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Socio-Technical & Team Management Theory at a Greenfield Site

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Brown,

Macon B. III

1993

**SOCIO-TECHNICAL AND TEAM MANAGEMENT THEORY AT
A GREENFIELD SITE**

A Thesis
Presented to
the Faculty of the Department of Communication
& Broadcasting
Western Kentucky University
Bowling Green, Kentucky

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts

Macon B. Brown III

May, 1993

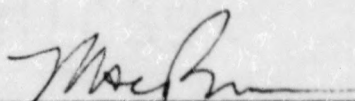
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SOCIO-TECHNICAL AND TEAM MANAGEMENT THEORY AT
A GREENFIELD SITE

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**SOCIO-TECHNICAL AND TEAM MANAGEMENT THEORY AT
A GREENFIELD SITE**

Mac Brown May, 1993 144 Pages

Directed by: Randall Capps, Judith Hoover, and Larry Winn
Department of Communication and Broadcasting
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The purpose of this research project is to answer the question, "How and with what effects does Logan Aluminum, Inc. translate and implement the principles of socio-technical and team management theory into its organizational culture and operational activities?" To answer this question the researcher first examined the literature related to those theories and then conducted on-site interviews and ethnographic research to witness their implementation. The researcher found strong evidence to prove the validity and accuracy of many of those theories when practiced in an organizational setting. Theories particularly proven were those relating to the necessity of constant training, the role of leadership, team and team member capabilities, employee morale and team maturation.

Introduction

Since the mid 1970s and early 1980s, management philosophy in the United States has taken a huge leap forward. This research will later outline why CEOs, plant managers, shift supervisors and shop foremen alike have begun to realize they can no longer view their employees as disposable assets. They must now enlist their employees' brains, as well as their backs, if they want to stay in business.

This research will examine one such new-paradigm facility, Logan Aluminum, Inc., an aluminum rolling facility employing 880 people in and around Russellville, Kentucky. Even before it rolled its first coil of can stock in 1983, Logan Aluminum built a management philosophy around the team concept--one of several participative management philosophies used in today's enlightened environment.

Upon completing a review of related literature about the history of the socio-technical movement, the principles of participative management, the characteristics of team management, the personal requirements of leaders operating in a team environment, productivity enhancements brought about by participative management and the training and competencies demanded of individuals in a team environment,

the research will examine how Logan Aluminum operationalizes these theories. Additionally, this research will report where Logan Aluminum began on the participative management spectrum, and how and where it will proceed.

This study will provide valuable information to researchers in the communication field because effective communication forms the basis for success in socio-technical theory, team management theory and at Logan Aluminum. Communication helps team members inform management about problems and solutions, it helps management and teams decide upon a corporate destination, it relates goal attainment results, and it helps train employees on how to do their jobs better.

This research will also prove beneficial to employers because it outlines how one organization has achieved success with the commitment of its employees. It will show how the organization attained that commitment, how it uses that commitment, the contributions the employees make, and how the organization expects its management philosophy to evolve.

Terms, Definitions and Importance

Information: The passing along of knowledge concerning a team's markets, customers, internal and external operating environments, regulatory issues, production efficiency, etc. Teams require more information because they have more

responsibilities than their counterparts operating in a more autocratic environment. Teams and their members have the responsibility of making decisions and to do that properly they must have access to information. In a team environment information should first be passed to the person(s) who will need it to make a proper decision (Cherns, 1987)

Greenfield site: An organization, facility or institution in which participative management occupied a management concern during planning and prior to operation (i.e. participation had a part in the organization before it became an organization). Greenfield sites offer a great opportunity for implementing team management because planners can adjust for its specific needs before construction. In one study (Kemp, Wall, Clegg & Cordery, 1983), employees stated that the deliberate manipulation of work design caused greater perceived work complexity, commensurate differences in perceived leadership style, and resulted in a higher level of job satisfaction. Employees at greenfield sites enjoy several advantages over "retrofitted" participatory environments. They generally have greater corporate support, more participation during set up with respect to working toward the same clear goal, the ability to make dramatic improvements, location selection ability that provides for the best suited site, participation in plant design, and freedom from past practices. By starting fresh the managers can eliminate those who do not fit the

profile. Longer lead times facilitate better preparation and make possible the integration of support workers with production workers. Greenfield sites also pose unique problems because employees have no existing set of practices (technical skills) to fall back on to increase the comfort level. Employees often have unrealistically high expectations about the working environment, which may increase team member complaints and result in difficulty in establishing standards.

Socio-technical theory: attempts to identify the conditions that secure the best match between the social and technical systems (Trist, 1977).

Process discontinuities: The extent to which a group's task is itself autonomous forming a self-completing whole. Teams must have a well-defined piece of work to do to achieve maximum effectiveness. By having distinct boundaries of responsibility (work cells) they can measure and monitor their productivity. The first of three conditions that enhance technically required cooperation and employees' capacity to control variance from goal attainment (Cummings, 1978).

Boundary control: The extent to which employees can influence transactions with their task environment. The major factors contributing to boundary control include: a well-defined work area that individuals can identify as their own territory; competent members who possess an

adequate repertoire of skills that frees them from having to rely on external sources for task performance; and group responsibility for boundary control decisions. These conditions allow group members to protect their work boundaries from external intrusions and perform selective environmental transactions. The second of three conditions that enhance technically required cooperation and employees' capacity to control variance for goal attainment (Cummings, 1978).

Task control: The extent to which employees can regulate their behavior to convert raw materials into finished products. This factor is enhanced when group members are given freedom to choose work methods and to adjust work activities to match task and environmental demands, influence over production goals allowing employees to modify their output as emergent situations are encountered, and feedback of relevant measures of group performance that provides the knowledge of results necessary for goal directed behavior. The third of three conditions that enhance technically required cooperation and employees' capacity to control variance for goal attainment (Cummings, 1978).

Self-directed work teams: A group of employees who have day-to-day responsibility for managing themselves and the work they do with a minimum of direct supervision. Members of self-directed work teams typically handle job

assignments, plan and schedule work, make preparations and/or service related decisions, and act on problems (Fisher, 1993). They have responsibility for turning out a well-defined segment of finished work (Orsburn, Moran, Musselwhite & Zenger, 1990). They operate within a clear structure whose purpose is fourfold: 1) to give each team a clear sense of its own separate identity; 2) to harmonize team efforts with corporate-wide objectives; 3) to ensure the accountability of the teams; and 4) to make sure that teams conform to fiscal, legal and other critical guidelines (Orsburn, Moran, Musselwhite & Zenger, 1990).

History of Socio-Technical Theory

Writings about democratic supervision and participative management started appearing with some regularity in the 1930s; however, the socio-technical movement did not start to gain maturity and popularity until publication of the works of Eric Trist and his colleagues at the Tavistock Institute of Human Relations in the latter stages of World War II and in the immediate postwar years.

Social scientists founded the Tavistock Clinic in London after World War I. Much of the Tavistock research centered on helping emotionally traumatized soldiers adjust and adapt to living without war (Fox, 1990). One of the most persistent ambitions of Tavistock was to make the social sciences practical. This not only meant applying the ideas

in particular settings, but also linking problems perceived by a variety of actors and agencies with a theoretical scheme and a particular technology of intervention. It meant establishing relays and interdependencies between the domain of problems and that of solutions (Miller, 1992).

Not until after World War II did Tavistock gear its efforts toward helping the British economy recover from the war. To begin this effort Tavistock researchers, namely Trist and his colleagues, examined an exceptionally productive coal mine in Yorkshire, England. It was there in the coal mines that the idea for the socio-technical theory came to Trist (Fox, 1990). As work at the coal mine became more mechanized an imbalance arose between the social and technical systems. To counteract this imbalance Trist and Bamforth (1951) wrote that workers must form groups based on all of the skills necessary to achieve the task. They theorized that effective performance, defined usually in output, absenteeism, morale, etc., was a function of matching, or jointly optimizing the social and the technical systems (Trist & Bamforth, 1951). Trist and Bamforth further postulated that melding the two approaches would lead to job performance that was more rewarding and productive for the increasingly experienced work force (Fisher, 1993).

The work undertaken in the British coal mines addressed a broader set of issues than just psychological defense mechanisms. It sought to understand the advent of coal-

cutters and mechanical conveyors as more than a matter of technology. Trist and Bamforth said we must understand change in terms of the destruction of the stable relations of "responsible autonomy" of primary work groups; reactive individualism, mutual scapegoating and self-compensatory absenteeism in the psychological disadvantages of a particular work system. Indeed, intra-personal, inter-individual and inter-group forces and tensions were to become the object of concern, rather than the technology in and of itself (Miller, 1992).

Miller (1992) wrote, "The response to problems articulated by Tavistock was to re-define the nature of the problem, to seek, beneath the layers of manifest or self-diagnosed problems, a subterranean stratum of conditions and causes. The terrain addressed was transformed, and a distinct modality of intervention created (p.418)." The Tavistock approach was novel, incorporating a model of intensive experiential learning that drew upon, in varying degrees, the work of Kurt Lewin, Wilfred Bion, and Melanie Klein (Miller, 1992).

Tavistock's next meaningful study occurred in the weaving sheds of Ahmedabad, India. There the group conducted studies on automatic and nonautomatic loom operators. Rice noted that the weaving sheds rested on a contradiction, for while the technology demanded worker interdependence the workers were independent so the social and technical systems

were not jointly optimized. Rice proposed the creation of work groups based on interdependent roles and reinforcement of the system with a group payment plan (Kelly, 1978).

Formal involvement programs caught the public eye only in the 1960s, when many American workers started demanding a greater voice in formulating their companies' management philosophies. One early response, the "Quality of Work Life" movement, began by devising ways to make work more enjoyable: adding recreation facilities and sprucing up the work areas, etc. Later decades brought more effective measures--jointly established work standards, work climate surveys and multilevel task forces (Orsburn, Moran, Musselwhite & Zenger, 1990).

In the late 1960s the socio-technical movement began to split. Miller and Rice continued to develop a general theory of organization, while Emery, Trist and Thorsrud became involved in the Norwegian Industrial Democracy project. This project forced further development of the socio-technical theory. Up to this point the socio-technical theorists postulated that work groups should take responsibility for a meaningful or whole task and that groups provided social forces inducing task performance as well as satisfying traditional social needs. The work in Norway added four more components to that system by saying that work should provide more conditions for learning, an involvement in the decision making process, more perceptible relations between the job

and the outside world, and a more desirable future for the employees (Kelly, 1978).

"The redesign of conventional organizations seems to me to have become mandatory for any proactive attempt to bring into being successfully a future that will permit human survival under conditions worth having," Trist wrote in 1977 (p. 270). He concluded that "Redesign involves more than marginal intervention. It requires a process of systematic transformation which will usher in a new paradigm."

Socio-technical theory has evolved considerably during the past half century. Its first tenets stated that employees should work together in teams to perform and complete a meaningful piece of work. Added to that theory were the conclusions that greater worker satisfaction and productivity could be achieved if the employers effectively managed and combined concerns for the social and technical systems at the job site. From there the theory evolved to include the employees in optimizing the social and technical systems, and now employees routinely help establish work standards, management philosophies and production.

All of these advancements have led to greater participation, empowerment, commitment and dedication by workers. They have brought the employees into the management function by making them responsible and accountable for their actions and performance, thus creating higher productivity and more satisfied workers.

Principles of Participative Management

The belief that, given a chance, people prefer to excel and achieve so long as they understand the achievement and that it carries a personal payoff for them underlies the root of participative management (Marchant, 1982).

Participative management consists of those techniques and practices that increase employee involvement in areas that can improve work practices, managerial decision-making processes, and organizational performance standards. Techniques used to improve work processes include self-pacing work, work teams, flexible hours, quality circles and management by objectives. Decision making techniques include problem solving committees, consultation meetings, ombudsmen, attitude surveys and employee representation on policy making boards. Incentive pay systems, merit pay, profit sharing and employee stock ownership plans (ESOPs) make up the list of techniques designed to increase organizational performance standards (Gilberg, 1988).

In theory, participative management's three basic premises are that several heads can better accomplish more objectives than one, that employees will carry out a consensus decision more enthusiastically than a decision handed down to them, and that allowing participation in decision making constitutes effective on-the-job training, thus helping develop subordinates (Herman, 1989).

Participative management derives much of its benefit

from its ability to release the natural, inherent enthusiasm and creativity of the entire organization. Its purpose, then, is to bring the total of that energy to higher levels than old-style, autocratic organizations can ever attain (Cattabiani & White, 1983). In doing so participative management gives employees a greater sense of achievement, by satisfying their need for responsibility, making their work more challenging and interesting, providing more recognition, and giving employees more input into their jobs (Knoop, 1991).

According to Carl Frost (1974, as cited in Taylor and Cangemi, 1983), participation's ultimate goal and benefit lies in making employees more responsible by creating an atmosphere in which employees perceive the organization's goals as a personal challenge. Then they set out to achieve them through their individual and collective efforts. Frost theorizes that employees have a natural tendency to seek self-fulfillment, and, when given the opportunity, prefer to exercise some control or influence over their employment destiny. Employees who are allowed and actively encouraged to provide meaningful input into their jobs become more interested, involved and committed. As a result, they become more responsible and accountable for the quality of their job performance and for the goals of the organization (Taylor & Cangemi, 1983).

Other benefits derived from employee participation

include increased, improved product and/or service quality, and a more comprehensive information flow (Ketchum & Trist, 1992). These phenomena arise because employees feel more responsibility for tasks and because their increased knowledge of the overall system allows them to identify mistakes they might not have otherwise recognized (Lawler, 1986). In addition to these benefits, participative management causes less resistance to new work methods, increased employee satisfaction and involvement, less turnover, increased flexibility, increased output, less support staff, less supervision and better decisions (Lawler, 1986); and the ability to allow top management to focus on broader, more important activities such as planning instead of simple day-to-day operations (Marchant, 1982). Participation helps organizations better manage change in a number of ways. Employees become psychologically motivated to implement the change. When employees participate they can help structure the change so it becomes desirable to them. Better communication reduces misunderstandings about the change. Participatively managed facilities require fewer employees, and those who remain will find their jobs more rewarding and satisfying because their employers treat them with respect and dignity, provide them with democratic and individual rights, and they share in the fruits of their labor (Lawler, 1986).

Frost's theories that participation fosters increased

commitment and motivation by workers echo and amalgamate the writings of others. Ketchum & Trist (1983) wrote that for a commitment to work to exist, workers must have the following rights: 1) the right to a demanding job in terms other than endurance (enfranchisement); 2) the right to continued learning on the job (personal growth); 3) the right to some area of decision making (judgement); 4) the right to social support and recognition (group belongingness); 5) the right to know how each part fits into the whole (contribution); and 6) the right to know that a job leads to some sort of future (hope). Hersey and Blanchard (1988) add that commitment increases when people participate in their own goal setting. When this happens, they contend, workers will engage in much more goal-directed activity before they become frustrated and give up.

In regard to participative management's tie to motivation, Lawler (1986) argued that high motivation and satisfaction will result only when people feel they are doing meaningful work and get feedback about their performance. He further argued that workers thrive when they have autonomy to do their job the best way they know how, when they receive sufficient and accurate feedback, when they employ skill variety in a task they can identify while accomplishing something of significance.

Several obstacles block the full implementation of participative management systems, namely: management's

placing a higher value on tradition and maintenance of the status quo than on innovation while utilizing organizational philosophies that prefer uniformity, consistency and control from the top rather than individual initiative and freedom at the field level. Also, rigidly adhering to a formal bureaucratic authority structure instead of implementing an organizational climate supportive of employee involvement and participation without fear of reprisals can stifle participation. (Gilberg, 1988).

Typically, managers object to participation because they perceive that it will decrease their maneuverability while lessening their control over operations for which they have accountability. They also fear the conflict caused by participation, especially in its infancy. Participation takes more time than autocracy because organizations include more people in decision making, and many managers disapprove of the greater time consumption. Finally, many managers fear a loss of power and visibility, as well as an increased lack of discipline (Gilberg, 1988). Subordinate barriers exist when non-managerial employees accept hierarchical authority patterns and resist increased participation (Gilberg, 1988).

Other drawbacks to participative management include higher salaries, higher training costs, more personnel support, resistance by middle management, the potential for dashed expectations of personal growth and development, and lost time (Lawler, 1986).

Several theories exist for the emergence of participative management. Lawler (1985) wrote that participative management has taken hold because today's workforce has attained a higher education level than any workforce to date. This increased knowledge, he contends, has created workers who want to have more influence at the work site. It has also lowered the number of managers who want to give orders, raised the number of workers who will challenge authority, and helped create more legislation to protect the employees' rights.

Another theory, this one espoused by Denison (1984), takes a more "bottom-line" approach. After surveying competing facilities in several industries, he determined that those which use participative management techniques perform better. He found that those facilities fostering a culture which encourages the development of adaptable work methods linking individuals to the goals of their organization have a clear competitive advantage. The advantage appears quite clearly, he reported, in Return on Investment (ROI) and Return on Sales (ROS). Byham (1988) echoed that opinion by writing that management often looks to participation because the customer wants more and the competition delivers it.

According to Marchant (1982), three factors in a participative environment facilitate high performance: 1) the management style encourages staff involvement in

structuring its own roles; 2) the organization has adequate personnel and resources to do a good job; and 3) an academically diverse staff provides a broad-based knowledge competency for making effective group decisions.

The success of encouraging employees to participate in decision making relates directly to two factors: 1) the amount of participation in decision making allowed by the supervisor; and 2) the discrepancy between the amount of participation allowed and the amount desired (Wheless, Wheless & Howard, 1984). The authors caution, however, that participation in decision making in and of itself does not increase job satisfaction. It may help, though, when employers use this technique as part of a larger organizational paradigm. Gilberg (1988) agrees that participative management practices cannot create large or enduring improvements in employee morale and productivity alone. They must be incorporated into a larger redesigning of the socio-technical systems of work to create more flexible systems for producing goods and services.

The socio-technical systems to which Gilberg referred consist of the melding of the technical systems (equipment and processes) and social systems (based in psychology, sociology and politics) that make up organizations (Ketchum & Trist, 1992). Participatively managed organizations look at the joint optimization of the technical and social systems, seeing people as complementary to the machines and

as developable resources while using flat organizational charts to create that collaboration (Ketchum & Trist, 1992).

Participation must represent more than a suggestion awards program or a mandatory cost reduction scheme. It must reflect an attitude that permeates the entire organization, fostering the perception that management genuinely cares for its employees and wants their ideas on how to improve the organization. Participation does not derive its worth from giving employees flexibility, Frost posits. Instead, it lets employees grow into mature organizational citizens (Taylor & Cangemi, 1983).

The four elements of participation include power, information, knowledge and rewards. Power entails the ability to decide. Information becomes more important because organizations must have upward, downward and horizontal information flow in order to make good decisions. Knowledge brings an understanding of the organization's operation. Rewards (both intrinsic and extrinsic) bring feelings of accomplishment and pay for those accomplishments. The movement of one or more of these elements down the organizational chart through participative management allows more people to participate in important decisions and activities (Lawler, 1986).

According to the new paradigm, real control comes from creating and sustaining a condition where people do what needs doing because they have the knowledge, skill,

information and desire to do it. Information functions, then, to prevent mistakes by assuring that the information controllers also learn to control the process, and they learn to control the process better by working with it directly (Ketchum & Trist, 1992).

