NEAR EAST UNIVERSITY

MASTER THESES

STANDARDS, QUALITY & TOTAL QUALITY MANAGEMENT

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Dedicated to
MY MOTHER

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ABSTRACT

Quality is the performance of a product or a service against the satisfaction of the needs of the consumer. In the ever increasing competition in the world organizations strive to produce and offer best products and best services. Quality awareness brings many benefits to the organizations. Recognition of the product of an organization as a quality product is a guarantee of success. Quality also increases the efficiency. Getting things right at the first go means effectiveness and efficiency.

Can a Business be a business without investment or an owner? Can a business exist without workers? Can a business exist without the consumers? The answer to all these are "NO". A business has many legs, and without these legs it can not exist. One of the important leg of the business is the employees themselves.

One way of approaching the TQM is the incremental approach. This option is one of the most frequently used models in implementing TQM, and perhaps the most wasteful of time and effort.

Second option is to use planning. Companies can approach quality aspects in more scientific way. TQM is an important tool to increase the productivity at the work place. It is conceivable for you to have more employees than the competition yet your company produces less and for you to have disgrunted low-

output employees even though you pay your employees more than the competition pays theirs.

The essence of employee motivation and effectiveness is the manner in which they are managed. A direct relationship exists between effective management (i.e., providing a work environment that simultaneously achieves company goals and employees' goals) and modern human resource management.

Getting high quality job performance from your employees depends on giving employees opportunities for their personal growth, achievement, responsibility, recognition, and reward.

The quality of work life technique is to involve your employees by sharing management responsibility and authority with them, the workers who do the job.

As a key to achieving improved profit goals, a major manufacturer experimented with human resource management, making jobs more interesting and rewarding through quality of work life techniques.

The tailoring of benefits to satisfy specific needs is part of the quality of work life technique. It is a way to maximize the amount of labor costs going to the employee and to maximize your return on these costs without increasing across-the-board expenses. By making a special effort to satisfy individual employee needs, you reinforce the motivational value of the flexible benefit.

Definitions of and ways to measure productivity vary. A basic way to express productivity is

productivity equals output divided by input, i.e., productivity is the ratio of output to input, or simply output over input.

The quantity of output is measured in units produced, dollars of sales, or any term that suits your need. The quality of output is measured by workmanship, adherence to standard, and absence of complaints. Input is measured by labor costs, hours worked, and number of employees. To be useful, measures must be as simple and as consistent as possible.

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CHAPTER 1

1.1 INTRODUCTION

Quality has become one of the most important issues in all organizations. Whether it is a product or a service that is being marketed does not make any difference. Quality is even more important in the international trade. On the one hand customs tariffs are reducing and world is becoming a global market, on the other hand different states are trying to restrict their imports while they are trying Turkey export more. Without any international quality concept it would be impossible to regulate the international trade. Each country would attempt to design a quality concept which would in effect contribute to a barrier to international trade. It is from this idea that the ISO the international standards idea have evolved. Organizations who try to be active in international markets try to adopt the ISO standards, and to achieve this effectively and efficiently, they are increasingly using the Total Quality Management concept. Total Quality Management (TQM) includes a philosophy of management based on the belief that an organization can improve its business and its relationship to its customers. Moreover, TQM

requires an organization to strive toward continuous improvement. The ultimate goal of TQM is to alter the process by improving satisfaction. Customers are actively pursued in order to ensure that customers are satisfied and have been treated fairly. Further, complaints, comments, and calls for assistance are viewed as valuable inputs in improving quality. Growing evidence suggests that small businesses that do not make the shift will find starting, competing, and surviving more and more difficult.

Companies are as Good As people who support them. Can a Business be a business without investment or an owner? can a business exist without workers? Can a business exist without the consumers? The answer to all these are "NO". A business has many legs, and without these legs it can not exist. One of the important leg of the business is the employees themselves. A management who regards their employees as "only good to do things that they are told" is in a mistake. It is undermining the quality of one leg. A management who is proud of the employees has a sound leg. A production business or a services business has a product. The quality of this product reflects the quality of all the people involved in producing.

In the early industrial revolution, the factory owners started a system that they made money at the cost of the labor. There were very poor conditions for the workers. As the science developed and the competition increased it is proved that the better conditions for workers meant better results. These forced the investors to invest in human resource as well. Today the big organizations spend a lot of money in training and educating their staff to get better results from them.

1.2 WHAT IS QUALITY?

Quality improvement has now become both the corporate and international business strategy of the 1990's. Sabancı and Netaş and Company each advertise winning the Malcolm Baldrige Award for quality. Tofaþ Car Company publicizes a "Quality is Job 1" slogan, and many other companies are following suit[1]. At the international level, interest has mushroomed in quality systems as a means of assuring the consistent conformity of products or services to a given set of standards or expectations.

[1] Ulusal Kalite Ödülü, Dünya Yayınları, Özel ek 13, June 25 1996

There has, however, been little agreement among either corporate management or professionals in the field regarding the meaning of "quality." The International Organization for Standardization (ISO) Standard 8402 defines quality as: "the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs."
However, there are problems with this definition. Whose needs does the service or product address? Who are its customers? In the testing services field, for example, totally erroneous test results may satisfy a client's needs quite well if the faulty test report can be used to allow him to sell his product, especially if an accurate test report would not. Nevertheless, such results are unlikely to satisfy the needs of the potential buyers of the product or of the agency responsible for regulating the product.

Customers for a product or service produced by a company can be located within or outside the company or both, depending on the product or service. A product or service may be provided by one company unit to another solely for the latter's use, or for subsequent delivery to a

customer outside the organization. It has been said that most product or service defects (no matter where they occur in the service or manufacturing process) usually find their way to the point of interface between a company and its outside customers.

In an attempt to address this problem, ISO has added seven footnotes to its definition, including that: "in a contractual environment, needs are specified, whereas in other environments, implied needs should be identified and defined" and that "needs can change with time." Needs can be defined in terms of safety; usability; availability; versatility; compatibility with other products; reliability; maintainability; overall cost (including purchase price, maintenance costs, and product life); environmental impact; or other desired characteristics.

