six employees who felt that teamwork had changed
little were from the manufacturing department. One person, a
manager, stated that the organization does not know how to create
and manage teamwork. He believed that the organization is
"running around in circle" with respect to teamwork. Another
employee, also a manager, concurred with the idea that people do
not have the skills to work together as a team. He believe that
the organization talks a lot about teamwork but had done little.
Another employee felt that employees who do not believe in
teamwork should be managed out of the organization
but that to date this is not done.

INTEGRITY

Five of the twelve interviewees felt that the organization's

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integrity had improved over the four year period, five felt there had been little or no change because the organization's integrity had always been high, and two people felt that integrity had not changed significantly and that improvement is needed. The two people who felt that improvement is needed spoke specifically about the need to treat all employees fairly. The other ten employees rated the organization very highly on integrity, either as a change for the better or as a value that has always existed.

COMMITMENT TO QUALITY

Most employees interviewed believed that the organization's commitment to quality had changed significantly in a positive direction. Ten of the twelve interviewees stated that an improvement had occurred, while one employee stated that quality had always been highly valued and one employee stated that he did not know whether or not commitment to quality had changed (probably due to his changing departments during the four year period). Several employees believed that this value had changed dramatically for the better over the four years. Four employees commented on quality being built in rather than inspected in, three employees referring directly to the changing structure of eliminating the quality control function. One person stated that the struggle between quantity and quality will always exist but that the organization does emphasize quality now. Another interviewee stated that the organization had gone from emphasizing quantity to emphasizing quality over the four year period. One person stated that the organization had always valued quality but that more people now believe in quality and work to ensure quality product. One employee believed that quality is emphasized in the manufacturing department but not so much in the support functions. One employee from a support function stated that a change had definitely occurred in her department in that quality is highly stressed today. She credits her managers with creating and introducing into the department new work methods allowing the employees more time to ensure quality of work.

INNOVATION

Ten of the twelve employees interviewed believed that there had been a positive change in the value of innovation between 1984 and 1988. One employee felt that there had been no significant change because innovation was encouraged in 1984 as well as in 1988 (this is an employee who changed departments during the four year period). One employee felt that there had been no major change and did not comment on her feelings regarding innovation in 1984 compared to 1988. Two of the employees who felt there had been positive change in innovation stated that innovation had been on the rise since 1984 but that recently there has been a downward trend again. These employees felt that senior management specifically had encouraged innovation more in 1985 through 1987 than now. (Both these

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employees are engineers and were speaking of innovation regarding
new products). One employee believes that the fact that R.B. has
a design group now is evidence in the belief in innovation. He
stated that Ottawa was previously looked to for innovation and
R.B. was seen only as a manufacturing plant. One employee felt
that certain areas of the division show an increase in innovation
while other areas do not. One operator stated that employee ideas
and suggestions are listened to now and often implemented;
before, new ideas were not taken seriously. One employee from a
support function gave a specific example of a new procedure that
was tried and did not work and the old procedure was
reinstituted. She stated that management supported this attempt
at change, which she saw as a positive change from the past.

DEVELOPMENT AND GROWTH OF INDIVIDUALS
        Eleven of the twelve people interviewed felt that
development and growth of individuals had generally changed for
the better
in the four year period discussed. The one person who saw no
change felt that this value was always demonstrated by the
organization. In general, employees were extremely positive
about training and development and internal opportunities and
promotions available to them. One employee stated that this is
the best company she has been with relative to development.
Another employee stated that she has not heard of other companies
doing as much employee development as NTE-RB. Another employee
stated that this is the best company around regarding training
and development. Some of these employees felt that training and
development had always been good but that even more opportunities
are available now compared to 1984. One employee, a manager,
felt that the company now provides more training opportunities
but that management does not balance short term and long term
goals well enough to take advantage of training opportunities;
i.e., employees are not always allowed time away from the job to
participate in training. One employee felt that while training
opportunities have increased, internal promotions are still
limited. Another employee stated that promotional opportunities
may necessarily be limited due to the small size of the company.
One employee believed that challenging objectives are limited due
to technical trainers in the production areas being overloaded
and not able to provide crosstraining to operators. This
employee also felt that job satisfaction had improved for some
employees while not improving for others. She attributed this
lack of change to no change in the equal treatment of
individuals. Another employee concurred that job satisfaction is
better for some employees and not better for other employees,
depending on the work area one is in. One employee pointed out
that while employee development has improved, implementation of
the craftsperson concept has been slow in coming. One employee
commented that the company has improved in its recognition of the
whole person--that the company pays attention to employee
families. Most employees who commented on "fun" state that they
believed there is more fun at work now than in the past, though

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one employee felt that there has been no change.