One can divide participation into five modes or classes. Downward participation means the manager actually does the same work as the subordinates who lack the necessary skills. This allows him/her to coach and train his/her personal growth and development. Upward participation entails the extent to which employees become involved in work before they are considered part of the managerial function. Lateral participation refers to the extent to which workers at different levels collaborate with each other. Organizational participation occurs across large segments of the organization and includes representatives from many functions. Personal participation includes the extent to which an individual uses such mental and physical capabilities as energy, creativity, intuition, muscles, concentration and thinking to perform work (Hinckley, 1985).

Participation fosters both horizontal and vertical expansion by employees. Horizontal expansion refers to assigning additional steps in the production process to an individual or group. Vertical expansion gives individuals responsibility for control tasks such as scheduling, determining work methods and judging quality (Lawler, 1986).

Obviously, different people respond in different ways. Those involved in participation programs report that the programs give them meaningful opportunities to participate in discussions about matters of importance to their work. Those people also have the highest regard for the programs. Employees not allowed to participate report to have the lowest regard for the new programs. One study (Graham & Verma, 1991) reported that employees fall into one of four groups relative to their attitudes about employee participation programs (EPPs). Group 1 employees do not participate and have the least favorable impressions about EPPs. Group 2 employees want to participate but have not had an opportunity to participate. They favor EPPs more than Group 1 employees. Natural activists make up Group 3 employees, and they highly favor EPPs. And Group 4 employees, those who before acted passively and yet call for more participation at work, like EPPs the most.

Finally, Denison (1984) wrote that participation works because it encourages a higher degree of inclusion from workers. Instead of seeing themselves as hired hands, they see themselves as having a sense of ownership. Coordination in a participative culture becomes an a priori condition of planning, problem solving and decision making, rather than an afterthought. Denison concludes that while participation fosters the long-term development of responsible work habits on the part of individual members, groups solve complex,

multi-faceted problems better than individuals.

In summary, participative management demands that the organizations practicing it allow and facilitate their employees' growth. A strong relationship exists between management's loosening of the traditional reigns and the development of the individual into a responsible corporate citizen. The increased freedom afforded employees demands that they let their creativity and enthusiasm flow freely, thus adding to their commitment to the achievement of corporate goals. The researcher found no contradictions in the research on participative management, however the literature reviewed did not always say the same thing in the same way. The underlying premises remained the same, those being that participation facilitates growth and development because it forces inclusion from employees who traditionally have not had it required of them. From this inclusion the employers expect higher productivity and quality, better decisions and change management, and increased job satisfaction.

Characteristics of Team Management

According to Orsburn, Moran, Musselwhite & Zenger (1990) teams go through five distinct stages between formation and self-direction. Those five stages and a brief explanation of the training needs of each requires follows:

Stage 1--Start-Up--An awareness of teams, how they

operate and what they do; basic interpersonal skills; basic administrative procedures; and technical training.

Stage 2--State of Confusion--Learning how to work together; developing administrative abilities; and expanding technical training.

Stage 3--Leader-Centered Teams--How to lead and participate in problem solving sessions; how to conduct peer performance appraisals; how to master advanced technical skills.

Stage 4--Tightly Formed Teams--Learning to work across team lines; applying administrative training in computing the cost of quality and working with vendors to establish specifications; making use of technical training to perform support tasks.

Stage 5--Self-Directed Teams--Managing customer-supplier relationships; understanding the economics of the marketplace; learning accounting procedures; applying administrative training in reviewing and responding to customer feedback.

Excellence remains the absolute goal of teams. To demand excellence and make it possible for workers to achieve it forms the essence of the entire team building concept. To achieve this goal, however, managers must operate differently from their autocratic counterparts. Namely, they must trust the people below. This trust includes allowing workers the opportunity to experiment and

grow (Cattabiani & White, 1983). Because every member of the team shares equal responsibility for his/her particular finished segment of work, self-directed teams represent the conceptual opposite of the assembly line, where each worker assumes responsibility for a narrow technical function (Orsburn, Moran, Musselwhite & Zenger, 1990).

Teams must stay focused on the fundamentals of their new role. That new role consists of the planning of the overall work of the team; coordinating with teammates and support groups; solving technical, administrative and interpersonal problems; scheduling and assigning work; and cross-training teammates and learning from teammates (Orsburn, Moran, Musselwhite & Zenger, 1990).

A team must be given responsibility for enough of the creation of a product or service so it controls and is responsible for a clear input and a clear output (Lawler, 1992). Hersey and Blanchard (1988) urge that management and individuals/teams mutually decide performance criteria in advance. This approach has two primary benefits: 1) it permits subordinates to participate in determining the basis on which management will judge their efforts; and 2) involving subordinates in the planning process increases their commitment to the established goals and objectives.

Team management operates with the belief that every person must have responsibility for his/her own actions; teams and individuals must collaborate rather than compete;

they must follow the golden rule and they must share more of the bad and the good (Ketchum & Trist, 1992). Work designs based on self-managed teams give workers a high degree of autonomy and control over their immediate behavior (Manz, Keating & Donnellon, 1990). With that control the teams earn and receive a broad scope of responsibility so they can increase the scope and responsibility of each member (Ketchum & Trist, 1992).

In team management, workers handle tasks traditionally assigned to specialty units such as maintenance, quality control, scheduling, personnel, planning and training (Ketchum & Trist, 1992). Highly autonomous teams can hire, fire, set pay rates, determine quality, specify work methods and manage inventory. Less autonomous groups make fewer human resources decisions, but they still set production goals, manage quality and determine work methods (Lawler, 1986). A team's responsibility can extend to seeing to task completion, relaying information to members, adjusting for late and absent members, reprimanding workers, keeping track of infractions, maintaining work orders, keeping time cards, scheduling, requisitioning supplies and supplying information to the oncoming team (Ketchum & Trist, 1992). Teams can select their own leaders, find opportunities to improve quality and productivity, perform basic maintenance and schedule vacations (Byham, 1988). Teams have meetings to share information, review their mission and team

performance, assess lessons learned and to discuss future actions (Ketchum & Trist, 1992). Members of work teams can usually manage inventory and fill out schedules, assure quality, and even perform some of the tasks typically done by middle- and upper-level management (Lawler, 1992.) Teams can solve problems and improve the work process, do their own quality inspection, and, where appropriate, make ongoing adjustments and changes as demanded by the work situation. By giving teams responsibility for their own quality inspections and by operating under a do-it-right-the-first-time approach, employers expect fewer product defects and lower production costs. By delegating responsibility for making adjustments to the work process, employers expect a higher and faster capability of adaptation to unforeseen events (Lawler, 1992). The team process consists of: 1) action, or the turning of input into output; 2) pause for learning, or the generation of information on the outcomes followed by review and evaluation; and 3) plan for action, or how to proceed from that point forward (Ketchum & Trist, 1992).

Team members gain multiple skill proficiencies so they can fill in where needed. Having these multiple skill proficiencies creates commitment because it utilizes two positive feedback loops: 1) doing a good job (i.e. controlling variances, hence the production process) reinforces commitment; and 2) as people learn by doing,

their competence increases. Rising commitment and competence create ever better variance controls. Employers can bring all of this about by paying attention to the work life of the individual and placing primary reliance on intrinsic motivation (Ketchum & Trist, 1992). These design features give a felt sense of responsibility for organizational performance because they create conditions where the individual can actually influence the direction an organization takes (Lawler, 1985).

Teams need management to deliver information, supply technical expertise, and social and problem solving skills, to intervene when questioned or to overturn decisions, and to make decisions when the team cannot (Ketchum & Trist, 1992).

To operate effectively teams need a tremendous amount of information when compared to their counterparts in more traditionally operated facilities. They need information regarding their customers/markets, technologies, competition, environment, political/governmental policies, demographics, suppliers, and economics (Fisher, 1993).

As teams develop the capacity to direct their own activities and increase their technical capabilities, the supervisors' active role relative to the group and task should shrink in a directly corresponding pattern, thus freeing up a capacity for supervisors to assume other functions (Watson & Schlesinger, 1979). In a self-directed

work environment, managers assume responsibility and retain authority over the strategies of "why" and "what" for the business, the teams assume substantial authority over the tactics of "how" (Orsburn, Moran, Musselwhite & Zenger, 1990).

On the social side, teams should ultimately identify and diagnose their own social problems, preserve cohesion and team loyalty while maintaining high diversity. On the technical/economic side they should ultimately diagnose complex problems in performance areas, have the basic economic information to make trade-off decisions affecting two or more performance objectives and test their own proposals for improvements requiring investments (Watson & Schlesinger, 1979).

Members of work teams generally report higher job satisfaction than autocratically managed employees because of their increased involvement, and because the team satisfies their individual needs for social interaction and belonging (Lawler, 1992).

According to Kanter (1982) teams operate best when well managed and when there is a clearly designed management structure and involvement by the appropriate line people. They also need to have an assignment of meaningful and manageable tasks with clear boundaries and parameters; a time frame, a set of accountability and reporting relationships, and standards that groups must meet;

information and training for participants to help them make participation work effectively; a mechanism for involving all of those with a stake in the issue in order to avoid the problems of power and to make sure that those who have input or interest have a chance to get involved; a mechanism for providing visibility, recognition and rewards for teams' efforts; and clearly understood processes for the formation of participative groups, their ending, and the transfer of the learning.

In continuing that thought, Kanter (1982) wrote that employers can use teams most appropriately to gain new sources of expertise and experience; to get collaboration that multiplies a person's effort by providing assistance, back-up or stimulation of better performance; to allow all of those who feel they know something about the subject to get involved; to build consensus on a controversial issue; to allow representatives of those affected by an issue to influence decisions and build commitment to them. In addition, employers can effectively use teams to tackle a problem that no one "owns" by virtue of organizational assignment; to allow more wide-ranging or creative discussions/solutions that are available by normal means; to balance or confront vested interests in the face of the need to change; to address conflicting approaches or views; to avoid precipitous action and explore a variety of effects; to create an opportunity and enough time to study a problem

in depth; and to develop and educate people through their participation: creating new skills, new information and new contacts.

In spite of all of these advantages Kanter (1982) warns, however, that teams and participation do not fit into all situations at all times. Among the reservations she listed include: when one person clearly has greater expertise on the subject than all the others; when those affected by the decision acknowledge and accept that expertise; when there is a "hip pocket solution": The manager or company already knows the "right answer;" when the subject is part of someone's regular job assignment, and it wasn't his/her idea to form the team; when no one really cares all that much about the issue; when no important development will result or others' knowledge would neither contribute to nor be served by their involvement; when there is no time for discussion; and when people work more happily and productively alone.

In summary, team management requires new and different efforts from employees and management when compared with a more autocratic management system. With time and maturation teams have the capability to perform administrative duties, schedule work and vacations, maintain relations with customers and vendors, and perform basic maintenance and quality control. This allows managers to spend more time developing a vision for where the organization needs to go

to assure its continued success. Again, the researcher found no contradictions in the literature reviewed for this section. The research pointed out that often times employees have the capability to accomplish more than they have traditionally had to opportunity to accomplish, especially when they work together as a team. While the researcher found ample information outlining what teams can accomplish upon maturation today, virtually no information was uncovered that pointed to what teams could be expected to accomplish tomorrow. What will teams look like? How will they evolve? What will their responsibilities be? These would be interesting questions to study.

Requirements of Leaders in a Team Environment

Open communication makes up the heart and soul of a participatively managed organization. Open communication must begin at the very top, with the CEO or plant manager, who has responsibility for the effectiveness of the entire organization. These persons provide anchors that allow people to manage change; they provide integrity. Most important, they establish a guiding vision. They must know where they want to end up, make a map on how to get there, find the soft spots, correct them, and then proceed (Bennis, 1989). Effective leaders in a team managed organization must build and maintain two-way information sharing, make sure teams receive ongoing performance feedback, and hand off

responsibilities according to plan (Orsburn, Moran, Musselwhite & Zenger, 1990).

Successful leaders believe that most employees want to be responsible, demonstrate the philosophy they urge others to adopt, articulate a coherent vision of the changed environment, and use imagination and authority to overcome obstacles to change (Orsburn, Moran, Musselwhite & Zenger, 1990). Leaders in a participatively managed organization share at least four common management traits: management of attention, the ability to communicate a sense of outcome, goal or direction that attracts followers; management of meaning, the ability to create and communicate meaning with clarity and understanding; management of trust, the ability to act reliably and consistently so people can count on them; and management of self, the ability to know one's self and to use one's skills within the limits of his/her strengths and weaknesses (Hersey & Blanchard, 1988).

Three consistent attributes are associated with the most successful leaders in empowered organizations: 1) the ability to create strong mutual respect between the workers and the leader; 2) assuring that the job gets done; and 3) providing leadership in getting problems solved (Fisher, 1993).

CEOs, plant managers and team leaders must maintain a two-way informational flow on policy, strategy, goals, performance, problems, needs and capabilities. They must

continually assess the organization's health and take corrective action when they receive negative feedback when they ask if the organization has accomplished its mission, if it has used effective processes, and lived up to its operational paradigm, if it has continued to develop and maintain its capabilities, and continued to adapt to its changing environment (Ketchum & Trist, 1992).

Leaders in participatively managed organizations must impart the abilities of making decisions based upon an envisioned future. They must emphasize intuition supported by reason, expand beyond given resources, work according to current needs, act toward the future based on the present, and emphasize belief and commitment to their followers (Bellman, 1988).

Team leaders act to clarify purpose and goals, build commitment and self-confidence, strengthen the team's collective skills and approach, remove externally imposed obstacles, and create opportunities for others. Most important, like all members of the team, team leaders do real work themselves (Katzenbach & Smith, 1993). Team leaders must be able to ensure timely delivery of resources so teams can produce on-time, quality products or services. They must develop team maturity by coaching and counseling, represent the team in organization-wide activities, train and lead the team in problem-solving activities, motivate the team to achieve goals, and assume responsibility for

indirect tasks (Fisher, 1993). Team leaders focus more attention on boundary issues such as interface problems with other teams, customer and vendor interactions, dealing with other corporate groups, assessing competitors and market opportunities, working on legal or community issues of importance, forecasting new technologies, building commitment bridges with other groups, forging important alliances, bringing training and development opportunities into the team, and so forth (Fisher, 1993). Effective team leadership requires: 1) keeping the purpose, goals and approach relevant and meaningful; 2) building commitment and confidence; 3) strengthening the mix of skill levels; 4) managing relationships with outsiders, including removing obstacles; 5) creating opportunities for others; and 6) doing real work (Katzenbach & Smith, 1993).

In keeping the purpose, goals and approach relevant and meaningful, all teams must shape their own common purpose, performance goals and approach. While a leader must be a full working member of the team who can and should contribute these, he or she also stands apart from the team by virtue of his or her selection as leader. Teams expect their leaders to use that perspective and distance to help them clarify and commit to their mission, goals and approach.

To build commitment and confidence team leaders should work to build the commitment and confidence of each team

member as well as of the team as a whole. One can find a large gap between individual accountability and mutual accountability and team leaders have the responsibility to close that gap.

Strengthening the mix and level of skills requires effective team leaders to keep a vigilant eye on their team's skill competencies. They have a clear goal: ultimately, the most flexible and top-performing teams consist of people with all the technical, functional, problem-solving, decision-making, interpersonal and teamwork skills necessary to perform the job. To get there, team leaders encourage people to take the risks needed for growth and development. They also continually challenge team members by shifting assignment and role patterns.

Managing relationships with outsiders and removing obstacles means a team leader must manage most of the team's contact with the rest of the organization. This calls on team leaders to communicate effectively the team's purpose, goals and approach to anyone who might help or hinder it. It also means team leaders must have the courage to intercede on the team's behalf when obstacles that might cripple or demoralize the team are placed in their way.

Creating opportunities for others disallows team leaders from gaining all of the best opportunities, assignments and credit. Indeed, the crux of the leader's challenge is to provide performance opportunities to the

team and the people on it.

Finally, doing real work means that everyone on the team, including its leader, must perform roughly equivalent amounts of work. As mentioned earlier, team leaders have a certain amount of distance from the team by virtue of their position, but they cannot use that distance just to sit back and make decisions. They must contribute whatever the team needs and they cannot delegate the disagreeable work. Where personal risks are high or disagreeable work is required, team leaders should step forward (Katzenbach & Smith, 1993).

On the social side, the team leader role becomes that of an encourager and a communicator (Hersey & Blanchard, 1988). It requires patience, integrity, knowledge of the business, compassion and self confidence (Cattabiani & White, 1983). He/she must keep the staff focused on its assigned mission, and determine when talk has lost its value and the time has come to decide (Marchant, 1982). Leaders build trust and openness; provide and communicate vision, and empower others (Lawler, 1986). He/she must be able to pass power and control comfortably to lower levels within the organization (Manz, Keating & Donnellon, 1990). He/she must know the causes of behavior, correctly discern "good" behavior from "bad" behavior, pin down the root causes of dysfunctional behavior and act to foster change without weakening the team's ability to function (Ketchum & Trist, 1992). Then he/she must be able to direct, change and

control future behavior (Hersey & Blanchard, 1988).

On the technical side, team leaders primarily help the team become more proficient process regulators. They act as observers, facilitators, participants and interveners--custodians of the design (Ketchum & Trist, 1992). They need technical skills (i.e. the ability to use knowledge, methods, techniques and equipment to perform specific tasks) and conceptual skills (i.e. the ability to understand the complexities of the overall organization and where everyone fits into it) to perform their tasks effectively (Hersey & Blanchard, 1988). Team leaders also have two critical don'ts. They do not blame or allow specific individuals to fail, and they never excuse away shortfalls in team performance (Katzenbach & Smith, 1993).

In summary, leaders in a team environment--whether they are plant managers, division managers or team leaders--must provide vision for those around them and assure that those around them become genuinely committed to that vision. They must assure that the organization has a destination and a map to get there. They must also assure that decisions get made at the appropriate levels. They must facilitate the work of those around them. This facilitation includes coordinating intra-organizational efforts, assuring that the team members will have the necessary materials to perform their assignments, and helping resolve issues the team members cannot resolve. The most important role of the

leader, however, is coordinating and facilitating the development of those around him/her. As teams mature their roles change, as do those of their leaders. And it is the responsibility of the leader to assure that the relationship between him/her and the team, with respect to assigned duties, stays current.

Training and Competencies Required of Individuals Working in a Team Environment

Highly successful companies see training as a permanent process, not an event, and they pay close, continuing attention to several sets of training needs and several populations. New team members need everything from acculturation through the full range of basic skills. Old team members need training, retraining, and continual reinforcement to deal with new products, new processes, and new standards, or to file the rust off old skills for a new assignment within or outside their primary team (Orsburn, Moran, Musselwhite & Zenger, 1990).

Training can cost a considerable amount of money as evidenced by Wiggernhorn (1990). Wiggernhorn, Motorola's corporate vice president for training and education, reveals that when Motorola first envisioned starting a training program it had a \$35 million budget (which many thought excessive) for a five-year period. Now the company spends \$120 million annually divided almost equally between training expense and lost production time and everyone

associated with the training effort considers it a sound investment.

Teams must develop the right mix of skills necessary to perform the job correctly. These team skill requirements fall into three categories: technical or functional expertise, problem-solving and decision-making skills, and interpersonal skills (Katzenbach & Smith, 1993). Orsburn, Moran, Musselwhite & Zenger (1990) also add the necessity of administrative skills.