Even if all "needs" can be identified and adequately defined, what about the issue of an "acceptable quality level (AQL)" - the maximum percentage of non-conforming products or service units that should be considered satisfactory as a process average? Stated in other words, how many

(if any) mistakes can you make and still produce a "quality" product or service? A manufacturer's production system may be considered by his customers to produce a "quality" product if the AQL is 0.1%, that is only one in 1,000 products contains defects. Yet a 1 in 1,000 error rate for nurses whose job it is to hold babies (they only drop one out of a thousand) or for containers which hold highly toxic or hazardous materials (only one serious leak gets by for every 1,000 containers produced) are obviously not acceptable. There is a belief among many quality experts and their disciples that the only acceptable quality level for any manufactured product or service is 100% ("zero defects"), and that any failure to "do it right" the first time is not tolerable. This is not a universally held opinion.

1.3 WHAT IS A QUALITY SYSTEM?

Product quality depends on many variables, such as the caliber of the components or materials used; type of equipment used in design, production, handling, installation, testing and shipping; the equipment calibration and maintenance procedures employed; the training and experience of production and supervisory personnel; the level of

"workmanship;" and sometimes the environmental conditions (temperature, humidity, level of dust particles) in the area where the product is produced. The process, organizational structure, procedures, and resources that manufacturers and suppliers use to control these variables to produce a product of consistent quality which meets defined specifications is called a quality system. The standards that are being adopted globally for quality systems are the ISO 9000 standards[2].

1.4 WHAT IS ISO?

ISO is the International Organization for Standardization, founded in 1946 to promote the development of international standards and related activities, including conformity assessment, to facilitate the exchange of goods and services worldwide. ISO is composed of member bodies from over 90 countries, the Turkish member being the TSE, The Turkish Standards.

ISO's work covers all areas except those related to electrical and electronic engineering, which are covered by the International Electrotechnical Commission (IEC). The results of ISO's technical

[2] QS 9000 An Easy Ride, Quality Today, July 1996

work are published as International Standards or Guides.

1.4.1 DIFFERENT ISO STANDARDS

In 1987, the ISO published a series of five international standards (ISO 9000, 9001, 9002, 9003, and 9004), developed by ISO Technical Committee (TC) 176 on quality systems. This series, together with the terminology and definitions contained in ISO Standard 8402, provides guidance on the selection of an appropriate quality management program (system) for a supplier's operations.

The ISO 9000 standards were intended to be advisory in nature and were developed primarily for use in two-party contractual situations or for internal auditing. However, the standards are currently being applied under a much broader range of conditions and circumstances.

Conformance to ISO 9000 standards is also being required in purchasing specifications with increasing frequency.

The ISO 9000 Standard Series has been adopted in the United States as the ANSI/American Society for Quality Control (ASQC) Q 90 Series (soon to be

changed to the ANSI/ASQC Q 9000 series). In Europe, it has been adopted by the European Committee for Standardization (CEN) and the European Committee for Electrotechnical Standardization (CENELEC) as the European Norm (EN) 29000 Series. According to a recent survey by ISO, forty-eight (48) countries have national standards that are identical or equivalent to the ISO 9000 Standard Series. Additional countries are considering their adoption.

1.4.2 INFORMATION IS CONTAINED IN EACH ISO 9000 STANDARD

The ISO 9000 Standard Series is generic in scope. Each standard addresses a different aspect of quality assurance, depending on the needs of the user.

ISO 9001, 9002 and 9003 describe three distinct quality system models of varying stringency for use in different applications. Common elements in ISO 9001, 9002, and 9003 include the need for: an effective quality system; ensuring that measurements are valid, that measuring and testing equipment is calibrated regularly; the use of appropriate statistical techniques; having a product identification and traceability system;

maintaining an adequate record keeping system; having an adequate product handling, storage, packaging and delivery system; having an adequate inspection and testing system as well as a process for dealing with non-conforming items; and ensuring adequate personnel training and experience.

ISO 9000 (ANSI/ASQC Q 90), Quality Management and Quality Assurance Standards - Guidelines for Selection and Use, explains fundamental quality concepts; defines key terms; and provides guidance on selecting, using, and tailoring ISO 9001, 9002, and 9003.

ISO 9001 (ANSI/ASQC Q 91), Quality Systems - Model for Quality Assurance in Design/Development, Production, Installation and Servicing, is the most comprehensive standard in the series. ISO 9001 covers all elements listed in ISO 9002 and 9003. In addition, it addresses design, development, and servicing capabilities.

ISO 9002 (ANSI/ASQC Q 92), Quality Systems - Model for Quality Assurance in Production and Installation, addresses the prevention, detection,

and correction of problems during production and installation. It is more extensive and more sophisticated than ISO 9003.

ISO 9003 (ANSI/ASQC Q 93), Quality Systems - Model for Quality Assurance in Final Inspection and Test, is the least comprehensive standard. It addresses requirements for the detection and control of problems during final inspection and testing.

ISO 9004 (ANSI/ASQC Q 94), Quality Management and Quality System Elements - Guidelines, provides guidance for a supplier to use in developing and implementing a quality system and in determining the extent to which each quality system element is applicable. ISO 9004 examines each of the quality system elements (cross-referenced in the other ISO 9000 standards) in greater detail and can be used for internal and external auditing purposes.

CHAPTER 2

2.1 EC QUALITY SYSTEMS APPROVAL

EC QUALITY SYSTEM APPROVALS

At the present time, notified bodies must be physically located within the geographical boundaries of the European Community. In November 1991, the EC developed a document entitled, Working Document on Negotiations with Third Countries Concerning the Mutual Recognition of Conformity Assessment, which provides guidance for the establishment of mutual recognition agreements with third countries. A less detailed directive on this topic is expected sometime in June 1992. Until the directive is issued and one or more mutual recognition agreements are subsequently established between the United States and the European Community, there can be no notified bodies in the United States. A mutual recognition agreement would allow U.S. entities to perform all required conformity assessment procedures included within the scope of the agreement.

There remains the possibility that some conformity assessment tasks may be subcontracted by notified bodies to bodies outside the EC, including organizations in the United States. Such subcontracting would be done at the discretion of

the notified body, which would continue to be responsible for the final assessment of product conformity. Subcontractors must comply with all requirements of the EN 45000 series. Guidance on subcontracting can be found in Guiding Principles for Subcontracting by "Notified Bodies" pursuant to the Council Resolution of 13 December 1990 Concerning the Modules for the Various Phases of the Conformity Assessment Procedures.

In the non-regulated product area, producers desiring to do business in the European Community (EC) and elsewhere may be required by procurement authorities or buyers to be audited and registered as being in compliance with an ISO 9000 standard. This is especially likely in industries such as aerospace, autos, electronic components, measuring and testing equipment, or in industries where safety and liability are concerns. Such requirements will result from marketplace demands, as opposed to regulatory requirements.