RECOGNITION OF ACHIEVEMENT

Five of the twelve interviewees felt that recognition had improved since 1984, six people believed there had been little or no change, and one person felt there is less recognition now than in 1984 (this person attributed the decline to the department he now works in). One employee who felt that recognition has improved since 1984 stated that recognition is more public now. An example is production workers (test area) receiving perfect attendance and training certificates at shift meetings. She also felt that teamwork is being recognized throughout manufacturing. Another employee (an engineer) who felt that this value had probably improved for most others but not for himself personally (because of a good manager in 1984) believes that the grading system on performance reviews is unfair and is applied only once a year when recognition should be given with each project. One employee (a manager) felt that there has been improvement by senior management--from a "2" on a scale from "1" to "10" to a "5" today. He believes that the division as a whole stands at a "7" or "8" now. One employee stated that the amount of recognition is dependent upon one's manager. While one employee felt there had been some improvement he felt there had been the least improvement in this value of the nine values.

One employee who felt there had not been much change in this value between 1984 and 1988 stated that operators who are topped out (on the salary scale) are often the ones who do less work; he feels this is unfair. He also stated that he believes implementation of the craftsmanship program would help recognition of achievement. Another employee stated that there has been a lot of talk about changing the rewards system, but he hasn't seen any changes yet. One interviewee believes that people are recognition with words but not monetarily and feels that this represents no change from the past. One person felt that the amount of recognition received for good work was dependent upon one's manager in 1984 and remains the same today. One person felt there was no change over the four years because the company was good at recognizing achievement in 1984 and remains so in 1988.

RESULTS ORIENTATION

Eight of the twelve interviewees stated that the organization has improved in the value of results orientation over the last four years, three employees have seen no real change, and one believes there has been a decline in results orientation (though he attributes the decline to his changing department during this timeframe). One employee stated that results orientation is a very high value in her department (a support function); both quality and results orientation are highly valued). She also believes that results orientation is

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valued highly in the manufacturing. One employee who felt there has been improvement stated that the organization now plans for potential problems <u>before</u> they occur. Another employee stated that the division now has better relationship with customers because they meet their commitments. She felt that the organization always tried to meet commitments but did not have the systems in place until more recently. One employee stated that there has been improvement in results orientation due to the involvement of more employees. One employee stated that the test department (he is an operator in the test department) has shown much improvement in this value. One employee stated that the manufacturing group is very results oriented but that he does not believe that support groups are.

Of the three interviewees who have not seen much change in this value, one person felt that this value has always been important while two people felt that this was not a very important value in 1984 and still is not today. One of the people who felt that results orientation has not been highly valued stated that there is more talk about it today than in 1984 but no real change. The other person felt that employees who are not team players stand in the way of results and that these employees should be managed out of the organization.

CUSTOMER ORIENTATION

Eleven of the twelve interviewees stated that the value of customer orientation had improved between 1984 and 1988 while one person felt there had been no change. At least three employees mentioned that this value had changed significantly over the last four years due primarily to the emphasis on an internal customer as well as an external customer. One employee stated that one of the strengths of the manufacturing restructuring was the focus on the next department or unit as the customer. Another employee stated that in 1984 there was a "crazy get it out philosophy," now the organization pays attention to the customer needs. One employee stated that the organization is much more aware of the customer's needs now and works to satisfy those needs (the SPC and electrostatic discharge programs were given as examples of requests made by external customers that the division has implemented). One employee (a manager) stated that the division has come a long way on this value but still has a long way to go. He expressed that the organization was at "0" on a scale from "1" to "10" in 1984 and that the organization is at a "6" throughout any given shift, but that between shifts the organization is at a "3" or "4" in recognizing each other as customers.

RESPONSIBILITY TO THE COMMUNITY

Nine of the twelve interviewees stated that this value has improved over the last four years while three employees believed that there had been no significant change, stating that the division has always had a strong commitment to the community. At

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least three employees who summarized their responses by stating that they believe there is probably improvement in this value stated that the division has always been community minded but that activities are more publicized now than in 1984 (and that there could also be more actual activity now than before). Employees gave several examples of community involvement and commitment to a safe working environment: adopt a school program, improved safety and health programs, college co-op program, more support for United Way, toys for tots with the USMC at Christmas time, community sporting events. One employee stated that the company is willing to lose production for the sake of the community. This same employee stated that in 1984 the division was at a "1" or "2" on a scale from "1" to "10" and now is at a "9."

INTERVIEWEES' SUMMARY COMMENTS REGARDING CHANGE IN HRSD VALUES

Seven of the twelve interviewees made summarizing statements regarding the extent to which change has occurred in the nine HRSD values between 1984 and 1988. All seven stated that overall there has been positive change in the HRSD values. One employee stated that the division has improved on approximately half of the values and not changed much on half. Another employee stated that these values were followed at a 10-15% level in 1984 and at a 90% level in 1988. Another employee stated that the division has "come a long way but has a long way to go." Two of the seven interviewees indicated that while the change has been "slight" or "not huge," improvement has been made.