Employees entering a participative setting for the first time face terrain that looks familiar on the surface, but the familiarity ends there. They must adapt to a radically new environment to survive. Therefore, the ability to learn becomes their most important attribute. They must reexamine their current ways of thinking, gain an appreciation for what they can learn, explore where they came from and where they will end (Ketchum & Trist, 1992). They must unlearn dysfunctional tendencies such as having concern over what some might view as past personal performance failings, or the belief that the new system will fail (Manz, Keating & Donnellon, 1990).

According to Orsburn, Moran, Musselwhite & Zenger (1990), technical training focuses on the actual tasks over which the team will have responsibility -- activities such as operating a piece of equipment, processing a claim, repairing a machine, etc. New hires must understand and

accept that one of the most important emphases lies in the indepth learning and proficiency of each individual in a small part of the technical system (Ketchum & Trist, 1992). Necessary team member proficiencies include knowledge and skill in material transformations (input to output), technical trouble shooting, safety, statistical process controls and analytical thinking (Ketchum & Trist, 1992).

Interpersonal skills training teaches team members to analyze problems they encounter and then come up with good solutions as a group. Team members need to learn a basic approach to problem solving that helps them zero in on the problem area, gather facts, analyze the cause and select the best solution. Organizations also must provide their employees with "people" skills for interacting, solving problems, deciding and acting (Byham, 1988). Other necessary people skills include the ability to teach, to participate effectively in group meetings, to learn from outside sources, to solve social problems, to evaluate team member skills, and to hire and fire properly. New hires must have a broad and deep awareness of reality, and the presence and continuing development of judgement (Ketchum & Trist, 1992). Administrative training focuses on how to deal with other parts of the organization. During administrative training team members learn to fill out request forms, purchasing invoices, payroll cards, etc.

The organization's human resources development arm

bears much of the responsibility for helping employees adapt to their new environment. Its three activities--training, education and development--provide the learning that can lead to performance change. Training efforts focus on learning related to the present job of the learner. Education efforts focus on learning related to the future job of the learner. And development efforts focus on learning that does not relate directly to the job but concerns the general growth of the individual or organization (Nadler, 1988). Human Resources Development employees also help devise the parameters of the hiring process.

The goals of the hiring and training process in a participative environment ensure employees have the ability and opportunity to learn what the organization determines as important to its survival and growth. These lessons include some understanding of the plant, its raw materials, technologies, mission, customers, and what each person must do to ensure continuing success. They also include a good understanding of the social objectives of the organization and a total understanding of the need for the organization to grow into a fully participative state. Team members must gain a good understanding of the principles of self-regulation, as well as a good understanding of the multiple skills proficiency principle. This lesson includes why the organization employees it, how it benefits the individual,

and what it will require of the individual in his/her day-to-day work life (Ketchum, 1984).

In behavioral terms, the hiring and training process should ensure that each person will be comfortable taking responsibility for himself/herself; strive to achieve neither "uncooperatively individualistic" nor "always a herd follower" status; be able and willing to think critically and analytically; be comfortable expressing his/her opinion before a small group; be a good listener; be aware of tendencies in oneself and in others to think stereotypically; be aware of the differences between opinion and fact; and be skilled in giving and receiving feedback (Ketchum, 1984).

Summarizing, training in a team environment is paramount. Workers in an autocratically-run facility generally must learn only a few technical functions. In contrast, workers in a team-managed facility must learn their technical functions, as well as interpersonal skills that aid them in working effectively with their coworkers, administrative skills to allow them to help manage the operation. The training in a team-managed organization never stops. The researcher found no disagreement with any of these principles of training.

Productivity Advancements Created by Teams

Self-directed work teams improve productivity because

deep employee involvement builds intense commitment to corporate success (Orsburn, Moran, Musselwhite & Zenger, 1990). Several other well-known phenomena explain why teams perform well. First, they bring together complementary skills and experiences that, by definition, exceed those of any individual on the team. Second, in jointly developing clear goals and approaches, teams establish communications that support real-time problem solving and initiative. Third, teams provide a unique social dimension that enhances the economic and administrative aspects of work. And finally, teams have more fun at work (Katzenbach & Smith, 1993). Most companies moving to teams report 20-40% gains in productivity after 18 months (Orsburn, Moran, Musselwhite & Zenger, 1990).

One Northern Telecom facility did not expect an increase in business because telecommunications equipment repair historically had been a money-losing business. However, revenue went up 63% after implementing self-directed work teams in 1988. Sales rose 26% and earnings 46%. Productivity per employee increased more than 60% and scrap decreased 63%. Quality results increased 50% and the number of quality inspectors dropped 40% (Schilder, 1992).

In his book entitled Leading Self-Directed Work Teams, Fisher (1993) reported the results of several studies that showed the positive effects teams have had on the productivity of organizations that use them. One study found

that 93% of the organizations responding reported experiencing improved productivity, 86% reported decreased operating costs, 86% reported improved quality and 70% reported better employee attitudes.

In another study cited by Fisher (1993), examples of the positive effects of teams showed that Procter & Gamble reported 30-50% lower manufacturing costs, Shenandoah Life Insurance reported case-handling time dropped from 27 days to two days, Tavistock Coal Mine reported a 25% increase in output and a 50% decrease in absenteeism caused by accidents and sickness. Also, Aid Association for Lutherans reported raising productivity by 20% and cutting case processing time by 75%, General Mills reported a 40% increase in productivity, and Honeywell Chandler reported a 280% increase in output and quality increased from 82% to 99.5%. In a similar study reported by Orsburna, Moran, Musselwhite & Zenger (1990), Xerox Corporation plants using work teams are now 30% more productive than conventionally organized plants and Procter & Gamble gets 30-40% higher productivity at its 18 team-based plants.

Literature Review Summary

The evolution of team management began when Eric Trist, a researcher from the Tavistock Institute, wrote that workers must form groups based on all of the skills necessary to achieve the task, thus optimizing the social

and technical systems. From that simple statement has blossomed an entire rethinking of the role of workers and management. Instead of treating workers like indentured servants, Trist and his colleagues suggested that they should be allowed to take part in how the work gets accomplished, thus leading to participative management.

Participative management consists of those techniques and practices that increase employee involvement in areas that can improve work practices, managerial decision-making processes, and organizational performance standards. To achieve this goal participation relies on power (the ability to make decisions), information (better information flow in all directions), knowledge (of the organization's total operation and goals) and rewards (both intrinsic and extrinsic that bring a sense of accomplishment). These efforts combine to cause workers to see themselves as more than hired hands. They have a sense of ownership. Participation also develops long-term responsible work habits on the part of the individual team members.

One form of participative management is team management. In it, teams have responsibility for a particular segment of finished work. Teams plan their overall work, coordinate with other teammates and support groups, solve technical problems, perform general maintenance, control quality, hire and fire, manage inventory, specify work methods, schedule and assign work,

and cross-train among themselves. Teams also take responsibility for establishing their own performance criteria. In this philosophy management decides, often with the help of teams, the "whats" and "whys" of the organization, while the team have responsibility for the "hows."

For team management to work effectively, however, an enlightened leadership system must exist. This leadership system draws its effectiveness from trust rather than overpowering strength. Leaders in a team environment have the responsibility of providing the vision of what the organization can be, and then letting the teams achieve that vision. They must share information about performance, facilitate work rather than assign it, strengthen the skills-level mix, and work side-by-side with team members when necessary.

The advancements in management philosophy listed above do not come about by themselves. All members in team-managed organizations require social, administrative and technical training. Subjects for social training include team building, conflict management, problem solving and decision making. Administrative training includes filling out request forms, purchasing invoices, payroll cards, and intra-organizational relations. And technical training consists of materials transformation, trouble shooting, safety, statistical process controls and analytical thinking. The

overall goal of training in a team-managed facility is to ensure employees have a thorough understanding of the plant and its mission, its social objectives, the necessity for growth and participation, the principles of self-regulation, and multiple skills proficiencies.

Research Question, Rationale and Methodology

After examining pertinent information concerning socio-technical and team management principles and the organizational culture and operational activities at Logan Aluminum, this study will answer the question: How and with what effects does Logan Aluminum translate and implement the principles of socio-technical and team management theory into its organizational culture and operational activities?

This question deserves study for at least four reasons. First, much of the available information concerning the socio-technical and team management movement offers only a theoretical perspective. This study examines a real-world organization that applies the above mentioned theory. Second, for the United States to hold, gain or recapture its competitive advantage, her organizations must employ the brains, as well as the backs, of their employees. Logan Aluminum attempts that, so this study will prove beneficial by showing one operationalization of socio-technical and team management principles. Third, just as the United States and her employers deserve the best efforts of their

employees, so do her employees deserve their employer's best efforts at helping them grow, mature and become more responsible private and corporate citizens. These philosophies form a significant part of the underpinning of the socio-technical and team management theories, so an examination of their implementation in a real-world setting counts as quite worthy of study. And fourth, in just thirteen years Logan Aluminum, Inc. has evolved from a set of blueprints to an organization producing some of the world's highest-quality aluminum can stock. Logan employees attribute much of that success to their team management philosophy.

The author used personal interviews and observations to complete this research. Upon gaining authorization to conduct the study, one Logan employee in the Human Resources Department orchestrated the three-day on-site visit. The researcher outlined the focal points of the study and the employee set up the interviews. Independent movement throughout the plant was restricted for safety reasons, thus the researcher had few opportunities to discuss Logan's team concept with individuals other than those the employee choose. However, because: 1) the researcher was left unattended during the interviews; 2) the researcher gained access to all of the specific individuals he requested to interview; and 3) because Logan employees provided all requested information without delay, the researcher feels

satisfied that he received an honest appraisal of the team concept from those interviewed. The researcher interviewed 17 employees, including the president, five unit managers, one project manager, three team leaders, five team members and two members of the Human Resources staff.

The researcher first interviewed the president during which he received a thorough report on Logan's Team Concept, its evolution and productivity. This was followed by an open question and answer period. The researcher then compared the information gained in that interview with the attitudes of employees throughout the plant. Second and third follow-up questions were repeatedly utilized to clarify, reinforce and verify information received from the president.

An Introduction to Logan Aluminum

Logan Aluminum, Inc. (henceforth called "Logan") is a management company responsible for operating and maintaining the aluminum rolling assets owned by ARCO Aluminum and Alcan and located in Russellville, Kentucky. While having almost complete operating autonomy, it has virtually no autonomy on capital expenditures costing more than \$1 million per project.

Construction on the facility began in 1980 under sole ownership of ARCO Aluminum, a division of the Atlantic Richfield Company. Initially costing more than \$465 million,

ARCO designed Logan to be the most technologically advanced aluminum rolling facility in the world. Shortly after completion, however, ARCO decided to divest itself of some of its metals businesses, among them Logan Aluminum.

Alcan Aluminum, Ltd. of Canada and Alcan Aluminum Corporation -- USA, known as Alcan, signed a letter of intent to buy the facilities ARCO had chosen to sell, including Logan. The U.S. Justice Department, however, opposed the sale on antitrust grounds. It said the purchase of Logan by Alcan would give it an unfair market advantage in the aluminum beverage can stock marketplace.

After several months of discussion and negotiation, ARCO and Alcan came to a sale agreement in January, 1985. The agreement stipulated that ARCO would retain 60 percent of the Logan facility and Alcan would purchase 40 percent of Logan and the other metals businesses ARCO intended to sell. Under the consent decree issued by the Justice Department, neither owner would be able to know anything about the manufacturing or marketing activities of the other.

Since the Logan facilities and equipment have joint ownership, the principals decided to create the separate management company with its own president and board of directors. Representatives from ARCO and Alcan comprise that board.

The manufacturing facility includes the four distinct process units of Melt and Cast, Hot Rolling, Cold Rolling

and Finishing, as well as a central maintenance area. Each business unit operates as a mini business. This organizational design necessitates bringing the professional expertise to the problem instead of bringing the problem to the professional expertise.

In 1993 the beverage can stock market in United States will consume approximately 4 billion pounds of aluminum. At the time of this research Logan satisfied approximately 15 percent of that market. By the time its new cold mill operation, named CM-3, comes on line in mid 1993 Logan will have the capability to satisfy between 25% and 35% of that market. By being the only aluminum fabricating plant built in the past 35 years, Logan has a clear technological advantage.

Logan Aluminum's only customers are Alcan and ARCO. Each associate owner maintains its own sales and marketing organization to conduct external sales to beverage can stock consumers. These consumers include the largest soft drink and beer companies, and other producers of aluminum cans.

Logan's mission is "To achieve and sustain the market leadership position in product quality, customer services, and cost performance by innovative and creative use of technology, our assets and human resources through progressive management concepts in a safe, clean environment."

Setting Up the Greenfield Site

One of the advantages Logan had with setting up its organization as a participative one is that, because it was a greenfield site, modifications could be made to the facilities prior to construction. The design team designed the plant to fit the teams instead of having to make the teams fit the plant (Harris, 1993).

In setting up this greenfield site, the design team focused its attention on creating autonomous, team-based units that would operate and perform like mini businesses. In doing this the team concentrated on two primary issues: process discontinuities and communications. Process discontinuities are naturally occurring stops or changes in the work process. Focusing on these discontinuities prior to construction allowed them to lay out a logical floor plan that met their anticipated needs. To provide for the best possible communications environment, the management and design team took two major steps: it implemented a flat organizational chart to provide for the highest possible velocity of communications. Logan has only one layer on its organizational chart between the president and the teams-- unit managers. It also strategically located team meeting facilities throughout the plant instead of having just a few meeting rooms in one location (Mudge, 1993).

"Our being a greenfield site with new technology and a new management system offers us an advantage in that we can

do the same work with 30 percent to 40 percent fewer employees," President Fred Mudge said (1993). "Similar plants employ approximately 1,500 workers as compared to our 880."

Logan's Evolution

Logan Aluminum operates under a participative management system it calls the Logan Team Concept. Planning for the Logan Team Concept began more than a year before the construction company broke ground for the facility. At the time ARCO did not know under exactly what type of human resources plan it wanted to operate, but it did have two main emphases around which it wanted to build its plan: 1) it wanted a management approach that would benefit Logan competitively while adding to the sense of ownership of its employees; and 2) it wanted an opportunity to look for ways to do progressive things with respect to management (Harris, 1993).

"When we decided to come here we made a conscious decision to start with green people who didn't know a rolling mill from a rolling pin," said John Gatlin (1993), project manager for the CM-3 mill and one of the initial architects of the Logan Team Concept. "The reason we did that is because we knew we didn't want to operate under the old management philosophy. We didn't want to bring in the 'we-they' mentality so prevalent at other aluminum rolling

facilities. We also knew we could teach the technical side.

"To keep from fighting that mentality we traded short-term gains (beginning production sooner) for long-term gains (team management). And because of that, I think, today we produce about 50 percent more than our plant's design capacity. Had we operated the other way our people would have quit when we got to design capacity, but here our people say 'I know we can do better, let's figure out how.'"

Initially Logan had to bring in people to fill many of the top management and technical positions. It needed the expertise in management philosophy and technical support. But it focused its hiring efforts for operators and support staff on Logan and the surrounding counties. Now, after more than 10 years, many of Logan's team leaders have worked their way up from the floor to team leader (Barrow, 1993).

"In the early days here we felt like we needed to talk about every decision," said Materials Unit Manager Candy McKenzie (1993). "Now we have people making on-the-spot decisions and it works much better. Our unit couldn't operate with as few people as it does if we tried to do it any other way." As an example of that evolution, in 1985 the Materials Unit had a unit manager, team leaders, planners and clerks. Today its clerks have been replaced with computers and systems, and the people who were clerks have moved up to jobs in which they have to think and analyze and communicate--higher level jobs that provide more challenge.

Logan's development of the Team Concept can be divided into three eras. During the early years (1983-84) the two primary missions were to develop a culture and teach the technical aspects of producing aluminum can stock. Since Logan Aluminum started from scratch, few of its managers knew anything about team management and even fewer of its employees knew anything about aluminum--commonly referred to as "tin" in Russellville at the time. To achieve this stage of evolution Logan relied heavily on training. Training subjects included team building, leadership, and interpersonal communications on the social side, and equipment operations and procedures on the technical side.

In the middle years (1985-87) Logan turned its efforts toward helping the teams mature and making the equipment perform as designed. They had developed the process and now they needed to produce a quality, cost efficient product. Here, too, Logan turned to training--more interpersonal skills training and more operations training.

Since 1988 Logan has worked to optimize its social and technical sides of the operation. Once again, training is the cornerstone of success. Now the training unit offers even more specialized interpersonal and technical training (Gatlin, 1993). A more thorough outlining of the training effort follows.

The Star Concept

One the most profound evolutionary changes Logan has experienced centers around what it calls its "Star Concept." Briefly, the Star Concept is a mechanism by which team members assume responsibility for management functions within their units. The Star Concept, which was created through the efforts of plant management and management consultants, defines the team boundaries and outlines the responsibilities each team has for its own operation. The basic premise of the concept is that information generated by a team or its support group(s) is essential to each team's understanding of, commitment to and participation in the Logan Management process. The Star Team is the management team so it eliminates having safety, quality, personnel, production and administration supervisors.

The Melt and Cast unit began operating under the Star Concept in late 1983 and a plant-wide audit in late 1985 showed some positive results. "We looked over our teams' maturity and found that the teams in Melt and Cast were happy with themselves and they had taken responsibility for a significant chunk of the duties in their area," said Pitchford (1993). From that audit Mudge provided the vision that all teams should participate in some form of the Star Concept by the end of 1986. This effort, Mudge and others said, would add a piece of structure around which the teams could develop.

The Star Concept provides structure for team meetings, develops an understanding of the management side of the business through participation as star points, and promotes ownership as a business partner. Star point responsibilities are expected to evolve consistent with the growth and maturity of the team (Sucher, 1993).

"The Star Concept gives us an opportunity to have some input. With it we get firsthand knowledge of what goes on at higher levels. It gives you the opportunity to see how this part fits into that piece of the puzzle," said Cardwell (1993).

The Star Concept acts as the nervous system of Logan's team management practices. Through it management hands off responsibilities to teams for quality, administrative, operations, personnel and site issues (Mudge, 1993).

Quality duties include daily metal review, process improvements, customer/supplier relations (both internal and external), monitoring product specifications and control plans.

Administrative duties include filling out monthly team reports, budgets and costs, requisitioning operating supplies and scheduling overtime coverage.