2.2 INTERNATIONAL STANDARDS AND TOTAL QUALITY

The expression Total Quality Management (TQM) has been in vogue for some time. While generally accepted, some would prefer to speak of "Total Quality". Whether, the ultimate objectives are the

same. It has been said that ISO 9000 provides the route to Total Quality.

There are a number of well known definitions of quality. ISO 8402 (1986) defines quality as "the totality of features and characteristics of a product or service that bears on its ability to meet a stated or implied need". Satisfying the needs and expectations of the customer is the common and main factor in most of the definitions. The ability to accurately define the needs, including design, performance, prices, safety, delivery will place a manufacturer ahead of his competitor s in the market.

ISO 9000 is a means of achieving quality assurance and is defined in ISO 8402 (1986) as "all those planned and systematic actions necessary to provide adequate
confidence that a product or is will satisfy given requirements for quality".

Total Quality Management as defined in BS 7850 Part 1 (1992) - Total Quality Management Guide to Management Principles "management philosophy and company practices that aim to harness the human and material resources of an organization in the most effective way to achieve its objectives".

The basic principles of TQM can be classified under ten headings leadership, commitment, total customer satisfaction, continuous improvement, total involvement, training and education, ownership, reward and recognition, error prevention and cooperation and teamwork.

It may be said that ISO 9000 relates to here and now, whereas TQM should provide the means to move forward.

Companies which have already invested resource, effort and time in Total Quality programs and have been successful have really little to learn from ISO 9000. In tact, they should be readily capable of achieving accreditation and certification.

Conversely, companies which have correctly preferred for ISO 9000 assessment can use this as the basis for future development. It provides the means by which the current state of affairs in the organization can be determined. Without this information it is extremely difficult to plan for the future[3].

[3] Willets, Gary G.Quality Control, American Marketing Association, 1989

2.3 QUALITY CONCEPT, APPROACH IN TRNC

TRNC, was always open for international trade. Therefore the Turkish community has always been aware towards quality. In addition, connection of the Turkish Cypriots with the European countries especially United Kingdom leads to European way of leaving in the island. On the other hand the income distribution and per capita income is eroding in comparison to the other countries. This means sacrifice for quality.

There is not much manufacturing activities in TRNC. But the total quality or the quality concept is not limited with manufacturing. At this instance there is no awareness for quality concept. In fact there is a great need for activities in this aspect. The state is specially very low in quality and productivity aspects. Hotels and services sector in general have to look into quality aspects and make improvements.

CHAPTER 3

3.1 APPROACHES TO ORGANIZATIONAL CHHANGE

Many organizations start with vague directives with little clarity on what to do. Their successes are sporadic and likely to fail. Other organizations may become victims of their own success. Their initial quality improvement teams may be so successful they rapidly create more teams, without the qualitative organization-wide changes necessary to sustain a permanent effort. Some of these changes are obvious, in that companies must facilitate, recognize and encourage these teams. However, other qualitative changes also may be necessary. If these changes are not made, the TQM movement risks running into the same troubles that enfeebled the quality circles of the 1970's and 80's.

3.1.1 STEP 1, INCREMANTAL APPROACH

he first two villages used "incremental" approaches to TQM: They deal with technical problems the organization faces one at a time, without reviewing or changing any underlying "systems" issues, such as performance appraisal, profit sharing vs individual compensation, and organizational structure. Incremental approaches

work best when senior management is unwilling to deal with these systems issues, when lower-level employees wish to experiment with TQM without senior management support, or when many in management are ambivalent towards TQM. Organizations can use approaches in "stealth" mode, where several quality improvement teams are quietly working without senior management's acknowledgment. These approaches are good for picking "low-lying fruit", (solving easy problems.) Incremental approaches can easily collapse when TQM "champions" leave the organization.

3.1.2 INCREMENTAL CHANGE

Option one is one of the most frequently used models in implementing TQM, and perhaps the most wasteful of time and effort. Using this approach, every one in the company or a designated unit receives massive training (40-100 hours) in TQM, Statistical Process Control (SPC) and meeting management. After this training, employees in many are on their own.

In addition, because management does not tie training to implementation, natural work groups (people directly reporting to the same person),

and cross-functional teams end up with only some of their members trained. Many people wait months before they used the training they were given.

The net result of this option is the loss of employee time due to too much training being given, employees feeling confused about the company's direction, and frustration at not using the training they received. Whatever success these teams are limited by the structural barriers the company has, that is compensation, organizational structure, performance appraisal, etc.

Option two emphasizes

1) defining the company's goals and objectives,
2) selecting quality improvement projects tied to those goals,
3) training only the members of the process improvement team with just enough training, just before they use it, and
4) providing on-going support of each team's efforts.

The result of using option two is a more sharply defined effort than in option 1, with a much greater chance that the quality improvement team's efforts will directly relate to the company's

quality goals, and a greater sense of accomplishment among team members.

As with option one, these teams' successes will be limited by the structural barriers the company has, i.e., compensation, organizational structure, performance appraisal, etc.

3.1.3 STEP2, THE STRUCTURAL (RE-ENGINEERING) APPROACH

The structural approach to implementing TQM deals initially and directly with the systems barriers described above. Other names for this approach include organizational design and the "socio-technical" approach. Using this approach, senior management forms a steering committee, who then designate a design team made of a diagonal slice of the company. This design team then assesses the company's culture, systems and environment, and develops recommendations for the steering committee. Such recommendations can include self-directed work teams, profit-based pay, pay for knowledge, and reorganizing the company away from the "functional stovepipes" of manufacturing, engineering, sales and service, towards a more product, customer or geographically based orientation.

The advantages to this approach are 1) dealing with major issues up-front, rather than avoiding them, 2) changing aspects of the company that will have a substantial effect on productivity, and 3) demonstrating that management is serious about quality.

Disadvantages include the need to be open and honest with employees from the beginning (if that is a disadvantage), and dealing head-on with issues that many in management may have trouble changing: their own management style, their own pay, and their own power.

3.2 TQM AS A TOOL FOR PRODUCTIVITY IMPROVEMENT

It is conceivable for you to have more employees than the competition yet your company produces less and for you to have disgruntled, low-output employees even though you pay your employees more than the competition pays theirs. Productivity surveys and case studies indicate that increased worker motivation and satisfaction can increase worker output. Progressive, innovative managers now achieve productivity gains with human resource management techniques that go beyond pay incentives.