OVERALL SUMMARY OF QUESTION 1

Of the 108 possible answers given (9 values X 12 interviewees), there were 82 "improved" responses, 23 "little or no change" responses, 2 "declined" responses, and 1 "Don't Know" response. Of the 23 "little or no change" responses, ten responses included a statement noting that particular value had always been a strength of the organization. Five interviewees responded in the "improved" category on all nine values; one interviewee responded seven times in the "improved" category and twice in the "little or no change category"; three interviewees responded six times each in the "improved" category and three times in the "little or no change" category; one interviewee responded five times in the "improved" category and four times in the "little or no change category"; one interviewee responded four times in the "improved" category and five times in the "little or no change" category; and one employee responded three times in the "improved" category, three times in the "little or no change" category, twice in the "declined" category, and once in the "don't know" category. This last employee stated at the end of the interview that he believes there has been quite a bit of positive change overall in the organizational culture, but that he has moved from a manager who was really good to one that

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is just o.k.

Based on both the qualitative and the quantitative summaries presented above, it is this researchers opinion that this sample of NTE-RB employees generally feel that there has been a positive change in organizational behaviors which are reflective of HRSD values between 1984 and 1988. In other words, culture as measured by HRSD values has changed in a positive direction over the four year timeframe. Specifically, there is strong agreement that positive change has occurred in the values of "Participative Management," "Commitment to Quality," "Innovation," "Development and Growth of Individuals," and "Customer Orientation." The values of "Results Orientation" and "Responsibility to the Community" are also seen as changing in a positive direction over the four years by most interviewees. The values of "Integrity" and "Recognition of Achievement" are each seen a improving by less than half of the interviewees. "Integrity" is seen as changing to a lesser degree than other values due to the belief that the company has always held this value in high regard; "Recognition of Achievement", however, is seen as a value that has not been substantially practiced by the organization either in 1984 or in 1988.

Question 2

Below is a summary of the tallies of responses given by the twelve interviewees regarding their degree of agreement with the Employee Survey Trend Analysis. The responses are organized under each topic according to the five categories used in the survey summary.

TOPICS	++	+	_	_ _	*
MANAGEMENT					
Openness of Managers	8	3	0	0	1
Managerial Communication	8	3	0	0	1
Mgrs. Handling Suggestions	6	3	1	0	2
Managerial Leadership	5	5	2	0	0
Mgr. Relationship w/ Subs.	8	3	0	0	1
Managerial Planning	9	3	0	0	0
Managerial Delegating	8	4	0	0	0
Managerial Decision Making	7	4	0	0	1
Mgr. Development of Subs.	0	7	0	0	5
TOTAL	59	35	3	0	11
COMMUNICATION					
Upward Communication	1	9	0	0	2
Downward Communication	11	1	0	0	0
Interdepartmental Comm.	1	5	0	0	6
Openness of Communication	0	4	1	0	7

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TOTAL	13	19	1	0	15
ADVANCEMENT CRITERIA					
Training and Development	9	2	1	0	0
Advancement Criteria	0	3	2	4	3
TOTAL	9	5	3	4	3
WORK ITSELF					
Workload	8	1	0	0	3
Task Structure	0	4	0	0	8
Interest in the Job	0	3	1	0	8
Sense of Accomplishment	0	4	0	0	8
TOTAL	8	12	1	0	27
WORKING CONDITIONS					
Departmental Climate	0	7	2	0	3
Overall Climate	1	8	1	0	1
Part. in Decision Making	1	9	1	0	1
Job Security	0	4	0	1	6
Physical Environment	0	9	1	0	2
TOTAL	2	37	5	1	13
RECOGNITION					
Pay	0	6	1	0	5
Praise	0	3	0	0	8
TOTAL	0	9	1	0	13
PERFORMANCE REVIEWS					
Performance Reviews	0	3	1	0	8
TOTAL	0	3	1	0	8
TURNOVER					
Turnover	0	1	1	0	10
TOTAL	0	1	1	0	10
GRAND TOTAL	91	121	16	5	100

Below is a summary of responses from the twelve interviewees organized under each major topic of the Employee Survey Trend Analysis. Included in the summary are conclusions from the quantitative data above as well as significant qualitative statements made by interviewees.

MANAGEMENT

It seems clear that most employees interviewed felt that there has been a change in way managers manage since 1984. One

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employee stated that managerial leadership has stayed the same for the TUMs but has improved at the BUM level. Another employee stated that leadership has improved significantly due to better managers. Another employee who felt that leadership has declined stated that the creation of TUMs was a bad idea. One employee stated that the reorganization helped improve managerial delegating. Regarding development of subordinates one employee stated that this has never been a problem, but that development is encouraged more now than before.

COMMUNICATION

     While this topic was not seen as changing as clearly as the "Management" topic, interviewees still responded in a more than a two to one ratio that there has been a positive change in communication versus no change. Regarding upward communication, one employee stated that employees are more assertive now in their communication with managers. The same employee felt that openness of communication has not changed because it has always been good. Regarding downward communication, he felt that management still serves as a large filter. Another employee stated that downward communication has improved significantly across the division, but not in her own department. One employee saw major improvement in interdepartmental communication because of monthly manufacturing meetings and because of regular meetings for technicians from different areas. One employee noted that it is now o.k. to disagree with your manager; therefore, openness of communication has improved.