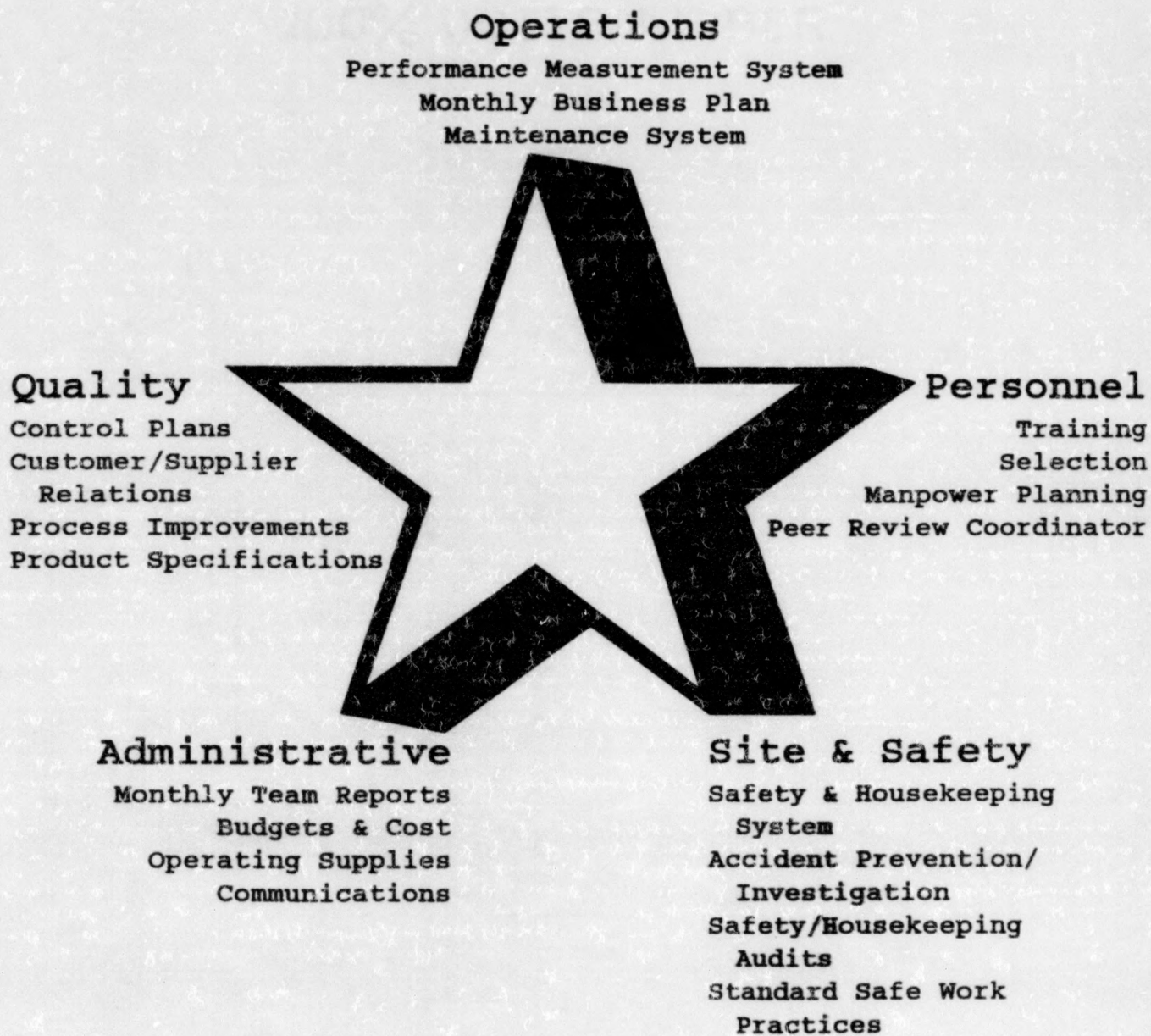
Operations duties include filling out a monthly business plan, maintaining performance measurements systems and operating maintenance systems.

Personnel duties include selection, training, manpower

planning and peer review.

Site & Safety duties include maintaining safety and housekeeping systems, accident investigation, performing safety and housekeeping audits and utilizing standard safe working practices.

A diagram of the Star Concept and the corresponding duties follows:



Team leaders facilitate the daily team meetings but team members take responsibility for performing star point duties. The overall strategy behind the star point system is to develop team members, minimize layers of management and ultimately to have fully self-directed teams.

Star point participation is not an option, it is a key component of Logan's strategy to develop its employees as business partners. Logan management recommends rotating star points every 6-12 months, reviewing and updating star point responsibilities every 12 months, and emphasizing star point involvement as a key component of work. Logan considers star point duties as necessary as work station duties.

The team retains accountability for the accomplishments of star point responsibilities. The role of the star point is to act as a coordinator for the team. A star point's focus is to learn about the business rather than to be the sole resource for the team or the team leader (Sucher, 1993).

Logan insists that its teams actively participate in mutually identifying, setting and achieving corporate goals. Logan's associates (ARCO and Alcan) tell it what they think they can sell each year, and using input from the teams

Logan develops its business plan. Then the teams set their goals about how to meet that plan by looking at products, costs, etc (Harris, 1993).

To ensure the continued support, commitment and growth of its employees, Logan operates under an all salaried pay-and-progression system that rewards employees for mastering new capabilities and gaining more knowledge. But the evolution will not stop there. Right now Logan Aluminum pays for skills and knowledge. Eventually, it will evolve into a pay for performance organization. Pay for performance leverages discretionary effort and peak performance, and focuses on increasing competitive advantage. Right now Logan has not decided exactly how it wants to do that. In the meantime, its teams are taking the time to mature (Mudge, 1993).

Another aspect of Logan's evolution consists of the program it has developed and implemented to encourage its Operating Technician 7s (the most advanced level of operating technician) to learn administrative jobs. This allows them to continue growing instead of hitting a ceiling in five and a half years. This program also gives Logan more valuable employees.

Harris (1993) identified a key component of the need for evolution in management practices when he said, "In the future people will be able to master product quality by learning to control the process so they can create a stable,

predictable product. Our challenge will be to take those same concepts and apply them to people and management."

As part of that evolution Logan now uses the input and experience of team members to help curb health care costs, increase production, decrease the number of accidents, and improve quality. An example of that input follows:

Until 1990 the Finishing Unit had the worst Occupational Safety and Health Administration (OSHA) reportable accident rating in the plant. From the plant's inception management had tried a lot of safety gimmicks and programs to improve awareness. This left the main safety responsibility in the offices instead of on the floor where people get hurt (Crafton, 1993).

"In about 1990 we began to think differently about safety. We finally realized that safety was a process instead of an issue so we turned control over to the people using the process," said Harris (1993)."

Finishing's unit manager assigned four committee members from teams to study the safety process. In the beginning the safety committee did not get much accomplished. They met only occasionally as they tried to conceptualize their assignment. After becoming frustrated with their lack of progress, the committee asked its unit manager for extended time off from their team duties so they could investigate safety thoroughly. The unit manager agreed and told the committee to take whatever time and resources

they needed (Crafton, 1993).

The team ended up taking three months off from their work responsibilities. During the first month they worked on conceptualizing exactly what they wanted to do. They tried to conceptualize the ideal safe working environment and what it would take to get there. They called in people from Finishing and other parts of the organization to get their impressions on safety (Crafton, 1993).

"Our committee recognized up front that if we didn't change our people's attitudes and work habits we were fighting a losing battle. The attitude used to be that accidents happen so our job became to convince them that they don't have to happen and that accidents are unacceptable," said Crafton (1993).

The committee recognized 11 safety areas on which Logan employees needed to work. Those issues and their solutions follow:

- * Safety related maintenance issues -- Workers often identified needed corrections but no follow-up mechanism existed. To combat this the committee compiled a reporting form that elicited participation from all three teams and related engineers, assigned responsibility for correcting the problem, and provided a time frame for when the problem would be corrected.

- * Lack of job safety analysis -- The committee rewrote Finishing's standard operating procedures, adding safety

procedures to the text, incorporated the task's purpose and importance, and added a list of the proper safety equipment required.

* Personal Protective Equipment audits and Job Safety Analysis audits -- To keep safety in the forefront of everyone's mind, the committee recommended and later implemented Critical Behavior Inventory Cards that the teams' safety star point representative fills out each day after observing each of the workers. These cards document the safe and unsafe work practices utilized by the team members. After completing the cards, the representative documents the findings on a chart and the chart is placed on the public bulletin board.

* Teams' awareness of authority -- Up until that time many team members did not realize they had the authority to shut down a piece of equipment if it posed a safety hazard. The committee wrote a safety flow chart showing what to do and when to do it, and to let team members know they had the authority to shut down the machinery.

* Training -- The committee members began training the teams on one updated standard operating procedure each week. They also held safety training classes for team members at the training center, bought tapes on how to prevent back and other types of injuries, how to operate equipment safely, and similar subjects.

* Accepting unsafe acts as daily routine -- The

committee informed team members that unsafe acts would not be tolerated. It emphasized that teams must look at what they do from a safety perspective. The committee also added safety issues to the peer appraisal forms, informed team members that safety was not more important than production, and gave the teams the tools to deal with unsafe behavior.

* Responsibility and accountability to work safe -- To address this problem the committee added safety to the peer appraisal process.

* Not enough positive recognition -- The committee put together short-term and long-term recognition programs. As part of the program Logan began offering company-sponsored pizza parties quarterly if no OSHA recordable accidents occurred. Units that work 45,000 manhours with no OSHA recordable accidents receive t-shirts and a steak dinner with President Fred Mudge, Manager of Human Resources Mike Harris and their unit manager attending. Units reaching 1 million manhours with no lost time accidents receive jackets. And when the plant recently passed the 1 million manhour mark, Logan bought everyone a steak dinner. It takes about 10 months for the plant to work 1 million manhours.

* The safety representatives role -- the committee further defined the safety star point's role.

* Using Operating Technicians 6s and 7s as role models -- The committee asked Operating Technicians 6s and 7s to help the new employees understand the importance of safety.

They also asked the more senior Operating Technicians to teach newer employees safe working behaviors as well as to show them where accidents might happen.

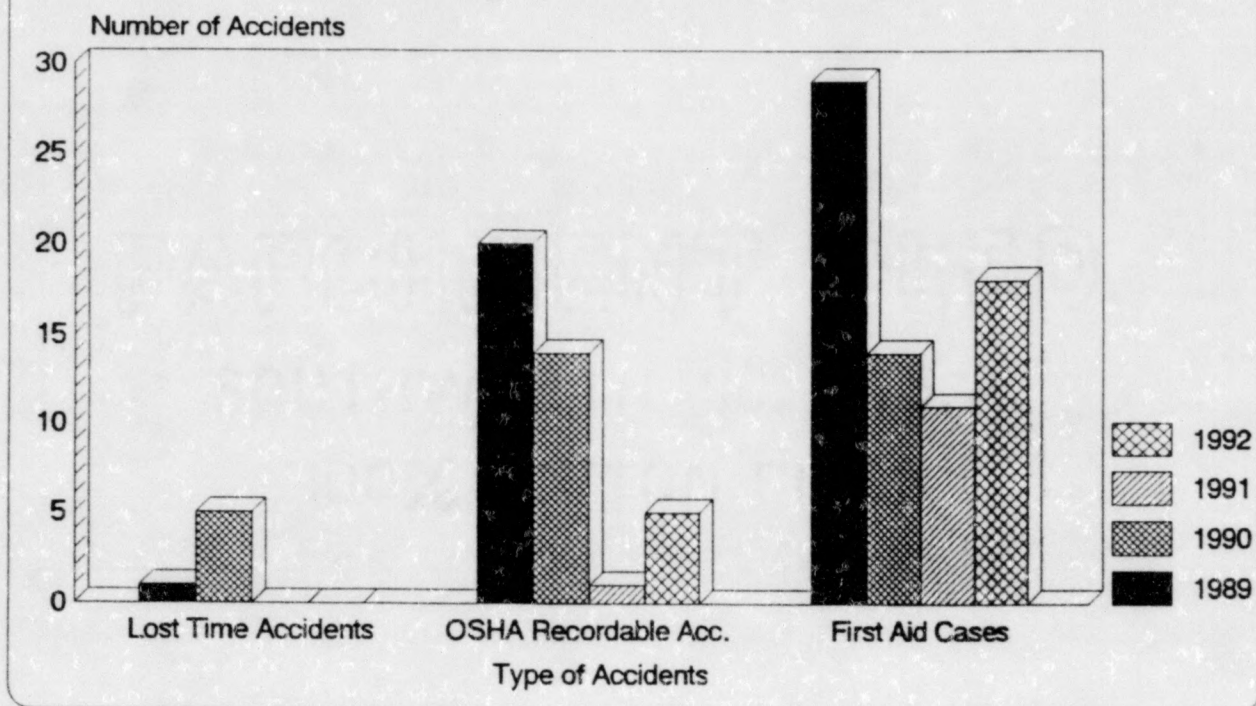
* Attitude and behavior -- The committee took the previous steps to help change the attitudes of workers.

Committee members also conducted training and made presentations to teams throughout the unit and the plant. They asked for suggestions on how to make Logan a safer place to work. Because of these efforts the Finishing Unit moved from worst to first in one year with respect to unit safety (Crafton, 1993).

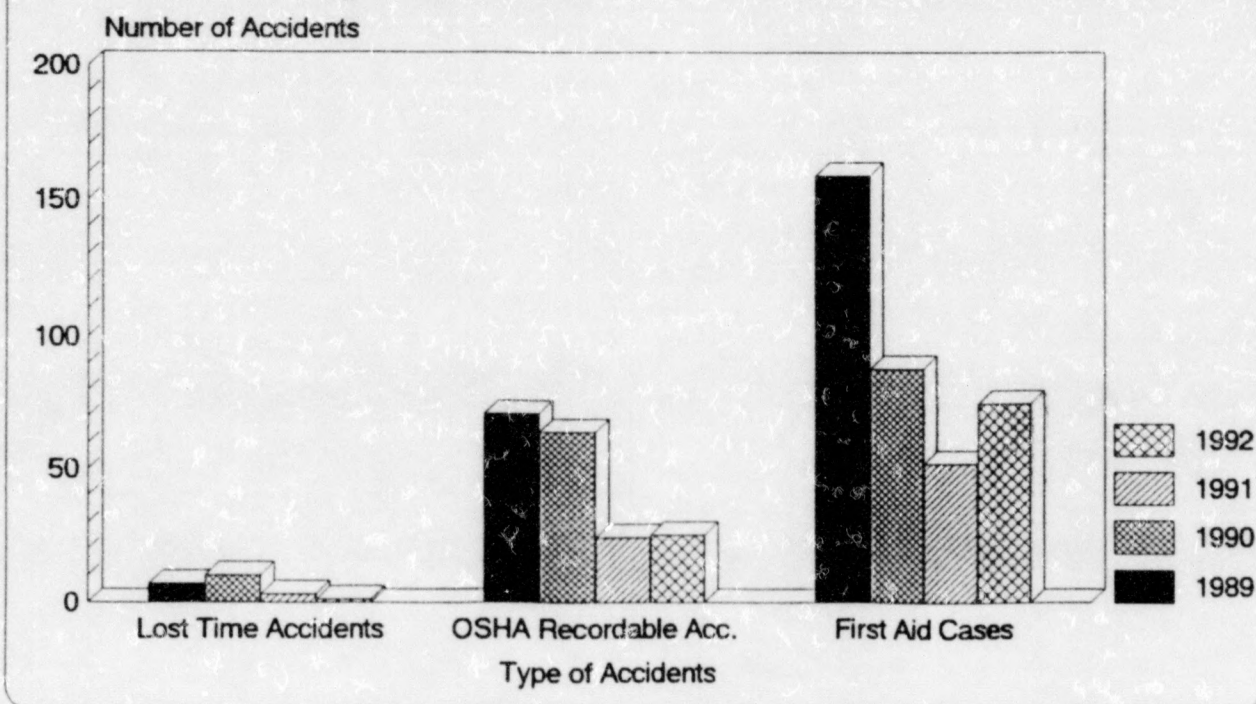
After the committee completed its work, Logan Aluminum initiated a 20-member plant-wide committee to look at safety. It followed much the same process as the Finishing Unit's safety committee and in 1992 Logan Aluminum won the National Safety Council's highest award for distinguished accomplishment in safety and health for all industries of its size or larger.

Charts showing the number of lost time accidents, OSHA recordable accidents and first aid cases for Finishing North and Logan from 1989 to 1992 follow:

Finishing North Accidents



Logan Aluminum Accidents



In 1991 OSHA became more strict in its reporting standards. At the time of this research a Lost Time Accident means one in which a worker must take off from work, an OSHA Recordable accident includes when stitches or prescription drugs are required to treat the injury or when a rash occurs. And First aid cases include incidences where nonprescription drugs or band aids will suffice.

"This is a microcosmic view of where we're going with our teams. When our team maturity level gets to the point where we can do it we will use our teams to solve all sorts of issues--cost, production, health care, etc. We are beginning to do that even now and look at how well it is paying off," said Harris (1993).

The Management Philosophy

Although construction for the Logan Aluminum facility did not begin until 1980, planning for the management system began in 1979. The perceived need for Logan's management concept came from four factors:

- * The nature of competition in the aluminum fabrication industry required a change in the work environment.

- * Prevailing thought made Logan aim toward hiring better people who were more committed so it would be more competitive.

- * The minority thinkers said that the problem was not with the people, but with the work and its design.

* The final decision was to utilize Logan's human resources to differentiate Logan from its competition and to improve its competitive potential.

"Management has always had to catch up with improvements in the workforce and technology. Today's management includes participation, power sharing and communication because it operates in a quality driven environment that is turbulent and unpredictable. It employs high technology to stay alive in the intense worldwide competitive arena. And its employees are well-educated, less loyal, more independent and have higher expectations than the employees of eras past," said Mudge (1993).

From those four factors and the perspective of Mudge, the Logan Management Concept evolved to include: a rethinking of the work, setting common goals with clear expectations and standards, using increased responsibility and accountability, better utilization of people skills, utilizing resources like management resources and a means to an end (Sucher, 1993).

Rethinking of the work means that Logan sees production as more than small, easily learned tasks that require little or no thought. Instead, production requires a team effort with each member of the team knowing the "whats," "whys" and "hows" of the operation.

Setting common goals with clear expectations and standards means that team members must participate in

deciding what goals the organization will strive toward, as well as helping to determine the standards by which the attainment of those goals will be measured.

Using increased responsibility and accountability means that not only will team members have the responsibility to set the goals, expectations and standards, they also have the responsibility to achieve them and will be held accountable if they do not.

Better utilization of people skills means that to make these improvements in the work process, the people performing the work must be able to work together.

Utilizing resources like management resources means that Logan looks upon all of its employees as thinkers and it expects all employees to think of new and better ways to perform the job. Logan's workforce is all salaried, however by law each employee has an exempt or nonexempt status for overtime pay eligibility.

A means to an end means that the focus of Logan is not the development of teams, rather it is the performance of the required task through teams.

The Logan Management Concept is built on the principles that Logan will treat all resources like management resources. Logan expects to employ mature, responsible people because the success of the individual and the organization are interdependent and continuous, thus improvement is paramount. Logan will operate a participative

business, not a permissive one. "Back-to-face" confrontation is unacceptable and employees are accountable for their actions and words. Specific decision-making boundaries exist within the organization. Logan exists in a dynamic business environment, and its employees are accountable for understanding and supporting our business decisions.

The Logan management concept is a far cry from what most people think of as participative or team management. Logan Aluminum's Management Concept is not: everyone responsible for everything; laissez-faire management; everybody doing what they want, how they want and when they want; and consensus agreement on all activities (Sucher, 1993).

"Our entire management philosophy evolves from the question 'Why do I have to tell you to pick up that piece of paper on the floor?' You're a mature, responsible adult. You put your pants on just like I do -- one leg at a time. So what we do is treat you like an adult. We set the standard of excellence and let you meet it," said Gatlin (1993).

People lie at the center of the Logan Management Concept. Logan views all personnel as management resources, a position that gives greater importance to what team members are able to do when needed than to what they are actually doing.

"Logan Aluminum operates under the 'up or out' philosophy. We want every employee to know everything in a

unit so we can have maximum flexibility. That is why we pay for what our employees know about our business, not how long they have worked here," said Mudge (1993).

Logan has eight skill levels for its Operating Technicians, starting with Basic Technicians and ending with Operating Technician 7. After spending the required amount of time at one pay grade and learning its required skills an employee can ask for a review and a promotion. Basic technicians must have a minimum of three months at that level before they can ask for a review. Operating Technicians 1-3 must have nine months in each grade, and Operating Technicians 4-6 must have a minimum of 12 months in at each level before they can ask for a review. It takes a minimum of five and a half years to reach Operating Technician 7.