This Aid discusses how to increase worker output by motivating with quality of work life concepts and by tailoring benefits to meet the needs of employees. Cost: enlightened human resource management probably costs no more than employee turnover (hiring and training new employees), unwarranted pay increases, and low productivity. Benefit: better productivity; loyal, efficient workers; higher quality work; and increased likelihood of staying in business.

3.2.1 Management Effectiveness

The essence of employee motivation and effectiveness is the manner in which they are managed. A direct relationship exists between effective management (i.e., providing a work environment that simultaneously achieves company goals and employees' goals) and modern human resource management.

Your management success is judged by your skill and knowledge in recognizing and assessing issues that concern employees and by your ability to resolve these concerns with employee help and satisfaction.

Do your employees know how you judge and measure their performance?
Do you provide and encourage individual development with training and educational programs?

Do you trust your employees and rely upon their know-how?
Do you let employees make decisions?
Do you have timely, accurate, open two-way communication with your employees?
If you answer no to all or most of these questions, you should improve your management skills because you probably have (or will have) employee-productivity problems.

3.2.2 Quality of Work Life

Getting high quality job performance from your employees depends on giving employees opportunities for their personal growth, achievement, responsibility, recognition, and reward.

Pay--money--is the primary need and reward. Once the compensation (pay and benefits) is established properly, it is necessary to use other means to

further motivate and improve your work force's output. The basis of all job enhancement efforts is your recognition of employees' desire to do good work, to assume responsibility, to achieve, and to succeed. Changes to consider in improving the quality of work life atmosphere include those listed below:

The quality of work life technique is to involve your employees by sharing management responsibility and authority with them--the workers who do the job.

3.2.3 Improvements in Quality of Work Life

From	To
1) detailed job descriptions with specific tasks and rigid instruction for how to do the work	1) flexible, diverse work assignment allowing self-regulation, variety and challenge;
2) structured chain of command, managers making decisions and supervisors bossing	2) worker involvement in planning, decision making and operating procedure;
3) hierarchical channels of communication	3) direct, fast two-way communications;
4) limited on the job instruction	4) advanced training, educational and career development opportunities;
5) job specialization in one task	5) leeway allowed for every employee to complete many tasks by

	crossing Lines of specialization;
6) obscure, irregular job evaluations	6) objective job performance standards with measures fairly administered; and
7) careless or neglected safety and health conditions	7) clean, safe and healthful working conditions.

3.2.4 Work Teams

As a key to achieving improved profit goals, a major manufacturer experimented with human resource management, making jobs more interesting and rewarding through quality of work life techniques. At its new Cable Division manufacturing plant the corporation began in 1976 to let "worker teams" run the operation. The plant's general manager and staff played an instructive, support role, not the traditional supervisory role. Workers were involved in production scheduling, performance evaluation, quality control, disciplinary action, hiring and training new workers the major decisions affecting their jobs and the plant. They had no job descriptions and no specific work assignments. And everyone was salaried--no time

clocks. Workers were cross-trained in multiple tasks so each could run machines, pick up scrap, fix machines and drive the forklift.

In six years the work force grew by 12 percent to 130 employees. Output increased 80 percent, absenteeism was two percent, and employee turnover was one percent. The Cable Division production equaled that of plants with Ss much as a third larger work force.

Although this corporation tried the team concept first in a new plant with new staff and new employees and in a nonunion situation, the results assured management that quality of work life projects do increase productivity and could be helpful in other plants with severe productivity problems.

Another old plant that once produced many different products was by late 1979, manufacturing only forged aluminum pistons for high-performance cars.

To stop this plant's decline and eventual closing, the company decided to make aluminum bar stock in-house rather than to buy it. Reasoning: if

inventory were reduced and managed on the just in-time concept and if
quality bar stock were made in-house for less than it cost to buy, then the finished pistons would be more cost-competitive. The plant's survival depended on that.

The basis of the new casting operation's cost-effectiveness was a quality of work life program. It worked. Three years later in 1982, the old plant was still operating, making bar stock cheaper than the plant could buy it.
It was a close situation subject to market conditions, but it was a success.

Resistance, resentment, skepticism, job classifications, work habits, all these obstacles were overcome as the casting unit was organized, trained, and took its place on the plant floor. Traditional industrial engineering concepts and practices were put aside in an effort to maximize (unleash) the productive potential of human resources.

Salaried managers and staff adjusted to being teachers in a support role rather than

supervising. Hourly unionized workers learned to work without supervision, to rotate jobs, to select leaders, and to share decision making. All worked in an unassigned job classification. The unit teams met their goal and gained the acceptance and thanks of the other employees. The quality of work life program succeeded at this old plant, and the corporation adopted variations of the concept at other plants.[1]

Human resource management and quality of work life techniques are general approaches that affect all employees. A more specialized (and companion) motivational technique is benefits management. Here you can deal with individual employee concerns.

3.2.5 Flexible Benefits

Compensation costs (salaries, wages, and benefits) are a large and increasing part of operating expenses; yet, productivity can decline among workers who get more pay and benefits. Workers are productive with fair pay tied to performance. Ironically, not all employee motivation and productivity problems are solved by pay raises and promotions. It isn't necessary to make pay

adjustments beyond a fair industry-wide (market place) level.

The tailoring of benefits to satisfy specific needs is part of the quality of work life technique. It is a way to maximize the amount of labor costs going to the employee and to maximize your return on these costs without increasing across-the-board expenses. By making a special effort to satisfy individual employee needs, you reinforce the motivational value of the flexible benefit.

For example, you can reduce unwanted employee turnover and related recruiting, hiring, and training costs by shifting these costs from developing new employees to keeping experienced employees. You can motivate an employee to increase productivity by providing opportunities for career development (training or schooling).

At the same time you have improved the worker's skills and shown recognition of the worker's value and aspirations. A tailored benefit can be worth as much to an employee as a pay raise. Such a benefit is practical because 1) it probably costs

no more than worker unrest and diminished productivity and (2) it is probably less costly than a comparable pay increase.

Age, education, job experience, job fulfillment, marital status, and family size are considerations that determine the utility and attractiveness of a benefit. Different benefits appeal to different people. Everyone's needs are different. A younger employee might be motivated by having use of a company car. An older person may want more status like a title or a professional association membership. The list of possible employee benefits and their applications is nearly unlimited. To get the maximum value, you've got to tailor the benefit to the job and your business requirements and financial capability.

Think how you could use:

* pre-tax thrift-savings programs
* recreational programs
* discounts
* scholarships
* personal financial planning

* loans
* tuition refund
* profit sharing
* company car
* personal expense account
* Parking privileges
* legal assistance
* extra vacation
* child care
* job titles
* professional or trade
* Association memberships
* travel.