ADVANCEMENT
     The two subtopics under this topic were viewed quite differently from one another by interviewees. "Training and Development" was seen as improving by a large margin while advancement criteria was seen as declining by a two to one ratio. One employee stated that training and development has improved even though it has always been good. Other employees corroborated this view. One employee believed that while development for one's career has improved skills training for operators has declined because of a lack of consistency across shifts. Most interviewees who agreed with the decline in advancement criteria did not make other comments; however, one person who felt that there has been an improvement in this subtopic stated that the criteria are now clear for advancement, unlike in the past. Another employee stated that while this subtopic has improved, she would like to see posting of NT jobs outside the R.B. division.

WORK ITSELF
     Consistent with the survey data, there were more employees who felt that work itself had not changed over the four years than there were who saw a positive change. However, also in agreement with the survey data, most interviewees saw the workload as improving during this four year span. One person stated that the workload is significantly better now because the

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workflow is more even now than before. Another employee stated that the workload is now more appropriate; that the workload used to be too light. Another person felt that the appropriateness of workload depended on which department one works in. Regarding "Interest in the Job," one employee felt that this topic had improved for him personally, but that most people hold the same amount of interest in their job today than in 1984.

WORKING CONDITIONS
     Interviewees generally felt that working conditions have improved between 1984 and 1988. One of the most mentioned subtopics of the survey was "Job Security." Most interviewees were surprised that this subtopic declined according to the survey. They saw job security as either staying the same or improving over the four years. One employee noted that job security has improved, especially in 1988. One employee stated that the physical environment has improved due to reduction in noise level, but that there is still a problem with the temperature in the work area. Another employee who felt that overall there has been no change in the physical environment stated that safety has improved.

RECOGNITION
     Under this topic, there were more interviewees who stated that there had been no change than those who stated there had been improvement (13 to 9). However, there was more of a split in the opinions of interviewees regarding pay than there was regarding praise. There were as many employees who felt there was an improvement in pay as there were who felt there was no change. However, a preponderance of interviewees felt that there has been no change in the amount of praise given for good work done. One employee stated that the amount of praise one gets depends on who one's manager is. Another employee felt that there has been no change because praise has always been o.k. except that more praise for work well done should come from senior management. Another employee stated that there has been no change in the "praise" subtopic because the level of praise has always been good.

PERFORMANCE REVIEWS
     There were more employees who felt that there has been no change in the topic of "Performance Reviews" than those that felt there has been an improvement in the management of performance reviews since 1984. One employee stated that she felt that there has been no change because performance reviews have always been well managed. Another employee felt that the management of performance reviews is improving. One person stated that there has been improvement since she is reviewed more often now than before. One employee stated that there has been improvement due to the more direct correlation between what he does and how he is rated on reviews.

TURNOVER
     Again, there were more employees who felt that there has

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been no change in this topic than employees who felt there has been an improvement. Most employees did not have much feeling regarding this topic. They appeared to believe that turnover is not and has not been a problem and that employees are generally very happy with the company. No significant comments were recorded regarding this topic.

OVERALL SUMMARY OF QUESTION 2

Of the 333 responses given, 212 or approximately two-thirds of the responses were positive (either a + or a ++). This is interpreted that respondents felt that, overall, there has been a positive change in organizational climate as measured by these factors over the four year period, 1984-1988. Specifically, respondents perceive a positive change in the important areas of the way managers manage and in overall working conditions. A strong majority perceive improvements in both upward and downward communication, in training and development and in workload. Interdepartmental communication and pay are seen as improving by half of the respondents. Respondents perceive little or no change in openness of communication, advancement criteria, work itself (except workload), praise, performance reviews, or turnover (meaning desire to leave).

Question 3

Below are the highlights of the responses given by the twelve interviewees to Question 3.

Employee 1: Initially, stated that she was not really sure why productivity improved (she questioned the accuracy of the data, stating that in the past charts showed more of an improvement than she had personally observed. When asked directly whether some of the efforts to change culture has contributed to the improvement she stated that she believes that such efforts played a big part in positive productivity trends and that when people feel better about their jobs they will do a better job. She stated that efforts such as work done by manufacturing on reducing contamination has also made an impact. She stated that on-going efforts in manufacturing to find and correct problems has probably made a bigger difference than operators being really happy. She stated that overall she is sure that the company is concerned and trying to change things for the better.

Employee 2: This interviewee stated that in 1984 the company did not have an error prevention program. She mentioned that new machines are making error prevention possible (better). She also credited contamination control and the use of electrostatic discharge control in the test and assembly areas for improved productivity. When asked whether culture change efforts have made a difference, she stated that she believed they have and added that classes such as BICM (Basic Integrated Circuit

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Manufacturing) have helped a lot by educating employees on the whole manufacturing process.