As with many other activities at Logan, the pay and progression system operates more from principles than hard and fast rules. Team members must collect points to progress to the next pay level. A team member must earn 200 points to advance to the next higher level and 1,400 points to advance to Op Tech 7.

The whole purpose of our pay and progression system is to assign point values for skills based on the percentage of time it takes to learn a particular job relative to the time it takes to learn all the jobs in a unit. Logan tried to add some structure to the equation by making basic tasks such as

learning to drive forklifts or operate cranes have near equal point values throughout the plant, but many of the more complicated and unit specific jobs such as running a control panel in the mill or casting ingots have varying point values. "We try to put new team members on some of the less demanding tasks when they start so they can get some points pretty fast, but it all keys off the unit's needs at the time," said Sucher (1993).

Sample point values include: changing the mold station, 12 points; preparing the mold station, 12 points; removing, inspecting and making ingots, 24 points; preparing to cast, 75 points; pouring sows, 2 points; operating forklifts, 24 points; selecting the charge for the melt furnace, 50 points; controlling melt furnaces, 40 points; performing operating maintenance on the melter, 10 points; and operating the ball preheater, 2 points.

Logan's organizational chart has only three levels: president, unit managers and teams. Each layer has broad spans of control and few intermediary positions between production and management.

Besides lacking layer upon layer of bureaucracy, Logan's organizational chart offers another distinct difference from many more conventional organizational charts. Logan's chart features three-sided instead of four-sided boxes. "We left the fourth side open because our employees don't have job descriptions. We didn't want to

restrict our employees. If someone has some expertise in an area that will help someone in another area, we want them to share information and assistance for overall business success. We want our people to lend their expertise when they can," said Mudge (1993).

Before coming to Logan, Mudge had never had any experience working in a team or participative environment, although he has always advocated working with employees instead of having the employees working for the company. As president, he sees his key role as understanding the team concept and providing direction on where it should go. He receives frequent audits to make sure Logan is going in the right direction. The audits examine the progress of each team and the progress of Logan as a whole. The scores from the surveys are matched against Logan's Vision Statement and adjustments are made to correct any wayward tendencies. The survey asks six questions each about customer orientation, operating excellence, common values, performance commitment, environmental awareness, trust, reward systems, work autonomy/job flexibility, organizational structure and leadership. The responses are listed on a continuum and then analyzed. See Appendix "A" for the complete vision statement and survey materials.

Accessibility is very important to the team concept. To achieve it Mudge walks through the plant every day and on weekends so he can talk to the employees. He also maintains

an open door policy. According to Mudge, a leader in a team environment must love people, be convinced that workers know their job better than anyone else, have enormous patience and not have a corporate ego.

One thing immediately becomes clear to readers of the Logan Management Plan--it has virtually no rules. "One of the goals we had when we started this place was to have as few rules as possible. Instead, we offer philosophies on how Logan will operate and we inform the reader that it is his/her responsibility, as well as the team's, to figure out how to live up to them. We wrote the management plan, not from the work rule perspective, but from a philosophical operations basis," said Pitchford (1993).

Team guidelines, for example, include working for consensus decisions, objectives and plans and supporting team decisions; openly sharing with one another one's feelings and opinions about problems and conditions; trusting, supporting, respecting and having genuine concern for other team members. Team characteristics include sharing collective responsibility, meeting meaningful goals, contributing to feedback on team and individual performance, and making sure that each team has a team leader.

Team responsibilities include meeting established production and customer requirements, maintaining a safe working environment by utilizing safe work practices, maintaining established quality and environmental standards,

maintenance and repair, housekeeping, coordinating and managing interface with other teams, educating team members, maintaining and increasing team effectiveness, selecting and evaluating team members, scheduling and cost containment. Nowhere in this manual does one find how these functions are to be performed: instead, the team makes this determination. See Appendix "B" for the complete management plan.

The Logan operation lies somewhere between participation (characterized by its standard of excellence, communications, involvement, openness, trust, collaboration and commitment) and enlightenment (characterized by stakeholders, self accountability, organizational direction, principles, sense of purpose, understanding and long term focus). "The key rests in figuring out what lies on the other side of enlightenment and shooting for that," said Mudge (1993).

Among the benefits Logan sees from its management system include improved satisfaction, greater productivity, higher quality and lower cost; flexibility of operations; and the opportunity to deal directly with employees as business partners. "Our management philosophy has allowed us to see great improvements in our production volume. We produced about 30 percent more in 1989 than in 1988, about 12 percent more in 1990 than in 1989, about 12 percent more in 1991 than in 1990, and about 10 percent more in 1992 than in 1991. All of this adds up to us producing right at 50

percent above design capacity," said Mudge (1993).

Logan has a greater utilization of its people; an absence of an adversarial relationships between employees and members of management; and increased interaction, participation and responsibility. It also places decision-making power at the appropriate levels, and has more equity, openness and trust.

As evidence of these perceived benefits Logan can say that:

* Only one half of one percent of the can body stock it produces has identifiable defects that cause it to be returned for reprocessing.

* Logan Aluminum has a less than 2 percent turnover rate per year.

The latest employee census results available (1988) confirm the success of the Logan Team Concept:

1. Eighty-two percent report that the Logan Team concept is working in their team.
2. Ninety percent report their team members are committed to team goals
3. Forty percent say unresolved conflicts exist on their team.
4. Eighteen percent report that their team leader must be present for the team to work well.
5. Ninety percent report that they can contribute to team their meetings.

6. Eighty-two percent report that they feel free to speak up.
7. Twenty percent report that inappropriate behavior is tolerated on their team.
8. Sixty-eight percent report that internal communications at Logan are effective.
9. Seventy-three percent report that upper management makes a sincere effort to communicate with them.
10. Sixty-five percent report that their accomplishments are acknowledged by the management team.
11. Sixty-eight percent report that they can communicate with all levels of management.
12. Eighty-nine percent report that their work environment is pleasant for this type of business.
13. Sixty-two percent report that Logan is a better place to work than when they started.
14. Eighty-six percent report they feel secure in their jobs.
15. Eighty-two percent report that they are pleased with their job progress.
16. Fifty-four percent report that their job gets better year to year.
17. Sixty-two percent report that they are well trained before they are asked to do a job.
18. Sixteen percent report that their job is boring most of the time.

19. Sixty-eight percent report that pay increases are handled fairly.
20. Eighty-two percent report that their suggestions are well received.
21. Ninety-seven percent report that most of their team members do a good job.
22. Eighty-six percent report that their coworkers get along well.
23. Ninety-five percent report that they feel accepted by other team members.
24. Ninety-five percent report that they work with high quality individuals.
25. Ninety-one percent report that they feel responsible for making Logan Aluminum successful.
26. Eighty-five percent report that they can make a positive difference at Logan Aluminum.
27. Ninety-four percent report that they are proud to be Logan Aluminum employees.
28. Eighty-six percent report that they understand how their performance is evaluated.
29. Ninety-six percent report that product quality is very important to their team.
30. Ninety-four percent report that their customers' perceptions of Logan Aluminum are very important to their team.
31. Seventy-five percent report positive job

satisfaction.

No comparative data were available from other aluminum rolling mills or other industrial concerns within Logan Aluminum's region.

Team Capabilities and Responsibilities

Work at Logan is divided among teams instead of broken down into small, easily learned, repetitive tasks performed by individuals. Each team is given a whole task to perform and all team members are required to learn all aspects of his/her team's duties. Definitionally, Logan says its team philosophy is "A management philosophy that organizationally structures jobs in ways that permit people to work in teams, giving individual team members greater interaction with their co-workers and greater responsibility for a broader scope of work," said Sucher (1993).

Teams at Logan work with vendors and contractors, fill out vacation and work schedules, perform peer appraisals and basic maintenance, as well as participating in the hiring and firing processes. They do whatever it takes to run their part of the business. "Where I worked before, I had to spend the first hour and a half every day assigning jobs. Here I may not even go out on the floor until 2 hours into the shift. That extra time allows me to take care of our administrative needs like production, planning, working with vendors--I get to do those things that we're going to need

tomorrow or next week," said Markham (1993).

The Logan Concept sees four levels to team development. It calls the first level 'new.' This level usually lasts for one to two years. In this level the team leader is the boss and is expected to intervene while the team acts dependently. Logan calls the second level 'young,' and it usually lasts from two to four years. In this level the team leader is the teacher and is expected to facilitate team actions. Teams at this stage are counterdependent. The third level is called 'growing,' and it usually lasts from three to six years, in it the team leader is a participating coach and the teams act independently. And Logan calls the fourth level 'maturity,' and it comes after the team has spent five or more years together. In this stage the team leader is a mentor/resource and the teams act interdependently (Sucher, 1993).

"When I get called out to the floor on an issue, like a quality concern, my team members know the right thing to do 99 percent of the time. Most of the time they just want a little reassurance," said Carlisle (1993), whose team has achieved "maturity."

Team leaders are responsible for coordination across functions and across shifts of operation, as well as for the effective performance of the team itself. This role is somewhat loosely defined, however, for as the teams mature into self-directedness the role of the team leader changes.

Also, the roles of the differing units within Logan require the team leaders to perform somewhat different tasks.

"The biggest change I have noticed from when I came here more than 10 years ago is in the people themselves. They have gained the ability, through training, to be a part and to take part in running the business. As a matter of fact, for most of the past year and a half I've been involved in special projects and haven't worked hardly at all with my team and it has carried on and run the business very well," said Markham (1993).

Daily team meetings--the primary vehicle through which team leaders monitor, evaluate and influence team growth and effectiveness--are designed to communicate consistent information, resolve day-to-day issues, analyze and act on information, develop team members and actively involve all employees in the business.

To provide the time for team meetings, team members spend 8 1/2 hours on site per day. They spend 7 1/2 hours on the floor, 1/2 hour eating and 1/2 hour in team meetings. Teams have the option of having their team meetings either immediately before or after their shift, however daily team meetings are required.

"One of the biggest benefits I see from team management is that our team does with 28 people what it took more than 40 workers to do at my last job," said Markham (1993). As another example of the effectiveness team management can

create, Hot Mill Unit Manager Bill Witherspoon compared Logan Aluminum to the British Steel plant in Port Talbert, England. The facilities are almost identical except Logan has two more furnaces, and the production is almost identical when one adjusts for the weight differential between steel and aluminum. In that comparison British Steel uses 40 operators per shift as opposed to 15 by Logan. And on maintenance day British Steel brings in 125 crafts people as opposed to 25 by Logan Aluminum.

Peer Appraisals

Logan's teams perform their own peer performance appraisals. This lets them establish the expectations, build team ownership, provide an opportunity for input and it makes the process equitable. "It also takes management out of the process and keeps us from being the ogre," said Mudge (1993).

The purpose and intent of the peer appraisal process is to assure that the highest level of quality input is available to the team member being appraised so a common understanding of expectations can be achieved and exercised. By having the teams perform their own appraisals, continual improvement becomes the focus of the team through the peer feedback loop and teams take ownership of performance issues and respond appropriately. The process itself has always focused on behavior (expecting mature, responsible

behavior), operational (technical) skills, administrative (not in addition to a job but as a part of the job) duties, and maintenance (all employees are expected to possess the skills necessary to perform basic maintenance). Since 1991, safety, which looks at whether team members work and behave safely, has become a part of the peer appraisal system.

Some of the key lessons Logan employees have learned from this process are that it provides feedback from those who know you best. Critical feedback from appraisers was initially limited but long term it has developed higher standards, expectations and accountability. Team members have also learned that the process is adaptable and flexible, allowing for each team to alter it to suit its needs. They have learned that it produces a clearly defined link between expectations and performance, and that it focuses upon continual improvement and activities that add value.

The Selection Process

President Fred Mudge and many of his coworkers credit much of Logan's success to its employee selection process. This process began with the greenfield site and stopped patronage in its tracks. All applicants interested in working for Logan Aluminum must first be screened by the Commonwealth of Kentucky. After that screening the applicants must take a general aptitude test, of which Logan

will accept those scoring in the top 20 percent. From there the Employee Relations Unit interviews applicants. Seventy-five percent of those interviewed are asked to attend a pre-hire orientation session that gives an overview of Logan Aluminum, how it works, what it does and what it expects from its employees. Those who still want to work for Logan Aluminum, usually about 98 percent of those remaining, spend eight hours in the Assessment Center taking more tests to measure decision making ability, energy, flexibility, oral communications, problem analysis, decisiveness, integrity and tenacity. Approximately 65 percent of those people will "make it" into the eligible pool. From there, team and unit members interview applicants when a position opens. Those selected consent to a pre-hire physical and two and a half days of post hire orientation.

As an example of how many people make it to the eligible pool, if the Commonwealth of Kentucky submits a list of 1,000 potential employees, Logan Aluminum will continue working with the top 200 scorers on the aptitude test. The Employee Relations Unit will narrow the list to 150, of which three will drop out after the pre-hire orientation. Of those 147 only 96 will ultimately make it through the Assessment Center testing and into the eligible pool. From there the employees have the final vote on who gets hired for their team.

The intent of Logan's selection process is to develop a

fair and objective selection system that identifies a relationship between individual capabilities and organizational needs. It attempts to establish a new standard, avoid traditional selection pitfalls, establish buy-in and ownership by letting the teams decide with whom they want to work, and insure that the capability exists to operate and upgrade the technology and equipment.

Training Efforts

No one at Logan will undervalue the effects the training efforts there have had on that organization's successes. They are invaluable. "Our initial challenges in setting up this greenfield site were to understand what we wanted to create and then provide the focus and training to create it," said Harris (1993).

Logan's training philosophy, developed in 1985 with the input of unit managers, says that training should be comprehensive in scope, systematic in delivery, job related, fair in its evaluation (i.e. written and performance based), individualized, classroom and performance based, and based on a no-fail proposition. Logan started its training effort even before it started employing anyone. It began by putting together the best selection process envisionable. From there it added task analyses to guide team members through all of the jobs. This formed the basis for two to three years of craft and leadership training (Vincent, 1993).

Logan began putting together a training system that fit these requirements by using the DACUM (Developing A Curriculum) technique. In it, a facilitator, a recorder, and five to eight content specialists met for three days for each job analysis to determine what duties and tasks were required for a particular position and how they were to be performed. The information generated by the meetings became the basis for classes offered individuals in those positions. This approach individualized training for each particular job. Business units then prioritized the courses and a course schedule was presented to the team members.

The whole reason Logan has its comprehensive employee development system is to be able to push decisions down to where they need to be made (Vincent, 1993).

As the above approaches of involving managers, team leaders and team members illustrate, the philosophy of training at Logan is based on shared responsibility for determining training needs and developing appropriate programs. The training staff does not presume to have all the answers. Their approach has been to start with the question of purpose and then work with each team from that perspective.

In the implementation of the technical training programs, Logan uses three sources: 1) employees, 2) vendors, and 3) local technical schools. Employees include both the Training Center staff and subject matter experts

who have been trained to teach. Vendors are contacted when specialized training is not available within the organization. Technical schools provide a low cost source of generalized training in skills such as in welding, pneumatics and basic electronics.

"As time went on we began getting more involved in organizational development and peer appraisal. In confronting those issues Fred (Mudge) and Mike (Harris) began to see problems popping up because we did not offer any comprehensive training so we opened the Logan Employee Development System in 1990," said Vincent (1993).

"Our Logan Employee Development (LED) program is the brain to our organization. With it we support employee performance by providing education in the technical, safety and business management sides of our business. We have colleges for quality, leadership, process and mandated classes," said Mudge (1993).

The Logan Employee Development System (LED) provides the opportunity for employees to obtain and/or improve their technical, managerial and interpersonal skills. The system is designed to assist in career path planning by providing developmental opportunities at various career stages. It is imperative that teams use the performance appraisal process to determine developmental needs and then use the LED System to support those needs.

The LED System is divided into six curricula: General

Technician, Operating Technician, Leadership, Professional, Administrative and Universal. The Leadership curriculum for Team Leaders, for example, includes courses on Business Concepts, Leadership Concepts, the Logan Management Concept, Assessment Center Rater Training, Logan Vision, Sexual Harassment in the Workplace, Maintaining Employee Safety and Health, the Logan Quality Process, Computer Training, the Logan Management Paradigm, Fire Fighting and OSHA Mandates. The entire program requires approximately 560 hours of classroom instruction plus written and performance examinations.

The curriculum has been divided into 16 schools or departments with each having an on-site dean to oversee course development and instruction. For example, Fred Mudge is the dean of the management section, Mike Harris is the dean of the Team Leader and Logan Management Principles section, Ann Stokes is the dean of instruction for the administrative assistants curriculum, and Ev Katz is the dean of the Finance/Accounting section. Operations Technicians are required to take 50 hours of instruction per year and general technicians (machinists, electricians, maintenance) are required to take 100 hours per year.

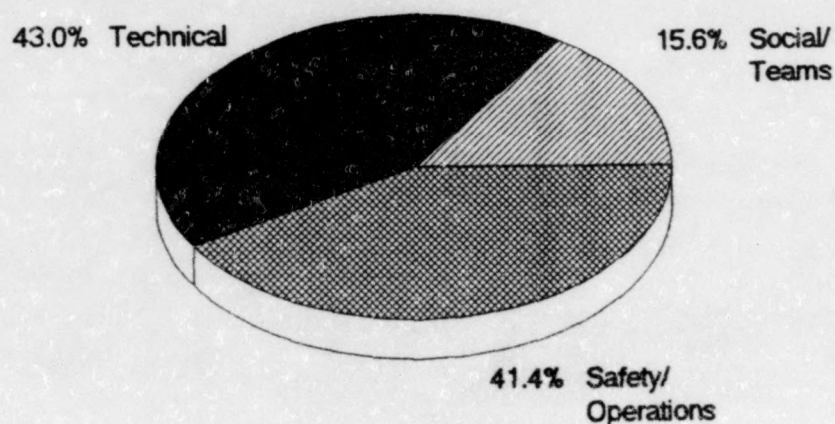
With much of the necessary technical training, or preparation for future technical training, already designed, now the training department has embarked on developing highly skilled "super-techs" and on cross-training for

better team development and implementation of the Star Concept. Team development training includes the basics of conflict resolution, communications, time management, goal setting, peer performance appraisals, giving and receiving feedback, motivation and positive reinforcement.

The training team has also developed a Team Leader Development Program, with the assistance of team leaders, using a comprehensive needs analysis. The following topics make up the two-year training program: Basics of the Logan Concept, Goals and Objectives, Performance Appraisals, Team Leader's Role, Definition of a Team Leader, Salary Administration, Effective Meetings, Logan Financial Accounting Systems, Self-Regulating Teams, Conflict Resolution, Time Management, Managing Teams, Communications, Decision Making, Effective Presentations, Dilemmas of Managing Participation and Basic Metallurgy.

A chart showing the proportion of Technical, Safety/Operations, and Social/Team training performed by Logan in 1993 follows:

Proportion, by subject matter, of classes taught at Logan Aluminum in 1993



1,284 classes taught: 552 Technical,
532 Safety/Operations, 200 Social/Teams

In addition, the Training and Development Team:

1. Designs, implements and evaluates the annual Employee Census.
2. Designs and facilitates the use of peer appraisal forms for teams.
3. Established a "point system" to track and document the pay and progression system for the plant.
4. Facilitates the implementation of the Star Concept and serves as a clearinghouse for Star Concept information.
5. Monitors and audits team meetings for consistency of

process and for any deviations from norms.