A flexible benefit is two-fold. Not only does the benefit satisfy some employee's specific need but also it communicates your concern to meet these needs, creating the kind of work environment that contributes to increased employee productivity.

You must recognize the productivity problem and the needs of your employees so that you can tailor the benefit to meet the situation. Beyond pay and statutory benefits you should pay benefits that provide the most value to your business.

3.2.6 Salary Compression

Ralph is an experienced employee. You think he is good but he is complaining that his salary is not enough. You're puzzled and angry because you gave him a raise and a cost of living increase a month ago and the salary is competitive. Ralph seems ungrateful and his output is down.

After talking with Ralph, you learn that he feels he should be paid more than Ed, a new employee. You hired Ralph two years ago at $15,000 a year. He's now making $16,500. But Ed was just hired at $16,000. Ralph thinks he should have more to show for his two years experience compared to Ed, who is younger with no experience.

You realize that starting salaries have gone up at a faster rate than regular pay increases. Attracting educated employees was competitive.
Result: the difference in pay got smaller between experienced and less experienced employees. This is called salary compression.

Your experienced employees don't like it. They will react negatively, slowing down and looking for another job, another promotion, or another

raise. In this situation you could recognize Ralph's experience, tenure and value with flexible benefits[2]

Using quality of work life techniques to motivate and to reward employees can result in productivity gains. The ultimate goal, of course, is to achieve the maximum result from the least effort, the greatest profit for the least cost, the largest output from the smallest input. To work toward this goal you've got to know how productive your company is. Thus you must define and measure productivity for comparison from time to time.

3.2.7 Productivity Management

Definitions of and ways to measure productivity vary. A basic way to express productivity is productivity equals output divided by input, i.e., productivity is the ratio of output to input, or simply output over input.

The quantity of output is measured in units produced, dollars of sales, or any term that suits your need. The quality of output is measured by workmanship, adherence to standard, and absence of complaints. Input is measured by labor costs, hours worked, and number of employees. To be

useful, measures must be as simple and as consistent as possible.

A simple and understandable method of productivity measurement is to divide total sales (output in dollars) by total compensation costs (input). Increases in compensation and prices are accounted for automatically; however, you must adjust for inflation. To compare productivity measures in different years, pick a base year and give it an index of 100. Then figure your ratio of compensation to sales and with that number calculate the index and compare the fluctuation of the indexes.

Suppose as follows:

	1984	1985	1986
Total Sales	$500,000	$550,000	$610,000
Compensation	$247,500	$275,000	$302,500
Ratio	2.02	2.00	2.02
Index	100	99	100

Compute the index by multiplying the output ratio for the given year by 100 and dividing that result by the output ratio for the base year.

$$\text{'85 Index of Productivity} = \frac{100 \times 2}{2.02} = \frac{200}{2.02} = 99.00$$

The figures are hypothetical and are not adjusted for inflation, but they Show that productivity declined in '85 compared to the base year '84 and that in '86 productivity returned (increased) to the level of '84.

But you had ten employees in '84 and '85 and eleven in '86. So you could also measure productivity output (sales) in terms of hours worked. Assume each employee worked a 40 hour week of 2,080 hours a year.

	1984	1985	1986
Total Sales	$500 000	$550,000	$610,000
Hours Worked	20,800	20,800	22,880
Ratio	24.04	26.44	26.66
Index	100.0	109.9	110.9

This index shows more sales to hours worked in '85 over '84 and the same again in '86 over both '84 and '85. Productivity increased. How valuable was the new employee?

Using output over input, you can measure any activity and employee. A typist's productivity can be measured in terms of numbers of pages typed, a salesperson by number of customer calls or amount of sales. When deciding who and what to measure, consider what a person does, how well, how much, and how often.

The indexes measure the productivity increases and decreases that indicate changes in your company's performance. You need these measures so that you

1) can set goals and priorities,

2) know where you stand,

3) are motivated by objective reasons--by numbers, not subjective feelings, and

4) have a common basis of communication with employees, bankers and consultants.

Additional productivity measurement methods are described in the "Productivity Management Bibliography" section below.

3.2.8 Chancing the Change

For many, if not most, companies adoption of quality of work life and flexible benefits management techniques can dramatically change how things are done. It is difficult and risky to make these changes; however, such changes may be not only necessary but also the difference between companies that are competitive and companies that aren't. Experience shows that with proper consultation, planning, training, and implementation the innovative human resource management concept is becoming the standard for effective management.

Key elements of a Productivity Improvement Program

I. Obtain Upper Management support. Without top management support, experience shows a PIP likely will fail. The Chief Executive Officer should issue a clear, comprehensive policy statement. The statement should be communicated to everyone in the company. Top management also must be willing to allocate adequate resources to permit success.

II. Create New Organizational Components. A Steering Committee to oversee the PIP and Productivity Managers to implement it are

essential. The Committee should be staffed by top departmental executives with the responsibilities of goal setting, guidance, advice, and general control.

The Productivity Managers are responsible for the day-to-day activities of measurement and analysis. The responsibilities of all organizational components must be clear and well established.

III. Plan systematically. Success doesn't just happen. Goals and objectives should be set, problems targeted and rank ordered, reporting and monitoring requirements developed, and feedback channels established.

IV. Open Communications. Increasing productivity means changing the way things are done. Desired changes must be communicated. Communication should flow up and down the business organization. Through publications, meetings, and films, employees must be told what is going on and how they will benefit.

V. Involve Employees. This is a very broad element encompassing the quality of work life, worker motivation, training, worker attitudes, job

enrichment, quality circles, incentive systems and much more. Studies show a characteristic of successful, growing businesses is that they develop a
"corporate culture" where employees strongly identify with and are an important part of company life. This sense of belonging is not easy to engender. Through basic fairness, employee involvement, and equitable
incentives, the corporate culture and productivity both can grow.

VI. Measure and Analyze. This is the technical key to success for a PIP.
Productivity must be defined, formulas and worksheets developed, sources of data identified, benchmark studies performed, and personnel assigned.
Measuring productivity can be a highly complex task. The goal, however, is to keep it as simple as possible without distorting and depreciating the data. Measurement is so critical to success, a more detailed analysis follows.
In an informal sense, productivity is doing the right things right. But this definition does not

help much when actual measurement is required. For that, a more mathematical approach is needed.