Employee 3: This interviewee stated that there has been no change in the slope of the yield and cycle time charts since the culture change efforts have been made--this would be in mid-1986, in his opinion--and therefore improvements cannot be attributed to culture change efforts. He believes that the organization has not yet realized gains from the culture change effort. If it had, a steeper slope would be seen on the graphs after mid-1986. He attributes the improvements to the necessity of staying competitive; he believes the organization must continuously improve to survive. In summary comments, this employee stated that not completing the implementation of the manufacturing re-organization (the original recommendations of the task team) may be a reason for the lack of positive results.

Employee 4: This interviewee stated that yield improvements are due to the time the company has been producing the same designs and the efforts of sustaining engineers. He also believes that more work goes into assuring quality than before. He stated that in 1983 and 1984 the organization brought in a lot of new employees and were very involved in training the new employees (which would have decreased productivity). He believes that the quality numbers have improved due to work to reduce contamination such as upgraded bunny suits, use of vacuum technology, and improved quality control. When asked about the relationship between culture change efforts and productivity improvements he stated that he believes that the change in culture did contribute to improved numbers on the charts. He stated that "if I am in a good working environment, I do my best." He stated that the culture change efforts had changed management a lot. He believes that it is possible to see changes in productivity one year after starting work on the HRSD (1986) and that those changes are reflected in the charts.

Employee 5: This interviewee believes that the yield improvements are due to engineering changes and that cycle time improvements are due to the decision to stop retesting the product so much. She did not know why the quality numbers had improved. When asked about the impact of the culture change efforts, she stated that many things have been done over the last four years to try improve the work environment and that she believes that these efforts could have impacted productivity a lot. She believes that a change in attitudes could change productivity.

Employee 6: The first cause this interviewee gave for improved productivity is the high competition in the industry. She stated that "if you don't improve, you're dead; without quality and productivity improvements, you won't survive." She stated that the organization has done everything possible to improve. The direct factors she believes are people's pride in their work and the fact that managers help employees to understand their jobs

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through training and guide them and encourage them with praise and rewards. She stated that managers should be complimented for the positive changes they have made. She believes management has zeroed in on problems and gotten rid of them. She stated that systems changes has a lot to do with the positive changes. By systems changes she said she meant "the way we do our business-- the way we deal with problems and with people." She then said that the way the organization manages people and equipment are both important. She stated that a lot more preventative maintenance is now done with equipment than before. She summarized by saying that the productivity changes have a lot to do with the change in culture. The message from management she stated is that they do care about people, that it's o.k. to make mistakes, and that they will provide training to give the employees skills, and that "we will all work together to make the division a success."

Employee 7: Before question 3 was asked, this interviewee had stated (while discussing the value "commitment to quality") that the yield improvements made over the years had come not just from process changes but also from attitude changes throughout the division. In answering this question, he stated that the yield improvements reflect steady improvements in the process and the fact that their has been continuity in the employee population in recent years. This means, he said, that people are learning to do their jobs properly; they are less likely to make mistakes. The cycle time trends may reflect people's working together better and a change in management practices (the Just In Time system being an example. Process changes he feels are only a small part of cycle time improvements. He stated that he does not really understand changes in quality levels but suggested that the large improvements seen in 1985 and 1986 may be a result of slowing down from the previously frantic pace. After the researcher reviewed the major steps of the culture change effort relative to the timeline of the productivity charts, the interviewee stated that improvements do in fact seem to correspond with the settling down period following the fast ramp up in population (1983 and 1984).

Employee 8: This interviewee stated that improved productivity came from employees getting used to the processes that are being run (in manufacturing); that people were learning from their mistakes. She felt that productivity had been lower before 1985 due to so many operators being hired at once (during 1983-84). At that time operators were receiving poor training. The improved quality 1985-86 was a result of people getting better training, learning their jobs, etc. When asked what impact the culture change efforts had on productivity, the interviewee stated "not that much--maybe 25%." She said it probably depended on the person (how much an impact the culture change efforts impacted productivity). She feels that people are generally comfortable with no change. Any major change can cause a decrease in productivity.

Employee 9: This employee stated that treating people more like people; treating them more professionally was a major factor in productivity improvement. An example of this better treatment is giving all employees sick leave as they need it. Another factor in improved productivity is improvements in the processes; employees gaining more experience over the years.

Employee 10: This interviewee stated that yields improved mostly as a result of better testing (to improve final test and probe yields) and because of building quality into the product in the Fab area. He mentioned better maintenance and adherence to specs and the use of SPC as specific improvements in Fab. In regards to improvements in cycle time this employee cited the installation of systems in Fab such as the pull (JIT) system as a major contributor. The concept of internal and external customer focus helped a lot he felt. Also, the expansion of the Test area helped. The most dramatic change of all, the improvements in AOQ, was due, he believes, to people involvement ("everybody got involved--including people on the floor", mostly in the test area). Management responded to all input. When asked the impact that the culture change efforts had on productivity improvements, this employee stated that 80% of the improvements in AOQ were due to the culture change. When asked if he felt that was possible given the timeline of the change efforts (the interviewer reviewed the timeline), he stated that he did believe it was possible. He stated that he believed that the yield improvements were due to experience with the product. The cycle time improvements he felt were due to the culture change. He felt that the re-organization impacted Fab cycle times a lot.