6. Conducts team building sessions for teams throughout the plant.

7. Audits the Assessment Center.

8. Develops philosophy and values statements for the human resources group.

9. Participates in community and public relations activities.

10. Coordinates all quarterly communication meetings for the President and executive management.

11. Serves as resources for other units in the plant.

12. Serves on every steering committee in the plant.

13. Provides information on team development to sister plants.

14. Completed the DACUM analysis for team leader positions.

Logan spends about \$175,000 per year on training alone. When one adds the trainers' salaries and lost time by trainees the price tag adds up to between \$900,000 and \$1 million per year on training. This figure amounts to about 1 percent of Logan's total operating budget.

Conclusions

In many instances, Logan Aluminum offers a textbook example of the principles of socio-technical and team management. Trist and his colleagues wrote that to jointly

optimize the social and technical aspects of work, the work must be performed by teams that have responsibility for completing a discernable segment of that work. Logan employed this philosophy by dividing its operation into four distinct units--Melt and Cast, Hot Rolling, Cold Rolling and Finishing--and then creating teams to perform the functions within each unit.

From there the theories evolved to include the importance of power (the ability to make decisions), information (better information flow in all directions), knowledge (of the organization's total operation and goals) and rewards (both intrinsic and extrinsic that bring some sense of accomplishment). Logan adopts all of these tenets. It gives its team members the power to make many types of decisions. Logan team members decide how they will perform their work, who they will work with (selection process), and who gets promoted, to name a few. To improve information flow in all directions, Logan mandates daily team meetings and has only three layers on its organizational chart. Sixty-eight percent reported that Logan's internal communication efforts are effective.

Knowledge of the organization's total operation and goals plays a critical part in Logan's implementation of socio-technical and team management theory. The Star Concept, in which team members perform operations, quality, administrative, personnel and site & safety functions,

embodies this philosophy. Logan Star Point Representatives have the performance and coordination responsibilities for their teams in these areas. The purpose of the Star Concept is to actively involve team members in the organization's total operation.

Logan also seeks input from team members when determining its goals. Upon learning of the sales capacities of its associate owners, Logan develops its business plan with the assistance of team members.

Finally, Logan utilizes a comprehensive rewards system. The pay and progression system rewards team members based on the number of skills they can perform, and the incentives offered for safe performance of duties offer more recognition.

Logan team members perform all of the duties and functions outlined in the literature review. The team members plan their own work, solve technical problems, perform general maintenance, control quality, perform peer appraisals, hire and fire, and manage inventory, to name a few. Now, upon attaining the Operating Technician 7 level, the highest level of Operating Technician, several team members have the opportunity to continue to grow and develop by learning the administrative functions within the facility.

According to the literature, these practices have the intent of creating better commitment to organizational goals

and improved performance. Ninety percent of Logan's employees reported in the most recent census available that their team members are committed to their team's goals, while 91 percent said they feel responsible for making Logan Aluminum successful. With respect to improved performance, Logan has improved productivity by at least ten percent during each of the past five years, and now its production outstrips the facilities design capacity by 50 percent.

The literature review pointed out that for an organization to effectively operate this type of management system it must have effective leadership. Fred Mudge, Mike Harris and a host of others provide this. From the beginning this cadre of leaders (visionaries) strove to create an organization that best utilized its human resources to give Logan the competitive advantage it would need to survive. Even with the successes they have had, they are still looking for ways to improve quality and the development of their employees. Logan recently turned over the safety process to some of its team members. Within a year of this action the facility won a National Safety Council award for being the safest organization of its type and size in which to work. It now plans to hand off similar exercises with respect to controlling health care costs, improving process controls, increasing production and improving quality. While its teams are maturing, the Logan Management Team is investigating the procedures to evolve from a pay for skills

organization to a pay for performance one. As Mudge said (1993), "The key is in figuring out what lies on the other side of enlightenment."

As stipulated in the literature review, training pulls all of the efforts together. The literature review revealed that team members must be trained in technical, social and operating techniques, that the training efforts must be ongoing and mandatory, and that they must evolve with the evolution of the organization. Logan began its training efforts even before it began hiring Operating Technicians. At that time the training focused on developing standard operating procedures and creating a curriculum for teaching interpersonal and team skills. Since that time the standard operating procedures have been expanded to include safety procedures and Logan has developed an entire training curriculum called its Logan Employee Development (LED) System. Course titles in this curriculum range from team building to pipefitting to computer operations to leadership to safe operating procedures. In all, Logan will offer 1,284 courses in 1993, and its training efforts will cost the company approximately \$1 million during that year.

This research was designed to investigate the operationalization of socio-technical and team management theory at Logan Aluminum, a greenfield site. This research in no way represents an exhaustive study of Logan Aluminum. Valuable communication information is still left unearthed

concerning the small group processes utilized in Logan's teams, procedures used in the training sessions, the evolutionary track of a particular team or unit, the specific communication systems used to relay information between teams, and between teams and management, and the evolution of the specialty teams (i.e. health care cost control, production, quality).

As previously stated, Logan Aluminum represents a textbook illustration of team management operationalized. Much can be learned from what it does and how it does it.

Appendix ALOGAN VISION

Purpose: The purpose of this document is to identify key characteristics of the Logan management system, define our expectations of the system, and assess where we are against those expectations.

Content: Listed are key sections which correspond to what we consider critical elements of our system. When understood and applied, they can provide valuable direction to each of us in thinking about our work and making decisions.

Customer Orientation	Trust
Operating Excellence	Reward Systems
Common Values	Work Autonomy/Job Flexibility
Performance Commitment	Organizational Structure
Environmental Awareness	Leadership

Explanations of these characteristics are attached. The characteristics are not clearly distinct from each other, but are interdependent and overlapping. They are identified independently to indicate their importance as key aspects to our management system.

Format: Each characteristic is defined as closely as possible to where we would like to see Logan. Examples will help calibrate where we think we are, and performance results will identify where we actually are. The example statements will be followed by a five-point scale. 1 on the scale describes the team or plant that is low on that particular indicator. A 5 on the scale describes the team or plant as high on that particular indicator. A 3 on the scale is an intermediate level. This format will allow us to gauge how we actually measure-up to the expectations of our management system. (Note: It measures the success of both the individual and the plant.)

Process: This document was developed to be used as part of an improvement effort by helping people both clarify the possible future state (where we would like to be) and assess our current state against it.

This document will also be useful in assessing our progress over time and should be continually challenged and upgraded to reflect our collective understanding of our management system.

Customer Orientation - A clear conviction shared by all employees exists toward meeting customer needs. A universal commitment exists to give the customer, internal and external, something beyond their expectations both tangible and intangible. This is evidenced by actions which demonstrate a high level of understanding of who customers are, their needs and concerns and desires.

Operating Excellence - All employees will display a broad based knowledge, understanding, and awareness of the process equipment and technology, its capabilities and state of performance. A commitment exists for mastering the skills required to perform successfully, now and in the future.

Common Values - Commonly accepted values exist throughout the organization. It is unmistakably clear that these values impact behavior, our expectations of ourselves and the organization. They impact policies, procedures and rewards. These values are well-defined, frequently articulated, and widely understood.

Performance Commitment - Every individual within the organization feels a commitment to make the maximum contribution they can to the company's success. All employees see themselves as business partners striving for execution of business plans.

Environmental Awareness - An awareness by all employees of external factors influencing the business exists, and the ability to put this information to use allows people throughout the organization to influence and respond to those factors. This is demonstrated by the degree of knowledge possessed by all employees and the ability of the organization to respond to external influences.

Trust - Is recognized and understood as a key contributor to the organization's success. Trust is "unconditional" in nature; that is, every individual is thought of as being worthy of receiving trust.

Reward Systems - A direct relationship exists between rewards and organizational effectiveness. The effectiveness of the organization should be continually reinforced by the nature of rewards.

Work Autonomy/Job Flexibility - All employees are multi-skilled, and this allows them greater understanding of the business and provides flexibility and improved effectiveness of the organization.

Organizational Structure - The structure of the organization allows flexibility and does not limit individual contributions to the success of the business. Change is viewed as a necessity in insuring continual improvement in overall functioning capability.

Leadership - Leaders have a clear vision of the organization's potential for greatness which they are zealously committed to achieve. Much of their work is in articulating this vision and in motivating people to work toward it. Leaders are never completely satisfied with how things are--the organization is characterized by continuous performance improvements. An understanding exists that greatness is achieved over time.

Customer Orientation - A clear conviction shared by all employees exists toward meeting customer needs. A universal commitment exists to give the customer, internal and external, (something beyond their expectations both tangible and intangible.) This is evidenced by actions which demonstrate a high level of understanding of who customers are, their needs and concerns and desires.

- People at all levels of the organization have frequent exposure to customers, both internal and external
- All decisions made are based upon improving the effectiveness of the product or service to the user.
- People within the organization perform and execute their functions in a manner that enables the next group in the work flow to meet customer need and the business plan (e.g. low quality product or workmanship are not passed on to another unit, time commitments are met).
- Actions are directed toward effective relationships to assure the flow of high quality, timely products to the customer.

1. Employees have little or no direct contact with internal or external customers and receive little feedback from those customers.

1. Employees have limited opportunities for direct contact with producing units. Occasionally customers may visit certain functional groups.

1. Employees have a high level concern for customers' satisfaction. Customers regularly visit and interact with group responsible for producing the product or service they desire.

1-----2-----3-----4-----5

2. Most individuals within the organization have little knowledge of the needs of the customer or little commitment to meeting those needs.

2. A limited customer focus exists. Most employees have some knowledge of customer needs but, typically, do not have an opportunity to utilize this knowledge in a meaningful way.

2. Customer satisfaction is the key focus of all people within the organization. People actively introduce and put in place new ideas which enhance the product or services' effectiveness from the customer's perspective.

1-----2-----3-----4-----5

3. The organization has difficulty reacting to changes in customer requirements.

3. The organization can make minor changes, but complex changes tend to have a negative impact on employees, and the results are unpredictable.

3. The organization is very flexible and views their ability to execute changes in customer demands as a competitive advantage. The organization can quickly respond to changes without negative impacts.

1-----2-----3-----4-----5

4. People tend to focus on what their task is without considering its impact on others.

4. People are aware of how their performance can impact others, but they feel so pressed to "get the job done" that the output ends up dysfunctional to downstream operations (salvage, diversion).

4. People perceive the next unit, their customers and are committed to providing a quality product in a timely manner. All activities are focused on satisfying the customer 100% of the time.

1-----2-----3-----4-----5

5. Isolated units have the only connections with or understanding of customers.

5. Management has contact with customers and an understanding of their needs.

5. All employees can state who their customers are and what they do in a product.

1-----2-----3-----4-----5

6. The facility is compartmentalized, and no joint projects exist to improve the effectiveness of the product or service.

6. Some joint communication vehicle projects exist to broaden employee's understanding of the total process.

6. All employees have a broad-based understanding of how the organization is integrated and the role each unit plays in the effectiveness of the organization and are totally committed to satisfying their customer and achieving business plan.

1-----2-----3-----4-----5

Operating Excellence - All employees will display a broad based knowledge, understanding, and awareness of the process equipment and technology, its capabilities and state of performance. A commitment exists for mastering the skills required to perform successfully, now and in the future.

-All employees fully understand their unit work processes, technology, and work flow.

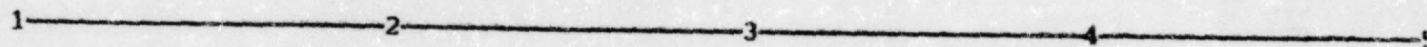
-Highly developed skills (depth and ^{breadth} broadened) exist in each unit.

-All employees are directly involved in a wide variety of work processes (e.g. goals, performance measures, accounting, work design, purchase decisions, process procedures).

1. Most employees cannot explain key processes that do not directly impact the specific task they are doing.

1. Some employees can explain key processes that affect the majority of the work within their unit.

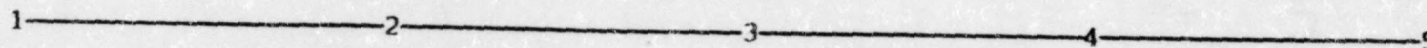
1. Over time, all employees can explain key processes that affect their unit. They can accurately explain the work flow and identify and react to potential process problems.



2. The focus tends to be on maintaining "status quo". Change is often viewed as a disruption to effectiveness.

2. Improvements in skills and technology is sometimes seen as a "threat".

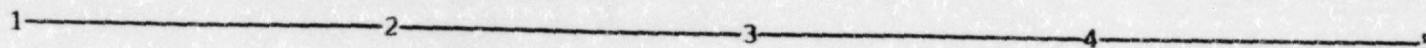
2. All employees regularly discuss ways to make improvements to the quality and cost-effectiveness of the product and to upgrading their operating and process skills.



3. Virtually, all skill development is focused on preparing people to perform narrowly defined "jobs".

3. Few individuals are given broad skill development opportunities.

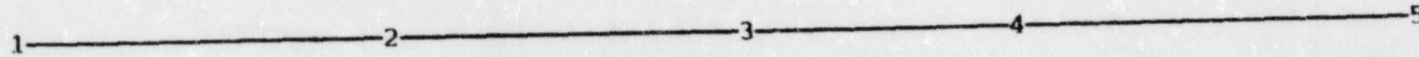
3. A formalized skills ^{is applied} development program is in place that enables people to learn a variety of useable skills.



4. Management or specifically designated people come up with virtually all new process improvement ideas.

4. Most ideas for process improvements come from management or staff.

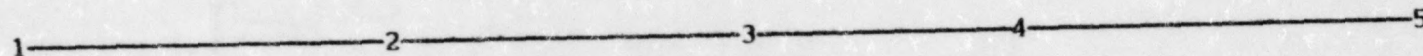
4. All employees are actively involved in creative, innovative ideas that are implemented regularly to improve the organization's effectiveness and efficiency.



5. Most employees do not demonstrate technical competency as perceived by peers and experts.

5. Most employees demonstrate technical competency as acknowledged by peers and experts.

5. Employees demonstrate mastery of technologies as acknowledged by peers and experts. This is evidenced by customer satisfaction and the performance and cost effectiveness of the organization.



Common Values - Commonly accepted values exist throughout the organization. It is unmistakably clear that these values impact behavior, our expectations of ourselves and the organization. They impact policies, procedures and rewards. These values are well-defined, frequently articulated, and widely understood.

- All resources will be treated like management resources.
- We expect to employ mature, responsible, cooperative people.
- Growth and participation in the management system is an expectation of every employee.
- The primary indicator of success is customer satisfaction.
- Responsible decisions will be made at the lowest possible level.
- There will be no unnecessary barriers which limit anyone's ability to make a contribution to the organization.
- The primary measurement of performance is "value-added" to the product per employee.
- Constructive disagreement is encouraged.
- Information will be freely shared.
- Everyone's opinion and contribution will be respected.

1. Operational philosophies include:

- The primary indicator of success is staying within budget.
- Decisions should be made by management.
- Disagreement is usually disruptive and should generally be avoided.

1. Operational philosophies include:

- The primary indicator of success is achieving performance goals (quality, output, budget, etc.).
- Decisions should be made by management after appropriate consultation with others.
- Disagreement is appropriate if it is not "disruptive", but disagreement with superiors is generally discouraged.

1. Operational philosophies include:

- The primary indicator of success is customer satisfaction.
- Decisions should be made at the lowest possible level.
- Constructive disagreement is "ok" and encouraged.

-Effectiveness is only measured in performance against schedule.

-Information should be shared primarily on a "need-to-know" basis.

-Only people who have "proven track records" are respected.

-People need to be controlled and organized through job descriptions, work rules, direction of activities, etc.

-The customer will be provided with the product and/or service that is produced.

-Effectiveness is measured in any one of a variety of ways depending on the function of the group.

-Information is passed along with some consistency.

-Most people are respected but those in "lower level" jobs are not seen as being as important to the organization as those in "higher level" jobs.

-Although people do not always need to be controlled, they are only expected to add value in their job area.

-The customer will be provided with a competitive product and/or service.

-Effectiveness is measured by "value-added to product per employee".

-Information is shared freely.

-Everyone is respected.

-There should be no "artificial barriers which limit a person's contribution to the organization.

-The customer will always be provided with the best value.

1-----2-----3-----4-----5

2. Decisions are made using the facts on hand without reference to overriding values.

2. Values are referred to by upper management but are seldom referenced by anyone else when they are making decisions.

2. Values are often referred to throughout the organization when decisions need to be made. They are used to justify or abort key actions.

1-----2-----3-----4-----5

3. Most people cannot state the organization values.

3. The organizational values stated by people will be limited to general attitudes like "be good to others".

3. People say they understand and are able to state the organizational values. These values are specific enough that they have genuine meaning for everyone.

1-----2-----3-----4-----5

4. People generally cannot repeat examples of successful changes in the organization to bring it in line with agreed-on values.

4. There is not much talk about values and when there is there does not seem to be much consistency on what the values are.

4. People can tell stories which illustrate when values were upheld and/or what happened when values were not upheld.

1-----2-----3-----4-----5

5. Most people will say that policies, procedures, practices, and rewards are often not consistent with organizational values.

5. Most people will say that policies, procedures, practices, and rewards are sometimes not in agreement with organization values.

5. People will agree that policies, procedures, practices and rewards are consistent with overriding values.

1-----2-----3-----4-----5

Performance Commitment - Every individual within the organization feels a commitment to make the maximum contribution they can to the company's success. All employees see themselves as business partners striving for execution of business plans.

- All employees understand the business and have knowledge of customers and the competition.
- All employees understand how their work contributes to and impacts business results.
- Performance expectations are achievable, realistic, and challenging.
- Expectations are clearly stated, widely communicated and understood.
- All employees accept a personal responsibility for improving the business and achieving the business plan.
- Performance measures reflect business priorities.
- People have resources (e.g., tools, training, information, funds) necessary for them to make their maximum contribution to the organization.

1. Most people do not know what the business plan is.

1. Most people know what the business plan is but they do not say that they are responsible for helping achieve it.

1. People know what the business plan is and they say that they are responsible for helping their organization achieve it.

1-----2-----3-----4-----5

2. Performance expectations are stated in terms of activities or assignments ("you do this and this and this", etc.) rather than as responsibilities.

2. Performance expectations are stated in terms of responsibilities ("you're in charge of this").

2. Performance expectations are stated in terms of business results ("you are expected to cut costs", etc.) and are consistent with business priorities.

1-----2-----3-----4-----5

3. Performance feedback is usually quite formal and held on an annual or semi-annual basis.

3. Performance feedback occurs with some regularity.

3. There is continual performance feedback.

1-----2-----3-----4-----5

4. Performance is rarely, if ever, discussed among peers. Managers provide employees with virtually all the performance feedback they receive.

4. Although most performance feedback comes from managers, occasionally peers may also provide feedback to one another.

4. People regularly and openly provide their peers with performance feedback.

1-----2-----3-----4-----5

5. Most people have difficulty explaining how their work contributes to overall business results.

5. All people can explain how their work contributes to their area's results but have difficulty explaining how their work contributes or adds value to overall business results.

5. All people can state how their unit's work contributes to business results.

1-----2-----3-----4-----5

Environmental Awareness - An awareness by all employees of external factors influencing the business exists, and the ability to put this information to use allows people throughout the organization to influence and respond to those factors. This is demonstrated by the degree of knowledge possessed by all employees and the ability of the organization to respond to external influences.

- Technological trends.
- Competitive trends.
- Social trends.
- Key indicators for the overall business and specific work unit results.
- Impact of work unit on other areas within the company.