Productivity is a ratio, a comparison of what is produced and what is used to produce it. It compares outputs with inputs by dividing outputs by inputs. Output is a physical entity--a car, a light bulb, a typed page, or a processed pay voucher. For measurement, an output must be countable over time, a direct result of identifiable activities, and homogeneous (don't mix apples and oranges). Inputs can be classified into four types: labor, materials, capital and energy.

Each input can be used as the basis of a partial measure of productivity, depending upon circumstances:

* Labor productivity, for example is measured by dividing output by hours worked, number of employees, or labor cost.

* Capital productivity is arrived at by dividing output by dollars invested or machine hours used.

* Materials productivity is output divided by units of materials used, units of scrap, or dollars spent.

* Energy productivity is output divided by units of energy consumed (like BTU's), or dollars spent.

Labor productivity (output divided by hours worked) is used by the Federal Government as the measure of the Nation's productivity. Many large, diversified companies, however, now use all four inputs to determine what is called Total Factor Productivity. In a purely office environment, since labor is the key input, some organizations use what is called the Administrative Productivity Index (API). It divides work output such as typing, loans serviced, clients interviewed or invoices processed by total hours worked to produce the administrative output. So the API essentially is a labor productivity measure.

Outputs and inputs can be measured in physical units or values or both. For example, an input unit for labor is hours and for value is dollars. A unit of output is the physical count of something and its value is its base selling price.

If value (the dollar) is used as the basis of measurement, inflation must be accounted for to maintain a true value over time in constant dollars. Thus, all input and output values usually are tied to the Producer Price Index of each input and output (this compensates for the impact of inflation) to maintain valid input-output and value relationships in
constant dollars over time. In other words, if revenues from product A increased 20% over last year, but its price increased by 8% to account for inflation, the real increase in dollar output was 12%. Yearly comparisons must be done using constant dollars. If the company mixes dollars and units, it still must deflate the dollars to maintain a valid relationship between physical quantities and value.

Another complicating aspect of measuring productivity is that not all inputs are equal and not all outputs are the same. Some production processes are more labor intensive than others; some use a variety of different labor skill (value) levels. Output products also change in quality and composition over time. So the process

of weighing inputs and outputs to account for their relative values must be done before a truly accurate productivity measure is possible.

The point to remember is, whether employing a partial or total productivity measurement, whether for service or industrial application, or whether the business is large or small, all inputs and outputs must reflect constant values and true mixtures. To do this, all factors must be deflated and weighed.

One final technical consideration, productivity measurements should be indexed to facilitate comparison. Index each input and output measure to a base year and assign each measure the number 100. This makes it easier to calculate percentage changes over time.

CHAPTER 4:

CASE STUDY OF NETAS

In 1995, Netas joined EFQM as General Member.

The company first entered the competition for the European Quality Award in 1994 which has been established by EFQM.

It ranked among the finalists of the Award in 1995.

This year, the company was again in competetion for the Award and has become a Prize winner.

Netas attributes its outstanding performance over the past five years to the total quality approach conceptualized by a philosophy of excellence. The emphasis should nevertheless be placed on persistence and strategic management by Netas leadership which has paved the way for Netas in becoming a finalist and a Prize winner in the last two years.

All managers initiated and actively participated at company wide TQM activities.

The major reason behind the Netas' success is team power, says President Tanju Argun. The fact of sharing one goal among all employees significantly enhances the effectiveness of team power.

Team spirit has been fostered by various means developed in response to the employee attitude surveys which were implemented biennially (in 1992, 1994 and 1996).

A satisfied work force is the key to a satisfied customer in Netas philosophy. Employee satisfaction in Netas has been improved by HR policies in response to the needs identified after

the attitude surveys. Increasing employee satisfaction rates in three successive surveys indicate appreciation for the actions taken after surveys. The average overall employee satisfaction rate is above 70%.

In order to design appropriate HR and communication policies, Netas has taken a step further: In 1994, a company wide culture survey was carried out to analyze cultural patterns of Netas employees and check how these aligned with company's core values.

Netas, which geographically and culturally is located in the crossroads of different cultures, has adapted the TQM business philosophy that comes out from Western experience .TQM has permeated into Netas community culture easily. Subsequently, Netas has taken its place in the family of quality-driven European companies.

Providing its customers with products and services exceeding their expectations is the Customer Satisfaction Policy of Netas. Working as a team with customers based on mutual trust and cooperation has paid back by continuously raising

the overall customer satisfaction performance through the years measured since 1989. The current customer satisfaction rate of
95% stands high above the industry average.

The needs of stakeholders are continuously traced, understood and balanced.
Benchmarking process of identifying the key success factors within the "World's Best Practices" has been established in order to extract valuable data for continuous improvement.
Successful business results of the past five years, such as 80% reduction in product/service failures , 40% improvement in product development cycle time, and increase in profit per employee by 35 times are the strong indicators of how Netas' commitment to TQM approach led to excellent business results and industry leadership in the market.

The EFQM initiative has provided Netas with :
* A drive for continuous learning for improvement;
* A model to identify the objectives and key drivers of success for greater business achievements;

* A framework within which systematic process management techniques are learned and practiced in order to yield substantial improvement;
* Experienced work force aligned around a common purpose and direction;
An opportunity that will strongly support company image which will, in turn, have positive impact on business and in contributing to the promotion of Turkey abroad.

People are indeed as good or as bad as their leaders allow them to be. A person can come to the work every day, simply do what he or she is told and leave the work place at the end of the day. There are cases that people who try or offer ideas may get punished for that. There are situations that the boss knows everything and only he knows. This kind of attitude is not the right attitude at all. People must be given a chance to demonstrate their ability. They must even be encouraged to do so. In recent years we can see that there are many changes in the philosophy of management towards human resources, and efficiency. In the past the management believing that they knew everything better, almost dictated the work to be done. Most of the work force were not even aware of what

they were doing, and they usually did not have a say in how things should be done. Management had different units to deal with the quality.

World market is becoming a one big global market. There are many economic unions in the world, such as European Union, where the member states enjoy total freedom of exchange of goods and trade between themselves. There are no longer any trade restrictions or barriers towards trade. International organizations like GATT make sure that there are no barriers.

Another reality is that the world state are still in competition with each other. Competing ground today is the quality. The organizations and the states work harder to attain higher quality to remain leaders.

Due to these developments importance of human factor is more recognized. Modern Managements of today do not dictate what their workers should do. The approach is to allow everybody participate in the process. All the people from top to bottom are working towards improvement of quality. There are four basic key factors in implementing TQM successfully. The first is the determination of the top management, second is to put the quality as the top priority. Third factor is to be

realistic about the implementation plan. Fourth factor which is very important is the participation of each and every individual in the process.