Employee 11: This interviewee stated that the input of employees in making changes and the consciousness of quality for the customer have been major factors in improvements. Also, new equipment and the improvements in upkeep of the facilities have contributed. He stated that employees take more pride in their work today than in 1984. There are enough people now to handle all the different codes (products) due to giving technicians as well as engineers
codes to manage. Another help has been the more effective organizing of the engineers (i.e., dividing the analog and digital engineers). He stated that in 1984 change was very hard to accept. Now, change is a way of life. Because of the changes the organization has been through, "we're now more able to adapt to change--without as much resistance." When asked how much the culture change efforts have impacted productivity, this employee stated that they were definitely an impact; he saw them as "greatly significant." All the change effort events have combined together, he feels, to create a positive change in productivity. He specifically mentioned the importance of improved communication. This employee stated that the real importance of the culture change may have been on the organization's ability to perform well while manufacturing lots of codes; he said "we would expect to improve with just one or two codes, but we've been able to improve while bringing in

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several new codes."

Employee 12: This interviewee stated that SPC has helped productivity a lot. Another factor in improved productivity has been getting the operators involved. He feels that reducing the cycle time has improved the quality levels. Lowering the inventory levels across the system (creating an even workflow) has been a major factor in improving productivity. When asked how much he felt that the culture change efforts have impacted productivity, this employee stated that the change efforts have definitely had an impact. He state that he (as an operator) understands more now. He again stated that SPC has really helped--in 1987 and 1988. He feels that improvements in quality in 1986 were a result of stopping so much retesting. He stated that the re-organization had helped a lot; that teamwork is much better as a result of the re-organization.

OVERALL SUMMARY OF QUESTION 3

Interviewees were first asked what factors caused the productivity changes. If culture change was not mentioned, they were asked what impact, if any, did the culture change efforts have on productivity. Of the twelve interviewees, four initially mentioned factors directly related to culture (e.g., attitude changes, systems changes); two initially mentioned manufacturing efforts to improve, which can be interpreted as being as result of emphasis on the HRSD values. Four interviewees broke productivity down into the component parts of yield, cycle time, and quality. All four of these interviewees attributed learning or maturity as the major factor for yield improvements. Cycle time improvements were seen as caused by factors directly related to culture by three interviewees (the fourth did not include cycle time in his/her analysis). Quality improvements were seen as caused by factors directly related to culture change by two of the four interviewees; one person attributed the improvement to learning or maturity (the fourth interviewee did not include quality in his/her analysis). One interviewee credited learning or maturity for productivity improvement, in general. One interviewee stated that the necessity of staying competitive to survive was the cause of productivity improvements. (This could be interpreted as meaning continuously working harder is the major factor in improved productivity). In summary, the initial responses of the twelve interviewees included six respondents attributing productivity improvement to culture change, either directly or indirectly; five respondents attributing productivity improvement to organizational learning or maturity either singularly or in combination with culture change (three of these five respondents saw culture change as the major factor in improved cycle time and two of the five saw culture as the major factor in improved quality); and one respondent attributing productivity improvement to working harder.

When asked directly what impact the culture change efforts had on productivity improvements, nine of the twelve respondents stated that culture change was a major factor in productivity

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improvement; one respondent stated that culture change was 25% responsible for productivity improvement; and two respondents believed that culture change was not a major factor in productivity improvement (one of these two felt that organizational learning or maturity was the overall factor responsible for improvements while the second felt that hard work was the overall factor responsible).

In summary, it is the opinion of this researcher that culture change is viewed as a major factor in productivity improvements seen since 1985 and that organizational learning or maturity is viewed as another major factor in improved productivity. In conclusion, it can be stated that, overall, respondents believe that culture change and organizational learning in combination were primarily responsible for the improved productivity experienced by the NTE-RB division since 1985.

Question 4

Below are highlights of responses given by the twelve interviewees to Question 4.

Employee 1: This interviewee stated that she feels that as far as job satisfaction she has seen both extremes; some people are really happy with their jobs and others are not at all. The ones that are not satisfied she feels are not because they have not found the right opportunities for them, but that the potential is there for all employees to find their place within the organization. When asked what factors have contributed to improved job satisfaction (according to the survey and her own observations of some people) this employee stated that the company has stressed that every job is important. This hasn't changed, she believes, over the last four years but that the organization has expressed its interest more openly than before.

Employee 2: This interviewee stated that she felt that job satisfaction has improved for employees across the division. She stated that a major factor has been the fact that there have been no lay-offs. Other reasons mentioned are the company's educational assistance program and the fact that the managers have improved--in some areas.

Employee 3: This employee stated that job satisfaction is 60-70% favorable now compared to 20-25% in 1984. He sees a major contributing factor being the attitude of managers--they talk more with their employees now. When asked about the impact of the culture change efforts on job satisfaction, he stated that he believes that these have contributed positively to overall job satisfaction.