1. The outside competition is monitored at the highest organizational levels. Such information is considered confidential.

1. The status of the competition is regularly examined at the highest levels in the organization. Some of the information is typically passed down to line managers.

1. The organization's relationship to outside competition is monitored and the information made accessible to all employees.

1-----2-----3-----4-----5

2. Everyone can state:

- The name of the area they work for.
- The name of their manager.
- Their job in their area.

2. Everyone can state:

- Senior officers of the company.
- Sketchy history of the company.
- Products they help produce.

2. Everyone can state:

- Key business objectives.
- Competitors and what differentiates their products.
- Key cost data.
- Main factors influencing profitability and how they affect them.
- Key customers.
- How they affect other parts of the business.

1-----2-----3-----4-----5

3. People maintain little or no contact with other organizations. They rarely share or seek information with outsiders.

3. People maintain contact with other organizations primarily through trade journals. They have little actual contact with other companies in their business.

3. It is common for people to keep in close contact with key outside organizations. For instance, visits to learn from the experiences of other companies are regularly practiced.

1-----2-----3-----4-----5

4. Most people seldom use market data or external information to make decisions.

4. People use external information for long range planning and "strategic" decisions but do not use the data for day-to-day decisions.

4. People use external information for day-to-day decisions. Action is taken based on this data as shown by projects, business direction shifts, organizational changes, new product development/modification, etc.

1-----2-----3-----4-----5

Trust - Is recognized and understood as a key contributor to the organization's success. Trust is "unconditional in nature; that is, every individual is thought of as being worthy of receiving trust.

-Trust being considered an important and relevant organizational issue.

-Openness, honesty and constructive feedback are highly valued and demonstrated organizational traits.

-Trustfulness is rewarded.

-Dishonesty is dealt with firmly, fairly and openly.

1. Trust is rarely discussed and not perceived as a particularly important area of concern.

1-----2

1. Trust is sometimes discussed.

2-----3

1. Trust is an issue that is openly discussed at all levels of the organization.

3-----4-----5

2. In general, mutual feelings of distrust are more readily shown between people than feelings of trust. This is evidenced by tight managerial control over operations and policies on the one hand and by attempts to "beat the system" on the other hand.

1-----2

2. There are mixed messages in relation to the degree people trust others. In some activities people have a fair amount of freedom; in others they are unfairly controlled or manipulated.

2-----3

2. Mutual trust between all people is demonstrated by such things as a lack of time clocks, flexible break hours, self-managing groups, joint problem-solving teams and the discussion of potentially sensitive information.

3-----4-----5

3. Those individuals who "get ahead" leave a bad image of themselves as a result of their actions.

1-----2

3. People generally value honesty but typically don't feel accountable for dishonesty of others.

2-----3

3. People who are considered outstanding examples of honesty and trust are clearly valued by members of the organization. The organization tends to reward such individuals.

3-----4-----5

4. Issues are often not brought up because of their "sensitive" nature.

4. People with suggestions understand the importance of raising issues but they are often reluctant to do so because of potential negative repercussions.

4. People are open, honest, and confrontative on issues. They say that they are rewarded for doing so constructively.

1-----2-----3-----4-----5

5. It is generally believed that people have more to gain by being dishonest than by being trustworthy. People tend to distrust others until they have proved themselves to be worthy of trust.

5. People "trust" others but not unconditionally. People perceive trust as an important value but do not demonstrate it by being completely trusting of others.

5. It is believed that people should demonstrate unconditional trust in others; that people, at all levels of the organization, can and should be trusted.

1-----2-----3-----4-----5

Work Autonomy/Job Flexibility - All employees are multi-skilled, and this allows them greater understanding of the business and provides flexibility and improved effectiveness of the organization.

- All employees are trained to do their tasks and are given the autonomy to perform and innovate.
- Employees are actively involved in the way their work is designed and performed.
- There is a high concentration of "generalists" who have a wide breadth and deep scope of skills.
- All employees share the joint responsibility, authority, and accountability for business results.
- Highly specialized functions exist only where they are absolutely necessary; they are closely associated with work teams.
- All employees cooperate in accomplishing a variety of tasks; they focus on "the work to be done" as opposed to "their jobs".

1. Jobs are specifically and narrowly defined to ensure maximum control of the work.

1. Jobs are specifically and narrowly defined with some exceptions. People are acquainted with a number of jobs besides their own.

1. Jobs are flexible and broad enough to allow people to make their maximum contribution to the business.

1-----2-----3-----4-----5

2. Management has the sole authority and the accountability for overall business results and improvements.

2. Management delegates some of the responsibility for business results and improvements but maintains the sole authority and accountability.

2. All employees share the job responsibility, authority, accountability for business results and improvements.

1-----2-----3-----4-----5

3. There are many specific job descriptions in the organization.

3. While most jobs have job descriptions which are very specific and specialized, others are more general and flexible.

3. Job descriptions are general and focused on key business results required rather than on specific isolated tasks.

1-----2-----3-----4-----5

4. Skill development/training occurs only for a new job holder.

4. Skill development/training occurs to allow people to do minimum requirements of other tasks which they will cover for absences.

4. Skill development/training occurs frequently. Job rotation is a commonly used way to give the people experience and necessary training to perform all the tasks in their immediate work area.

1-----2-----3-----4-----5

5. Most employees only know their job. They often become highly skilled and proficient in a narrow field of expertise.

5. There are "specialists" and "generalists".

5. Although most employees are considered generalists, there are a few targeted skills that require a high level of specialization. Specialists work closely with and are considered to be contributing members of work teams.

1-----2-----3-----4-----5

6. People will agree that managers are "in charge" of the operation.

6. Managers are said to be "in charge" but frequently other people are put in charge of a small piece of the operation.

6. All people agree that they are "in charge" of a significant part of the business. They will agree that they are business partners with a vested interest in the success of the company.

1-----2-----3-----4-----5

7. Managers make the important operational day-to-day business decisions. Decisions are solely the responsibility of management.

7. Managers make all the important business decisions after carefully considering subordinate's opinions.

7. All employees make decisions that go beyond the day-to-day tasks and often affect the long term viability of the business.

1-----2-----3-----4-----5

Reward Systems - A direct relationship exists between rewards and organizational effectiveness. The effectiveness of the organization should be continually reinforced by the nature of rewards.

- People are rewarded from a variety of sources (e.g., pay, promotion, peer recognition, management feedback, the work itself).
- People are formally rewarded for their ability to make a variety of contributions which help the team meet its objectives (e.g., problem solving, team work, job skills, resourcefulness).
- People are rewarded based on both the skills and the work-related knowledge they possess and on their ability to apply them to the improvement of the business.
- Rewards are directly tied to customer satisfaction.

1. People are rewarded based on how well they perform a specific job.

1. People are rewarded based on how effective they are at performing more than one narrowly defined task.

1. People are rewarded based on the variety and complexity of tasks they know how to perform.

1-----2-----3-----4-----5

2. Employment continuity is not guaranteed regardless of an individual's ability to do their job. Layoffs are a method used to maintain profitability during harsh economic times.

2. Employment continuity receives much attention although no clear plan exists.

2. Employment continuity is a function of how well the organization performs against its competition.

1-----2-----3-----4-----5

3. Problem solving is considered the role of management.

3. Most problem solving is done by management, although employee suggestions are accepted and rewarded.

3. People are rewarded for their ability to solve problems.

1-----2-----3-----4-----5

4. People are rewarded for their ability to do what their supervisor tells them regardless of its potential impact.

4. People are rewarded for their ability to "manage their job." That is, people who perform their task efficiently and cause minimal disruption to their peers or manager tend to be considered effective.

4. People are rewarded for their ability to get results in a team environment. This includes regular interaction with other team members, the team leader and other units.

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5. It is generally felt that informal recognition is ineffective as a form of reward. Pay and promotion are considered the only useful forms of recognition.

5. Informal recognition for good performance is occasionally given to people.

5. Informal recognition for good performance is regularly given to people.

1-----2-----3-----4-----5

6. People perceive their job solely as a source of income. They get little or no enjoyment out of the work itself.

6. People get some enjoyment out of their work, but they do not see it as being particularly motivating or rewarding.

6. People find the work itself rewarding and a source of motivation.

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7. Rewards are based solely on the isolated performance of the individuals and therefore may not take organizational performance into consideration.

7. The relationship between the reward system and achieving organizational objectives is not fully understood by most people. Numerous reward systems are inconsistently linked with business direction.

7. Reward systems are consistent with organizational effectiveness and tied ultimately to customer satisfaction.

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Organizational Structure - The structure of the organization allows flexibility and does not limit individual contributions to the success of the business. Change is viewed as a necessity in insuring continual improvement in overall functioning capability.

- The organization is "mission driven" versus department or territory-driven.
- Based on the issue that needs to be addressed, a variety of people may be involved. This is evident by the frequent use of short term ad hoc and long term task teams.
- Individuals and work teams are in control of the majority of their day-to-day responsibilities.
- By organization design all employees are integrally involved in problem-solving, decision-making, planning, and implementation activities.
- Considerable energy goes into examining ways to help the organization continually improve its overall operating effectiveness. This is an unending process that is considered extremely important for the longevity of the business.
- There are communication networks into the organization. Information is immediately disseminated to all employees through these networks.

1. The main emphasis is in attempting to maintain organizational effectiveness with the minimal energy. The maintenance of a "smooth" operation--the status quo--is considered ideal.

1. Some energy goes into examining ways to improve the organization's overall effectiveness, but generally there is a clear bias to not do too much "to disrupt the system".

1. Considerable energy goes into examining ways to help the organization continually improve its overall operating effectiveness. This is an unending process that is considered extremely important for the continued growth of the business.

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2. Identified problems are addressed by specialized organizational departments.

2. Most problems are addressed by a specialized group. These groups sometimes ask for assistance from other departments.

2. Ad hoc groups, whose membership is determined solely based on the skills required to perform the task are regularly formed to address organizational issues. In this way, individuals from a variety of disciplines are brought together to address organizational problems.

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3. The highly bureaucratic structure requires numerous levels of management and several highly specialized functional groups.

3. There are fewer functional groups than in most comparably sized, highly bureaucratic organizations. There are approximately the same number of management levels, however.

3. There are far fewer levels of management than in most comparably sized organizations.

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4. Only managers are responsible for the performance of their group. Employees are not required to take any responsibility for their actions other than the avoidance of repercussions for unsatisfactory performance.

4. Certain management tasks have been delegated to the work group. However, the group's overall performance is still considered the exclusive responsibility of its manager.

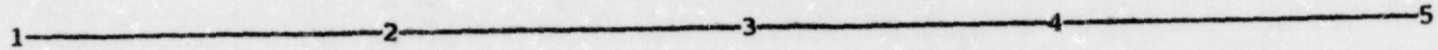
4. The work teams and the functions they perform are almost entirely self-contained and managed by the group itself. Group members rely on one another for cross-training, problem-solving, the handling of administrative duties and mutual support.

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5. People generally hear business information second hand or "through the grapevine". Meetings occur only for special reasons.

5. People have access to information required for them to do their job. However, there are no systematic ways to pass along information about "general business" or competitive business activities.

5. Information passing processes such as "team meetings" and regular "state-of-the-business" assemblies are a regular part of the work.



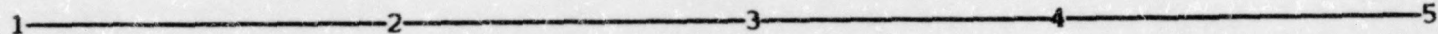
Leadership - Leaders have a clear vision of the organization's potential for greatness which they are zealously committed to achieve. Much of their work is in articulating this vision and in motivating people to work toward it. Leaders are never completely satisfied with how things are--the organization is characterized by continuous performance improvements. An understanding exists that greatness is achieved over time.

- The leaders of the organization are "future-oriented" and they prepare the organization to be successful in both the short term and in the long term.
- Leaders have a strong minded commitment to excellence.
- People feel empowered by organization leaders. It is common for people at all levels to champion key organizational issues.
- Management's primary responsibility is to support and act as a resource to their subordinates.
- Leaders are able to adapt and respond to a variety of circumstances. They see specific opportunities in ambiguous situations and approach issues with a variety of styles/behaviors appropriate to the situation.
- Leaders continually reinforce the core mission of the organization.

1. Managers' calendars are filled almost exclusively with activities (meetings, discussions, conferences, etc.) which focus on the immediate day-to-day needs of the organization.

1. Managers' calendars are mostly filled with activities which emphasize the short term needs of the organization but there are some activities in their calendars which address longer term needs.

1. Leaders' calendars are balanced with activities which address short term needs and with activities which address long term needs.



2. People say that they feel limited or unduly constrained by those in management positions above them.

2. People will say that management allows them to have an impact in certain areas. Typically, however they view their contributions as limited by management.

2. People will say that they frequently feel empowered and motivated about accomplishing business results. They frequently attribute this to effective leadership. They recognize the boundary conditions (e.g., time constraints, budget limitations, etc.) given to them as focusing rather than limiting.

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3. People will say that managers are more interested in making their own units effective than in making the business as a whole effective.

3. People will say that managers sometimes "sacrifice" the effectiveness of their unit for the good of the business.

3. People will say that leaders focus nearly all of their time and energy on maximizing the effectiveness of the whole business.

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4. People will agree that "leadership" is solely the responsibility of management. Non-managers say that they cannot influence the direction of the organization.

4. People agree that leadership is primarily the responsibility of management but they say that they can sometimes provide input to ideas that are being considered by management.

4. People agree that leaders are continually emerging within the organization. People with strong commitments to an idea frequently champion it through implementation regardless of their level in the organization.

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5. Managers will not list "communicating information" as one of their primary responsibilities. People in the group will say that they do not trust much of the information communicated.

5. People will say that their managers have difficulty explaining complex issues to them. Managers will agree that they often find themselves and their audiences frustrated by attempts to pass along information.

5. People agree that their leader effectively communicates even complex ideas into terms that are meaningful and motivational to them. People say the leader generates commitment through this communication.

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6. People will say that the predominant leadership style is authoritarian in virtually all circumstances. Typically commands are given to subordinates which they are expected to carry out.

6. People will say that the leadership style is focused on the requirements of the situation but rarely balanced with the growth needs of the group.

6. People will say that the leadership style used is fitted to the requirements of the situation that is being faced. The leader continually balancing the need for the group's development toward increased self-regulation with the specifications that he/she must follow for any given situation. Group members discuss and agree that they understand the situational component of leadership.

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7. People will say that they are unclear about the mission or future of the group.

7. People will say that they think they understand the mission of their group but that their leader is sometimes ambivalent.

7. The leader of the group stresses the organizational mission through his/her words and actions. People say that their leader "lives" the mission.

1-----2-----3-----4-----5

Appendix B

LOGAN
MANAGEMENT
PLAN



CONGRATULATIONS! You are now an important part of Logan Aluminum Inc. As a new team member, you have joined a select group of people responsible for the successful operation of the most modern aluminum facility in the world.

Because you are such an important member of the Company, programs have been developed to provide each of us the opportunity to utilize and develop our abilities to the fullest and maintain a facility with growth, prosperity, and reward for years to come.

Understandably, you wish to know more about the Company and our Team Concept. We believe the information in the following pages will provide this knowledge, as well as benefits, opportunities and your role as part of the Logan Team.

The "Logan Concept" plans and principles are dynamic and will change as we grow in order to meet our needs and the needs of our customer.

The purpose of Logan Aluminum Inc. is to utilize the most modern technology, equipment and management concepts available to operate a safe and efficient aluminum rolling complex while producing the highest quality aluminum products in the world. Logan Aluminum expects to be profitable and a good place to work while improving our competitive position within the world-wide aluminum industry.

Mature, responsible people who possess skills, ambition and quality of thinking capabilities are the foundation for successful operation of Logan as our abilities are used to improve ourselves and the effectiveness of our plant. Each team member relationship will be on an individual basis as we operate in a manner that encourages open communications, honesty, respect between individuals, and responsiveness to ideas and suggestions. Positive contributions are necessary from each team member in order to meet both the short-term and long-term objectives of our company.

A fair and equitable compensation and benefit program has been established to reward team members on development of individual skills and demonstrated positive performance of the individual, team, business unit and plant. The objective is to maintain stable employment while providing a challenging and rewarding opportunity for personal growth and development. Personal development is a daily activity in which each Logan team member participates as both a learner and a teacher.

Every team member will develop a working knowledge of our customers' needs and their use of our products.

We want to be recognized in our community as a good company, a concerned citizen and a good neighbor.

Finally, our families must learn about and understand Logan operations so that it will create a positive impact on our family life. We want our families to have pride in the fact that they, too, are part of this team and feel welcome to participate as we all grow together as members of the Logan team.

The goal of the Logan Aluminum Inc. Team is to be a successful organization. We can improve productivity and efficiency by utilizing people's minds. Additional goals are directed toward satisfying the needs of those affected by our operations:

- ° Our customers
- ° Our stockholders
- ° The community
- ° Ourselves
- ° Local, state and federal government
- ° Our suppliers

Through the effective use of human, financial, and material resources available to us, we will work toward the following:

- To contribute to the profitability and a fair return on the investment of our owners.
- To produce a quality product in high volume while remaining responsible to changing market and customer needs.
- To upgrade the quality of life by providing safe, steady and meaningful employment to our work force.
- To encourage involvement, commitment and participation by our employees in an atmosphere of trust, communication and opportunity.
- To follow policies that will comply with safety, equal employment opportunity, environmental and other governmental requirements.
- To be an active citizen of Russellville, Logan County and the surrounding area and to do our share to promote the growth and prosperity of this area.

TEAM CONCEPT

The goal of each team member is to continually increase his/her knowledge and ability to apply skills throughout the team's area of responsibility and activity. Team members focus on the best use of their skills and time so that they can fully support fellow team members in the overall accomplishments of the team's progress in making their operation as effective as possible.

The goal of each team is to become self-reliant on its own members to operate, maintain and improve its area of business.

A successful team has open, honest and frank problem-solving relations among its members. They look for ways to support and learn from one another and their management resources to continually improve the effectiveness of their functional area.

TEAM GUIDELINES

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In order to meet the goals of the teams, it is essential to establish guidelines for support and to help us function as a cohesive group in making decisions and promoting harmonious relationships in day-to-day operations.

The following guidelines are designed to aid each member in establishing a cooperative atmosphere as the foundation of our participative management style. The following guidelines are an integral part of that decision-making process. Thus, each member should:

- ° Work for consensus on decisions, objectives and plans and then support the team's decision.
- ° Share openly with each other our feelings and opinions about problems and conditions.
- ° Trust, respect, support and have genuine concern for other team members.
- ° Listen and try to understand other team member's point of view and related background.
- ° Encourage and assist other team members to improve themselves and learn from them whenever possible.
- ° Strive for self-improvement but not at the expense of another team member.
- ° State our honest opinions.
- ° All team members will have specific responsibilities and will also share responsibilities for improving team effectiveness. Members will serve as representatives on various committees, task teams and core groups.

TEAM CHARACTERISTICS

All teams will have the following characteristics:

1. Collective Responsibilities - Each team member will share responsibility and accountability for the performance of the total team.
2. Meaningful Goals - Each team member will be expected to help meet the goals set by and for the team and participate in the setting of additional goals.
3. Feedback on Performance - Each team member will be expected to participate in developing information and data concerning their own and the team's performance.
4. Team Leadership - All teams will have a designated team leader.