Total Quality management is not dealing only with the quality of the products, but it also involves the quality of the working conditions, the wages, the social security and many more aspects. So we can accept this as a new philosophy behind the human resource management.

CHAPTER 5

CONCLUSION AND SETTING UP A QUALITY CONTROL SYSTEM

Basic Quality Elements

All quality and inspection systems have simple, basic elements in common:

Organization: setting and assigning specific authority and responsibility for each phase of the system;

Quality Planning: writing work instructions with realistic "defect prevention" rules, looking at manufacturing processes for possible quality trouble spots, setting acceptance/rejection standards, controlling accepted/rejected products, and setting up a means of using suppliers' and

customers' failure information to improve product quality;

Product Specification Control, making sure everyone always has the latest technical data for properly producing, inspecting, and shipping the product;

Supplier Product Quality Control: watching purchases to make sure that the people you buy from know and observe your quality requirements as well as technical specifications;

Measurement and Test Equipment Control: setting up a system to insure that such equipment is properly and regularly calibrated to established standards;

Nonconforming Material Control: spotting defects as early in production as possible and keeping faulty items from reaching customers; and

Records and Reports: setting up a system that tracks all steps of the production, inspection, and shipping cycle to identity existing and potential problem areas.

The following sample manual incorporates these basics. It may be adapted to fit your needs. It is recommended that each section of a manual you work up be on a loose-leaf sheet for easy reference and revision. Remember, the best manual in the world won't do any good unless every employee, not just those in Quality Assurance--is convinced that producing quality products is of prime importance.

5.1 SETTING UP A QUALITY CONTROL SYSTEM

We will now attempt to set up a manual for quality control, which will be easy to follow for those who want to adopt total quality concept. This manual describes for employees and customers our quality control system. The System applies both to the items produced and to the items bought from suppliers.

As dictated by the complexity of product design, manufacturing techniques used, and customer requirements, more specific written procedures may be required to implement the policies set in this manual.

No changes may be made to this manual or any supplementary quality control procedures unless

approved by the plant manager or an authorized representative.

1.0 Scope

1.1 The quality control system includes: receiving, identifying, stocking and issuing pads and material; all manufacturing processes; packing, storing; and shipping.

1.2 The system is designed to ensure customer satisfaction through quality control management of supplies made and services performed here, and by our suppliers at their facilities. It is designed to spot processing problems early so we can correct them Before we've produced a lot of faulty items.

1.3 Written inspection and test procedures will be Prepared to supplement drawings and other specifications, as necessary.

2.0 Responsibilities

2.1 The supervisor of quality assurance reports directly to the plant manager.

2.2 The quality assurance supervisor's Responsibilities include:

2.2.1 Planning how to meet customer's quality Requirements

2.2.2 Reviewing customer drawings and specifications.

2.2.3 Determining inspection points.

2.2.4 Writing inspection and test instructions.

2.2.5 Establishing (and making sure employees follow) the most effective and efficient quality assurance procedures possible.

2.2.6 Keeping adequate quality assurance records.

2.2.7 Reviewing quality assurance records and overseeing follow-up for correction and prevention of defects.

2.2.8 Assuring that our suppliers' quality control and follow-up are adequate.

2.2.9 Inspecting all special and standard gages, test equipment, and tooling used to manufacture Products when we acquire them and calibrating them on a regularly scheduled basis.

2.2.10 Coordinating in-plant correction of items rejected by customers, explaining to customers what action will be taken, and evaluating the actions for effectiveness.

2.2.11 Making sure inspectors make unbiased decisions to accept or reject items.

3.0 Purchase Order Control

3.1 All of our purchase orders to suppliers must be approved by the plant manager or an authorized Representative.

3.2 When the purchase order is released, our buyer will send our supplier all required drawings, specifications, and other customer requirements (such as material or process certifications, physical or chemical analysis, source inspections) with the purchase order.

3.3 If there is a drawing or specification change after our order is placed with the supplier, our buyer will send the supplier a purchase order change, including our latest Engineering change and the latest drawings or other specifications.

3.4 Copies of all purchase orders will be kept on file for our customers to review.

4.0 Drawing and Specification Change Control

4.1 We manufacture to customer drawings and specifications. Sets of these are filed in job number folders in Production Control files.

4.2 Production Control is responsible for charging out and keeping track of drawings and specifications, 4.3 The Sales Department receives Engineering changes from our customers and is responsible for sending these changes to Production Control immediately.

4.4 Production Control is responsible for issuing the latest Engineering changes, drawings, and specifications of departments that need them and

for voiding outdated Engineering changes, drawings, and specifications.

4.5 A standard procedure will be set up to control changes by effective date or serial/lot number.

5.0 Receiving Inspection

5.1 All parts and materials will be received and logged in by the Receiving Department.

5.2 All parts and materials will be sent to Receiving Inspection after logging in.

5.3 Receiving Inspection will assure that proper certification, physical and chemical test data, special process certifications, or source inspection certifications are with the items to be inspected.

5.4 The receiving inspector must document the complete results of all inspection and tests.

5.5 Inspection will identify accepted lots and send them to stock.

5.6 Rejected lots will be identified and set aside in receiving Inspection until the buyer and Production Control decide on disposition.

5.7 The Receiving Department will send a copy of each rejection report to the Purchasing Department and the supplier.

5.8 The Purchasing Department has the responsibility of assuring that a pattern of continually receiving faulty items from any supplier doesn't develop and assuring supplier corrective action.

5.9 The Quality Department will follow-up to see that a supplier who has sent us items we reject has effectively corrected what it has been doing wrong.

5.10 Receiving Inspection instructions will be written with consideration given to the complexity of the parts, material received, and customer requirements. Follow customer instructions (if any)' for inspection.

5.11 Sample according to customer requirements

5.12 The Quality Department will review Receiving Inspection records periodically to see if any suppliers are consistently failing to meet standards.

5.13 All inspection records will show the number inspected, the number rejected, and the name of the inspector.

5.14 Inspection records will also show the disposition of supplier-provided records and data.

6.0 Raw Material Control

6.1 Raw materials, bar stock, sheet stock, and castings will be marked so they can be traced to their certification, and stored in an area apart from the normal flow of in-process material.

6.2 Copies of all certifications will be filed in the job order number folder by job order number and available for customer review.