Employee 4: This interviewee stated that he felt that overall

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job satisfaction has improved between 1984 and 1988. He stated that job satisfaction is very important for him--why he likes NT and stays here. He stated that the culture change efforts have made a significant impact on job satisfaction. He believes that the biggest benefit of the HRSD work has been improved teamwork.

Employee 5: When asked her opinion regarding changes in job satisfaction over the last four years, this interviewee stated that for her personally job satisfaction has improved. She felt that job satisfaction has improved for approximately 50% of the employees and has not improved for the other 50%. She stated that she feels that the improvement in job satisfaction is due to the interest taken in people. She felt that the culture work done in the division has changed the level of job satisfaction.

Employee 6: This interviewee stated that she feels that job satisfaction has improved over the last four years. She believes that a lot of people are very happy today compared to 1984. She stated that the reasons for the improved job satisfaction are several. She cited management's attitude toward employees and the emphasis on development of employees as two major factors.

Employee 7: This employee did not feel that job satisfaction has changed much. He stated that job satisfaction has always been good and still is for himself and for most others (although some people still complain). When asked why he believed that most employees felt there had been an improvement in job satisfaction (between 1985 and 1987), he stated that he really does not know.

Employee 8: This interviewee stated that she feels that overall job satisfaction has stayed the same. When asked why she feel that most employees felt that job satisfaction had improved between 1985 and 1987 she stated that the length of time they had been here and their feeling of security about their job and the company are major factors. Contributing factors to this security are no lay-offs during hard times and the improved efforts in employee development. When asked to what extent does she believe the culture change efforts have influenced the positive ratings in job satisfaction, she stated about 35%.

Employee 9: This interviewee stated that he believes that employee job satisfaction has improved since 1984. He feels that major factors contributing to this improvement include the fact that managers are more "seasoned" now, that the organization is not hiring new employees so rapidly now, that people are treated better now, that procedures such as sick leave have changed for the better, and people feel more secure about their jobs now.

Employee 10: This employee stated that he believes that job satisfaction has improved over the last four years. He feels that the re-organization was a major impact on job satisfaction. Other major factors include the fact that employees feel they can be innovative, that they can have a voice in the business, and the fact that communication from above is more open and honest.

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Employee 11: This interviewee stated that employee job satisfaction is definitely better now than in 1984. He feels that overall, people are taking more pride in their work now than before. Reasons given for the improved job satisfaction include improved communication, better training so that people feel more competent, employee's being in charge of their own quality, more involvement (such as attendance at meetings), and reduced turnover so that employees feel more secure.

Employee 12: This interviewee stated that he believes that job satisfaction has improved a little bit and that it had improved for him. He stated that overall job satisfaction had improved due to employees feeling more of a sense of accomplishment, the fact that their jobs are getting easier to do, that there is better equipment, and that the physical environment is better. He stated that implementation of the craftsmanship program will help (so that employees are paid for their skills). He feels that the training program for operators is not adequate currently.

OVERALL SUMMARY OF QUESTION 4

Interviewees were first asked their view of overall employee job satisfaction: how has it changed between 1984 and 1988? Of the twelve respondents, eight stated that they felt there had been an improvement; two stated that job satisfaction had improved for some and not for others; and two stated that there had essentially been no change (one stated that job satisfaction had always been high). Overall, these responses can be interpreted as most respondents felt that there had been a positive change in job satisfaction over the four years. This is in agreement with the findings of the employee survey for the April, 1985 to November, 1987 timeframe.

Secondly, interviewees were asked their opinions as to why job satisfaction has improved. (In the case of the four interviewees who said there was partial or no change, they were asked to offer an opinion on what factors led to an overall improvement on the job satisfaction rating on the employee survey.) Ten interviewees stated (without specifically being questioned regarding the impact of culture change) that culture change or factors that can be interpreted as components of culture change were responsible for improved job satisfaction. These components include improved management attitudes, more interest in people, re-organization, no lay-offs, employee development, stronger voice in the business, opportunity to be innovative, improved communication, employee involvement in quality, and the company stressing the importance of every job. One interviewee stated that he does not know why job satisfaction improved (this is one of the interviewees who felt there had been little or no change). One other interviewee did not give a response regarding cause of improved job satisfaction before being asked what impact culture change has had on improved job satisfaction. This interviewee responded that culture change has

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had a significant impact.

In summary, it can be stated that most interviewees felt that culture change has been the primary factor in job satisfaction improvements seen between 1984 and 1988.

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APPENDIX I

LETTER CORROBORATING INTERVIEW

SUMMARIZATION PROCESS

December 2, 1988

SAN DIEGO CONSULTING GROUP

ORGANIZATIONAL AND EXECUTIVE DEVELOPMENT

Mr. Terry Dearstone
Manager, Training & Development
Northern Telecom Electronics
16350 W. Bernardo Drive
San Diego, CA 92127

Dear Terry:

After reviewing the tapes of the interviews that you conducted with members of your organization and the summaries of those interviews, I am convinced that you have summarized the interviews with a high degree of accuracy. I was particularly impressed with the detail in the descriptions of the interviews - you were very thorough.