Each team should strive to become a self-managed unit, meeting the business needs of the company with the following responsibilities:

1. Meet established production and customer requirements in a quality, cost effective and timely manner.
2. Maintain safe practices and a safe environment.
3. Check and maintain established quality and environmental standards.
4. Maintenance and repair.
5. Housekeeping.
6. Coordinate and effectively manage the interface with other teams.
7. Feedback and information exchange pertinent to their own ideas and impacting other areas.
8. Educate team members and members of other teams.
9. Keep time for hours worked and balance working hours.
10. Maintain and increase team effectiveness.
11. Process and procedure optimization.
12. Selection of team members.
13. Team scheduling and need for replacement of absent team members.
14. Responsible for cost containment and overtime control.
15. Evaluate team and team members.

These and other responsibilities and accountabilities will be added as the team gains maturity and skill.

The Logan Compensation System is an important part of the organization and is designed to support our team concept.

The system

1. provides for increased earnings as members develop competence and apply increased skills,
2. has no separate parcels of work called "jobs",
3. is based on everyone teaching as well as learning,
4. will be adjusted to reflect changing pay situations,
5. provides for the level of skill development within a team to:
 - a) operate their process area
 - b) troubleshoot their process area
 - c) perform maintenance tasks
 - d) improve their process area
 - e) manage their own dealings with their surroundings .
6. starts with orientation and increases in reward as you move into more complex areas.

The pay progression system will provide each team member an equal opportunity to develop abilities and skills necessary to progress. Progression depends on ability, competence, effort and ambition of the individual to progress, as well as the needs of our business. Learning new skills and, more importantly, the effective contribution and application of these skills is the basis for qualification for pay increases. This includes effective team participation and technical and behavioral skills.

Each level implies a specific pay range and these will be adjusted to maintain our competitive pay position. Movement from one level to the next will occur when the team, Team Leader, and Business Unit Manager agree that you qualify. Qualification implies completion of learning modules both on and off the job and proficiency in performing various tasks. These same people support a plan of development for you and agree that you can obtain the skills development and education needed for advancement.

An explanation of the Logan salary system for exempt and non-exempt team members is available from the Employee Relations Team.

Qualified, motivated, intelligent employees are Logan's best guarantee of a successful business. Therefore, we strive to create a dynamic, responsive organization and climate which encourages and acknowledges both individual contributions and team effort and improves productivity.

In our efforts to reach this objective, we are committed to do the following:

1. Recruit, employ and advance people without regard to race, religion, color, sex, age, handicap or national origin.
2. Provide a safe and healthy work environment.
3. Maintain compensation, benefits and other policies designed to provide incentive for a high level of accomplishment and to afford competitive financial protection and security.
4. Create an atmosphere for personal development and advancement appropriate to individual qualifications and interest and consistent with Logan needs and social responsibilities.
5. Promote continuous communications among team members.
6. Respond to concerns in a rapidly changing social, economic and industrial environment.
7. Be perceptive of each individual's needs and aspirations.
8. Encourage each individual's awareness of his or her role and obligations as a member of society.

Consistent and fair application of these principles establishes a sound and credible approach at Logan. There should be no need to seek union representation.

It is the responsibility of each team member to be consistent with the Logan principles and, in this way, the Logan objective to operate on a union-free basis will be assured.

If all team members treat each other fairly and honestly, there will be no need for outside interference. At Logan, each member is involved in the management process and our organizational design provides each of us the opportunity for reward and advancement. It is our belief that union-free operations offer each of us the flexibility to grow and prosper.

We have an earnest desire to make Logan Aluminum the most efficient and profitable rolling mill in the world, and, at the same time, to provide an exciting and rewarding career for all of us. To do this, others need to know how you feel about various aspects of your work - your questions, ideas and any problems that you have. To provide for this exchange, a number of communication techniques are designed.

1. Team Meetings

Regularly scheduled team meetings will provide information concerning business and operations and provide opportunities to discuss these and other matters with members of the unit.

2. Review Sessions

Regularly scheduled meetings with the executive management team will be conducted to advise team members of business conditions and related matters. Similar sessions will be held within the units with the Business Unit Manager on a regularly scheduled basis.

3. Open Communications

A plan which reflects our belief in and respect for the individual. It is based on the principle that every person has an opportunity for discussion with those who have opposing views. Should a problem exist which a team cannot resolve, or help to resolve, the Business Unit Manager should be contacted. If the matter is still not resolved, or is of such a nature that you cannot discuss it with your team or Unit Manager, you may schedule a conference with a member of management whom you feel would be most appropriate. The intent is to ensure that issues are resolved as soon as possible.

BENEFITS

Details of the benefit plans are available in "Your Logan Aluminum Benefits Manual". The comprehensive benefits package includes:

- Medical, Hospital and Surgical Insurance
- Prescription Drugs Coverage
- Dental Insurance
- Life Insurance
- Business Travel Accident Insurance
- Short Term Disability Plan
- Long Term Disability Plan
- Retirement Program
- Before-tax Savings Plan
- After-tax Savings Plan
- Paid Vacations
- Paid Holidays
- Educational Assistance Program

BEHAVIORAL PRINCIPLES

Trust and mutual respect are the cornerstones of the Logan organization. Every team member should respect the rights and privileges of fellow members and the necessity of our team to achieving our objectives.

As members of the Logan team, we are each responsible for mill safety, quality, security, cost control, production, waste control, improved methods and individual behavior. As the success of our plant depends on fulfilling these responsibilities, the goals of our organization can be attained as members develop the knowledge and skills to:

- ° operate equipment and perform duties in a safe and efficient manner,
- ° provide information necessary for effective problem solving,
- ° participate in problem analysis and decision making,
- ° assist in the education and development of other team members,
- ° participate in member selection, evaluation and development,
- ° develop additional skills to perform other functions or activities within a team,
- ° participate in the establishment and support of behavioral principles.

To protect the rights of each member and to ensure the efficient operation of our company, certain types of behavior have been recognized as unacceptable. The following list is not all inclusive, but reflects those types which are considered extremely serious in nature and could result in the termination of membership on the team:

- ° dishonesty, theft or falsification in any form,
- ° carrying weapons or possession of explosives on mill premises,
- ° evidence of consumption, possession or selling of drugs or alcohol on mill premises in any detectable manner,
- ° horseplay, intimidation, threats or fighting,
- ° harassment of other members for any reason, including race or sex,
- ° tampering with safety devices,
- ° committing a felonious act on mill premises,
- ° destruction or threat to personal or mill property.

At Logan, individuals are responsible for their own behavior as well as for establishing standards of conduct for the team. Corrective action and individual improvement planning are the keys to this approach. The team becomes responsible for evaluation and recommendation of corrective measures and administrative steps. The following guidelines should be used by the team in attempting to resolve performance problems:

1. When a team member initially fails to meet behavioral or performance standards of the team, the Team Leader, team or designated team member will counsel the individual and suggest necessary improvements.
2. Upon reoccurrence or failure to improve, the Team Leader and designated team member, if appropriate, will again counsel the individual, this time in a serious but friendly setting.

(Either step should be documented and signed by the participants of the counseling session. Copies are to be forwarded to Employee Relations.)

The objective of these steps is to positively improve the individual by gaining measurable commitment to change in a non-threatening environment. Therefore, only limited punitive measures should be considered or recommended by the team. Typical steps might be to recommend disallowing pay for absence in the case of a team member with attendance problems. Another consideration should be disallowing movement to the next technician level for continuing failure to meet team standards.

Should the corrective actions outlined above yield unacceptable results, a final counseling session will be conducted. The subject team member, Team Leader, Employee Relations Representative and designated team member, if appropriate, will participate. Notice is given whereby failure to adequately respond will be cause for termination. Other disciplinary steps, including suspension without pay, may be considered at this step.

Although we fully expect that any problems will be resolved through normal channels, there may be occasions for which other alternatives are desired. For matters which are unresolved through normal processes, an alternative method has been designed for resolution.

Any situation that cannot be resolved through normal communication channels within your business unit should be referred to your respective Employee Relations Representative. If the matter is not resolved to your satisfaction at this level, you are encouraged to ask for a review of the situation by requesting an appointment with any member of the executive management group.

It is understood that on occasion you may elect to bypass normal channels of communication. In cases of this nature, you should feel free to discuss your situation with any member of Logan management you feel would be appropriate.

EQUAL EMPLOYMENT OPPORTUNITY

The Logan Aluminum Company has a continuing policy to ensure that fair and equal employment opportunities are extended to all persons without regard to race, religion, color, sex, age, national origin, handicap, and veteran or marital status. With respect to religion, the company will make every reasonable effort to accommodate an employee's religious observance or practice to the extent such accommodation does not create undue hardship in the regular conduct of our business.

This policy applies to recruitment, selection, placement, training, promotion, pay, benefits, layoffs, terminations, social and recreational programs and other conditions of employment and is subject only to limitations of law.

The company seeks, in all of its operations, to employ individuals for available positions who are qualified or qualifiable on the basis of merit and ability alone. It is extending its best efforts to identify and develop the broadest possible range of applicant sources and to promote the fair and effective use of such sources in all of its employment activities.

To achieve our objectives, we have undertaken a program of Affirmative Action. As part of this program, the company will continue to emphasize to employees, potential employees, the community, customers, vendors, stockholders and others that opportunities are made available on a non-discriminatory basis and that employment and advancement within the company are based upon individual merit and ability.

EMPLOYEE MEDICAL PROGRAM

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The Logan Medical Department strives to offer Occupational Health Programs which are directed toward maintaining the health of the entire work force at an optimal level. To ensure this is achieved, employees have access to:

- ° pré-placement medical evaluations or examinations,
- ° periodic medical examinations at intervals as determined by good medical practice and as legally required in certain special instances,
- ° testing for such things as exposures to hazardous chemicals and physical agents, hearing impairment and respiratory limitations.
- ° emergency medical treatment,
- ° coordination with private health care providers in continuation of medical care, as indicated and available, and
- ° immunizations.

All employee medical reports are treated as confidential and are accessible only to the individual employee, the Logan medical staff, or appropriate members of management accountable for administration of various employee benefit programs.

Preventive Health Programs are aimed at ensuring the continued and future good health of employees.

EMPLOYEE ASSISTANCE PROGRAM

Personal problems come in all shapes and sizes, but whether yours is a minor difficulty or a major obstacle, our E.A.P. provides the services of a professional and experienced counselor who can help you identify the problem and, if necessary, refer you to the appropriate community resource for assistance. We can assist you in the following problem areas:

§

- Marital
- Family
- Children
- Financial/legal
- Alcohol abuse
- Drug & substance abuse
- Grief
- Anxiety
- Depression
- Stress
- Any other personal/emotional problems

At Logan, this program is set up to help team members confidentially obtain assistance. An Employee Assistance Coordinator provides counsel and advice and assists the Medical Department in deciding the appropriate treatment source. Benefits under the insured plan will be the same as for any other illness or any medical service or treatment provided.

Logan Aluminum Inc. has a vital interest in maintaining safe, healthful and efficient working conditions for its team members. Drugs or alcohol on the job pose serious safety and health risks to the user and to all those who work with the user. The possession, use or sale of an illegal drug or alcohol in the workplace also poses unacceptable risks for safe, healthful and efficient operations.

The Company recognizes that its own health and future are dependent upon the physical and psychological health of its employees. Accordingly, it is the right, obligation and intent of the Company to maintain a safe, healthful and efficient working environment for all of its employees and to protect Company property, equipment and operations.

We maintain an Employee Assistance Program which provides help to employees who seek assistance for alcohol, drug abuse and other personal/emotional problems. Details concerning this program are available from your Medical or Employee Relations staff.

Following are other steps which Logan Aluminum Inc. has instituted to try to eliminate such problems from the workplace:

I. Drug and Alcohol Screening

We may require a blood test, urinalysis or other drug/alcohol screening of those persons suspected of using or being under the influence of a drug or alcohol or where circumstances or workplace conditions justify it. An employee's consent to submit to such a test is required as a condition of employment.

II. Disciplinary Action

Violation of this policy can result in disciplinary action, up to and including termination, even for a first offense.

As an important member of the Logan Team, your prompt and regular attendance is essential for improving our competitive position within the industry. Tardiness and absenteeism creates a void in your responsibility, while disrupting your fellow team members and operation of the mill.

The necessity of absences in emergency situations is recognized. A method for reporting necessary absences to minimize the inconvenience and disruption of work caused by such absences is as follows:

Call your Team Leader or designated team member as soon as you know that you will not be able to come in. This should be done prior to your scheduled start time.

After an absence, report to your Team Leader or designated team member prior to going to your work location. If your absence was due to an accident or illness which cause you to be absent for three (3) or more days, obtain a medical release from a physician and go to the Medical Department before reporting to your team.

Because of our continuous operation, being late or absent without notification is a serious matter. The Team Leader and/or a team representative will counsel with you if this situation occurs. Three (3) consecutive absences without notification will be considered a resignation.

The Logan philosophy is based upon mutual responsibility between team members and our company. If a team member is absent for a legitimate reason and, if approved, the team member may be paid. Each team member should understand that all absences will be questioned and some reasons may not be accepted by the team for compensation. Furthermore, the matter of pay continuation for absences will largely be determined by your personal attendance record. You should understand that a team cannot exist where team members are allowed to be absent according to their own personal desires. Each member is crucial in the performance of the team; therefore, questionable, inexcusable and unnecessary absences will not be accepted nor paid by the team.

LEAVES OF ABSENCE

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During the year, a team member may be required to be absent for reasons other than accident or illness. The reasons for the leave and the effect the absence has on the team will be taken into consideration before judgment is made to pay or not pay for the leave.

1. Military Leave

If a leave is required to fulfill a military obligation, it will be granted in accordance with the federal law. When a team member is also a member of the Armed Forces Reserves or National Guard and is called for the regular two weeks military training, the team member will be paid the difference between his regular salary and wages received from the government (up to 40 hours per week).

2. Absence Due to Illness or Accident

If a team member is absent because of accident or illness, each day's absence must be approved by the team. Such absences of three (3) or more consecutive days will necessitate a medical release from a physician and clearance through our Medical Department before reporting for work. Pay for this type of absence may vary according to length of service. Refer to the short term disability section of the benefits booklet or to the Team Leader's Pay Practice Guidelines.

3. Jury Duty

Members of the Logan Team who serve as jurors will receive regular pay while serving. Members should be here before and after jury service each day, when possible.

4. Funeral Leave

On occasion, it is expected that funeral leave time will be needed by team members. The period of leave time necessary may vary and will depend on the circumstances unique to each case. Trust and judgment are key factors in considering funeral leave situations. Approval for pay, in each case, must be granted by the Team Leader.

MUTUAL REVIEW PERIOD

The first 90 days on a new job is a period for mutual review. It is a period when intensive learning and communication are encouraged. Job performance feedback is a necessary, continuous and effective two-way communication technique.

A team member should learn as much as he/she can about the company, its philosophy, team concept, plant environment and work role. During this period, a team member can make a decision on continuing the relationship.

During this period, the company also has an opportunity to observe the team member under actual working conditions. Then the company makes its evaluation of an individual's performance and a decision on continuing the employment relationship.

Although you will participate in periodic formal evaluations, you are encouraged to discuss your performance and progress at any time. By working together we can plan how your performance may be improved in the future.

We trust this process will develop into a long and fruitful relationship for the team member and contribute to a more successful company.

SOLICITATION AND DISTRIBUTION OF LITERATURE ON COMPANY PROPERTY

To prevent disruptions in the operation of these facilities, and to minimize interference with or inconvenience to all of us, the following will apply to solicitation and distribution of literature on company property.

Outsiders:

Persons not employed by the company may not solicit or distribute literature on company property for any purpose at any time.

Logan Employees:

Team members should not solicit for any purpose during working time. Employees may not distribute literature for any purpose during working time or in work areas. "Working time" includes the working time of both the employee doing the solicitation or distribution and the employee to whom it is directed. "Working time" does not include authorized or approved break periods or meal times. If you have any questions as to the meaning of "working time" or "working areas", please ask your Team Leader or Employee Relations Representative for clarification.

VACATION

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As a Logan team member, you will receive a vacation with pay based on length of service as determined by your service date.

<u>Service</u>	<u>Length of Vacation</u>
After 6 months	5 working days (if hired between 1/1 and 6/30)
1 through 4 years	10 working days
5 through 9 years	15 working days
10 through 24 years	20 working days
25 or more years	25 working days

Each team is responsible for planning and coordinating the vacation schedule for their respective team. It is expected that by doing this, conflicts will be minimal and manageable.

The entire vacation allowance for which you become eligible each year must be taken in the calendar year in which it becomes available. Unused vacation days cannot be carried over from one calendar year to the next. The following apply to vacations:

- ° Vacation allowance should be scheduled in advance with prior approval from your Team Leader.
- ° Vacation allowance of five consecutively scheduled work days, taken during the work week, will be considered a "vacation week", and you will be granted time off from work for seven consecutive days beginning on Monday and ending on Sunday.
- ° When observing vacation in less than a 5-day segment, a vacation day may be taken when an employee is scheduled to work on a recognized Holiday with Team Leader approval. In this occurrence, the employee will be paid for both the Vacation Day and Holiday.
- ° If you become sick or injured while on vacation, you cannot have your vacation rescheduled.
- ° If you are an active member of a military reserve training program, you will be granted your normal vacation in addition to the leave of brief obligatory duty.
- ° The smallest increment in which vacation can be taken is one (1) day.

Team members are entitled to their initial vacation allowance upon completion of six months of credited company service when they are hired between January 1 and June 30. For team members hired between July 1 and December 31, initial vacation is earned as of the first anniversary date, but may be used prior to the anniversary with Business Unit Manager approval. Following the initial allowance, the vacation allowance for each subsequent year accrues to the individual on January 1 of the year in which the service anniversary occurs.

HOLIDAYS

Beginning on the day you report to work, you are eligible for the following company holidays:

New Years Day
Washington's Birthday
Good Friday
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Day after Thanksgiving
Christmas Eve Day
Christmas Day
Floating Day

Each year a schedule for holiday observance will be developed and posted. Generally if the holiday falls on a Saturday, the preceding Friday will be observed. If the holiday falls on a Sunday, the following Monday will be observed.

You will receive your regular pay for days recognized as holidays and not scheduled or worked.

If you work a day recognized as a holiday, you will receive your regular holiday pay, plus $1\frac{1}{2}$ times your normal rate for all hours worked.

You are encouraged to take advantage of additional educational opportunities that will increase your growth, development, job productivity, and improve your potential for future advancement. Every Logan team member is eligible to apply for financial aid through the Educational Assistance Plan.

The Educational Assistance Plan is designed to assist you when the courses you select are related to your present or future work activities or necessary to fulfill the requirements for a scholastic degree in a field potentially useful to the Company. You must attend accredited schools, colleges or universities in your area in order to be eligible for financial assistance. If educational facilities are not available locally, or if work schedules prohibit you from classroom attendance, courses offered by accredited correspondence schools may be approved. Prior to the start of the course, you must obtain application forms from Employee Relations and secure the necessary approvals.

You will be reimbursed for 80 percent of the cost of tuition, required fees, required textbooks, and the typing of theses as necessary when you submit written evidence of satisfactory completion of course(s) including credit earned. If you qualify for reimbursement from any other educational assistance sources, such as the Servicemen's Readjustment Act, the Company will pay 80 percent of the difference between the total approved costs and the reimbursement from such other sources. Credits must be earned for courses taken. IRS regulations require that reimbursement be treated as income and therefore any reimbursement received will appear on your W-2 form.

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