6.3 Only raw material accepted by Receiving Inspection will be released for production.

6.4 Certified stock will be issued from its storage area only for job order requirements.

6.5 Verification of suppliers' certifications will be ordered from independent testing laboratories when deemed necessary by the Quality Department or to meet our customers' requirements.

6.6 All certifications will be traceable to purchase order, date of receipt of the material, and the inspector of the material.

7.0 In Process Inspection

7.1The Quality Department will make first piece inspection after set up is completed and approved by Production.

7.2 No production runs will be made until first piece inspection is accepted.

7.3 After first piece inspection acceptance, in-process inspections will be made by the Quality Department at intervals adequate for early detection of processes producing material that doesn't meet standards.

7.4 The Quality Department will keep records of all first piece and in-process inspections.

7.5 The inspection records will be stored in the job number folder and will be available for customer review.

7.6 Tag or otherwise identify rejected items and move them to an area apart from the normal flow of in-process materials.

7.7 The Quality Department will follow-up to prevent recurrence of faulty material.

7.8 Inspection records will list: the number of pieces accepted, the number rejected, kind of defects and basic causes of rejection, date of inspection, and the inspector's name.

7.9 Attachment _____ shows the locations of fabrication and inspection stations. For each station, it lists the types of items subject to inspection, the kind of inspection done, and the applicable drawings and specifications.

7.10 Special processes will require appropriate inspections and controls, including qualification and certification of personnel and equipment.

8.0 Assembly Inspection and Functional Testing

8.1 Production personnel will make assembly inspections and do functional testing, as required.

8.2 The Quality Department will check functional test under an established sampling plan.

8.3 The Quality Department will keep the inspection records.

8.4 The inspection records will be kept in the job number folder and will be available for customer review.

8.5 All faulty (discrepant) assemblies will be marked and set apart so they won't be accidentally used.

8.8 The Quality Department will initiate corrective and follow-up action to prevent recurrence of faulty material.

8.7 Inspection records will list: the number accepted, the number rejected, the date of the inspection, and the inspector's name.

9.0 Final inspection and Testing

9.1 Final inspection and tests will be performed either on 100 percent or on a sample of the items. The number of items sampled will depend on the complexity of the items and customer requirements. Inspection will follow either customer-supplied procedures when available or MIL-STD-105D.

9.2 Each end item will be inspected/tested 100 percent, unless the customer asks otherwise.

9.3 The Quality Department will keep all final inspection and test records.

9.4 Inspection and test records will be filed in the job number folder and will be available for customer review.

9.5 The Quality Department will follow-up to see that processes producing faulty materials are corrected and to prevent recurrence of faulty material from those precesses.

9.8 All faulty material will be marked and set apart from the normal flow of finished material.

9.7 Faulty material will not be shipped to the customer without specific customer instructions to submit such nonconforming material.

9.8 Rejected material which has been repaired, reworked, or sorted must be resubmitted to final inspection to make sure it meets requirements.

9.9 Inspection records will list: the number of pieces accepted, the number rejected, the date of inspection; and the inspector's name.

10.0 Faulty (Discrepant) Material Control

10.1 All faulty (nonconforming) material, supplies, or parts will be placed in a "DO NOT USE" area. The items will be clearly marked with

job number, part number, revision letter, lot size, defect, inspector's name, and any other information necessary.

10.2 The specific reason an item has been rejected will be clearly written on a rejection tag attached to each part or container.

10.3 No one may remove items from the "DO NOT USE" area until disposition is determined by a Material Review Board made up of the plant manager, and representatives of the Production and Quality Departments.

10.4 Nonconforming material will not be shipped unless the customer's buyer approves it. The shipping documents will be marked with what's wrong with the items.

10.5 The Quality Department will control all lots submitted for acceptance inspection. Each lot will be kept as a unit, apart from other lots, and out of the normal flow of material.

10.6 During the processing of material all production and inspection operations must be kept

in proper order. Each step must be completed before the next step is begun.

10.7 The Quality Department will set up a system so that the stage of inspection each item is in, can easily be identified.

10.8 Unidentified material will be taken out of the normal flow of production until it is inspected to insure that it meets all specifications.

10.9 Reworked material will be segregated from other material until the Quality Department determines its status.

11.0 Tool and Gage Control

11.1 All special tools, jigs, fixtures, gages, and measuring equipment must be properly identified.

11.2 Each new or reworked tool, jig, fixture, gage, and item of measuring equipment will be inspected before issue for use.

11.3 All gages, measuring and test equipment will be calibrated to standards set by the National Bureau of Standards.

11.4 A written schedule for calibrating gages, measuring and test equipment will be set and strictly followed. Frequency of calibration will be based on type and purpose of the equipment and severity of usage.

11.5 A restricted area for storing and calibrating gages, measuring, and test equipment will be set up.

11.5.1 A strict system of issue, control, and return will be set and followed.

11.6 If the customer supplies special gages, they will be checked at the intervals the customer sets. If the customer supplies no inspection schedule, the equipment will be checked according to a schedule that takes into account type, purpose, and severity of use.

11.7 Calibration will follow the written procedures kept in the calibration area.

11.8 Obsolete or out-of-service tools and gages will be tagged.

11.9 Decals or stickers will be put on tools and gages or their containers to show the last date of calibration and the due date of the next calibration.

11.10 Personal, as well as company-owned production and inspection tools, must be properly and regularly calibrated.

12.0 Overrun Stock Control

12.1 The Quality Department will oversee overrun stock.

12.2 The Quality Department will insure that any overrun parts sent to stock are properly marked "accepted." The part number, latest drawing number and specification revision, date of inspection, job number, and quantity of parts will be shown. The Quality Department will periodically check to see that the parts are properly packed to prevent deterioration and damage.

12.3 No overrun parts will be shipped to a customer until they are reinspected and found in acceptable condition and to meet the latest drawing and specification revisions.

13.0 Packing and Shipping

13.1 No order will be shipped to a customer until all shipping papers are stamped or signed and dated by the final inspector.

13.2 No order will be shipped until all required certifications, test reports, special samples, etc., have been packed with the material in accordance with the customer's requirements and accepted by the final inspector.

13.3 All material will be packed to prevent damage deterioration, and substitution.

13.4 The customer will be identified on the packaging, parts, and as otherwise necessary to prevent lost and misdirected shipments.

13.5 The order will be packed as directed by the customer, if applicable.

14.0 Identification

14.1 All materials and articles will be identified by a basic part number and revision letter.

14.2 Critical materials and articles will also carry a serial or lot number. If required, a list of materials and articles by identification numbers will be attached.

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