While I am not familiar with Northern Telecom or it's employees', I am reasonably certain that my descriptions/summaries of these interviews would have been consistent with yours had it been necessary for me to provide you with such a written analysis. Given the level of detail you provide and the amount of information yielded from these interviews, I am sure there would be some inconsistencies. However, my overall impression is that what I heard on the tapes and what I read in the written analysis was congruent.

It's evident that a lot of time and effort went into these descriptions. I reviewed four of the twelve interviews and spent a tremendous amount of time - I can only imagine the kind of time that you have devoted to this project-good job.

One final note, I was also impressed with your ability to probe and wait for the interviewees' to answer the questions during times of silence. As a researcher you are required to exercise a certain amount of restraint during the interviewing process - I think you did this quite well.

If I can provide you with any further assistance please let me know.

Sincerely,

Kevin L. Freiberg

KLF:weg

3111 Camino Del Rio North, Suite 1130
San Diego, CA 92108
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APPENDIX J

SUMMARY OF EXTERNAL INTERVIEWS

SUMMARY OF INTERVIEWS WITH CUSTOMER REPRESENTATIVES·
AND CORPORATE OFFICERS

Three representatives of customer organizations and two NTE corporate officers were interviewed. Two of the customer representatives were from the RTP (Research Triangle Park), North Carolina division of Northern Telecom and the third representative was from the Santa Clara, California division. Both corporate officers are located in Ottawa, Ontario, Canada.

Question 1

To the extent they felt qualified to judge the data, all three customer representatives agreed with the data presented. One of the corporate officers felt strongly that the culture had changed at R.B. over the four year period, while the second officer did not feel qualified to evaluate the extent of culture change. This person questioned the lack of change in "Development of Subordinates" and "Openness of Communication" given the improvements on other factors. The four interviewees who gave favorable responses regarding culture change at NTE-RB made the following comments:

"The R.B.organization definitely believes in integrity."
"There is no question about R.B.'s integrity."
"Communications coming from R.B. are always open."
"The organization is definitely more innovative now than before."
"Customer relations are good."
"Our perception is that R.B. must be doing these HRSD values because R.B. is the only vendor that truly treats us like a customer. We can reach our goals of quality, productivity, and constant product improvement because R.B. works well with us. R.B. people always come right out onto the floor and talk with our employees--they work on improvements.... R.B. has a really good reputation here."
"R.B. management has improved vastly.... I have seen observable changes."
"Communications is very different now.... The language is even different.... R.B. people go out of their way to communicate."
"I don't accept the data that says 'no significant improvement'in interdepartmental communication. I have seen cross-departmental meetings working to solve problems.
"I'm not convinced that R.B. is yet a tasked organization--it is not doing all it can. It is an untapped resource."

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Question 2

All three customer representatives agreed with the opinions expressed by internal NTE-RB employees regarding the reason for improvements on the productivity charts. Comments included:

"I would agree. You're making the people feel wanted."
"I totally agree. To me, its the leadership that counts for getting improvements. I would think the culture change has allowed organizational leadership to occur."

Of the two corporate officers, one agreed with the opinions expressed by the internal employees. He emphasized the importance of including organizational learning with culture change as the responsible factors in productivity improvement. Other comments from this officer included:

"The most impressive chart is the AOQ chart. As a volume house, one would expect yield improvements.... Without the culture work, the graphs might be more erratic on the way up."
"I think R.B. has built a foundation. The culture work gives more predictability of performance.... R.B.'s potential is still untapped."

The second corporate officer stated that the charts are somewhat misleading in that good electrical die shipped per employee and total wafer cost would be better measures of overall performance. If these were measured, he does not feel R.B.'s performance would look as good as with these charts. He stated that there may have been one "+" in productivity improvement, but not "++" as he would expect for the investment in the culture work. In summary, this officer stated:

"As an outside observor, I haven't seen a step function change in R.B. performance. We have seen, possibly, continuous improvement, but not a step function change as I would expect."

This interviewee also believed, as did the first corporate officer, that the R.B. division has not been tasked to a level to utilize its full potential.

Question 3

All five interviewees agree with the opinions of internal employees regarding the reason for improved job satisfaction. They all felt that only internal employees could accurately answer the question of how job satisfaction has changed, but they felt that the work done on culture change is a likely reason for improved job satisfaction. Comments included:

"Quality of work life and being listened to would be major contributors to improved job satisfaction."

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"At R.B. people get an opportunity to work on different
things--things that interest them. There is a real
commitment to innovation there. Employees have a choice
in at least 20% of their jobs in terms of what they do.
All this contributes to improved job satisfaction."

One corporate officer questioned the "no change" rating on
"interest in the job" and "sense of accomplishment" on the employee
survey given a major improvement in overall job satisfaction.
(These two survey factors were among the highest rated factors on
the survey both in 1985 and 1987; therefore, no change indicates
satisfaction during both timeframes.)