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ASSET MANAGEMENT IN THE ARABIAN GULF

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In the last few years many industrial companies in the Arabian Gulf and Gulf Corporation Council (GCC) have begun to realize the importance of Strategic Asset Management (SAM) as an enterprise strategy that, properly implemented, will result in Sustained Business Performance Improvement (SBPI). Typical results of an effective Strategic Plan for Asset Management include a 20% - 50% reduction in maintenance cost accompanied by a 15% - 20% increase in real capacity, with no capital investment in production equipment. The tangible results include a significant increase in profitability accompanied by a dramatic reduction in unit cost.

In the modern world, the leadership and management of the large industrials in this region are highly competent, well educated individuals. They are actively seeking strategies that will enable their companies to compete successfully in regional and global markets. They are supported by engineers and professionals in other technical disciplines who are well trained and competent in their chosen professions. This is no longer the Arabia of Lawrence; it is a modern, growing industrial base with no foreseeable limitation on revenue to support growth and expansion.

In her paper “**Improving Profitability Through Reliability**” Dr. Carol Vesier states, “*The goal of all public companies is to enrich their investors. A requirement to increasing shareholder wealth is profitability. Profitability is the return on an investment. Measurements of return include cash flow and net income while measurements of investment include operating assets, total assets and equity. All strategies to improve profitability can be classified as employing one or more of three fundamental mechanisms:*

- Eliminate waste
- Change the rules of the game.
- Improve reliability

Research has shown that increasing asset productivity and reducing costs are powerful contributors to improving profitability. Successful strategies that allow harnessing two of the most powerful contributors to profitability will have

more impact than those based on weaker contributors to profitability. Manufacturing reliability improvements offer a unique opportunity to simultaneously increase asset productivity and reduce costs. Because of this ability, reliability strategies offer an excellent opportunity to increase profitability. **Most companies should include a global reliability strategy amongst their profitability strategies.”**

Developing and implementing a Strategic Plan for Asset Management requires significant effort and knowledge. Most companies have difficulty finding a sufficient supply of these valuable commodities to implement SAM internally while continuing to manage an operating facility. Many companies also struggle with figuring out how to get started and in what direction to proceed. A Roadmap is needed!

In the past, Reliability Improvement Initiatives have been restricted to site level programs that achieve impressive results at individual manufacturing sites. These benefits often are lost due to management changes, failure to establish sustainability and lack of Senior Management support. The ability to duplicate results across multiple sites is restricted due to cultural differences, lack of consistent business processes, and plain old territorial jealousies. Strategic Asset Management (SAM) programs are designed to overcome these deficiencies and achieve significant and sustainable improvement in corporate business processes and financial performance. The benefits of a successful Asset Management Strategy include:

1. Accurate analysis of equipment maintenance, repair, and replacement records.
2. Increased availability of production systems and equipment.
3. Fewer failures of production systems and equipment, resulting in fewer unplanned outages.
4. Improved product quality associated with a reduction in costs related to losing or reprocessing product.
5. Lower costs for system and equipment maintenance, spare parts inventory, and capital replacement.
6. Enhanced morale among management and the hourly workforce as they learn to enjoy a proactive environment instead of surviving in chaos.
7. Additional real capacity as operating units are able

to operate at higher levels for sustained periods without excessive equipment failure.

- Higher profits from the compounded effect of reduced conversion costs and increased production levels.

In order to understand the impact of this phenomenon in the Arabian Gulf, one must first get a grasp of the culture and history of the region. Most of you probably know the Arabian Gulf as the Persian Gulf. However, in the region and especially among the Arab oil producing countries, it is known as the Arabian Gulf. Most of these countries are monarchies with government and industry controlled by various royal families. In recent years, a very strong move has developed toward privatization.

SMALL AREA - LARGE GLOBAL IMPACT

According to published OPEC data, Saudi Arabia has approximately 26% of the world’s known crude oil reserves; Iran and Iraq have about half that amount and the United Arab Emirates and Kuwait each control reserves equal to approximately 40% the Saudi reserves. Tiny Qatar has one of the largest known “un-associated” gas fields in the world. This represents a critical source of energy for industrial development as well feed gas for petrochemical production. The current crude oil market is delivering a huge influx of cash into the region. Owners and Senior Management of the companies in the region are using the opportunity to invest heavily in the expansion of existing industrial facilities as well as the development of new facilities and new industries, both petroleum and petrochemical related and non-petroleum industry. These industries can be very competitive in global markets due to their geographical location, the low cost of expatriate labor from third world countries, and the very low cost of energy in countries where crude oil is produced at an average cost of approximately 2.5 US Dollars per barrel.

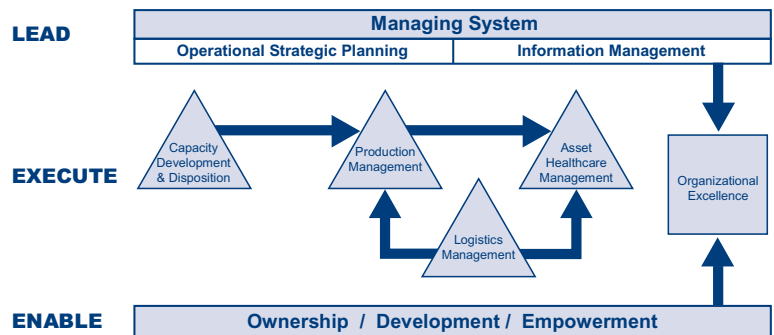
The countries in the region have established the Gulf Cooperation Council (GCC) in a structure similar to the European Union. On 21st Rajab 1401 AH corresponding to 25th May 1981, Their Majesties and Highnesses, the leaders of the United Arab Emirates, State of Bahrain, Kingdom of Saudi Arabia, Sultanate of Oman, State of Qatar and State of Kuwait met in Abu Dhabi, United Arab Emirates, where they reached a cooperative framework joining the six states to effect coordination, integration and inter-connection among the Member States in all fields in order to achieve unity, according to article 4 of the GCC Charter.

Article 4 also emphasized the deepening and strengthening of relations, links and areas of cooperation among their citizens. The underpinnings which are clearly provided for in the preamble of the GCC Charter, confirm the special relations,

common qualities and similar systems founded on the creed of Islam, faith in a common destiny and sharing one goal, whereby the cooperation among these states would serve the sublime objectives of the Arab nation. In recent announcements, the GCC has stated that the member states will have a common currency within the next five years. Many member companies of the GCC have begun to look to asset management as a strategy for improving the business performance of their organizations. Visit their website at http://www.gcc-sg.org/index_e.html for more information.

THE STRATEGIC ASSET MANAGEMENT MODEL

In a recently published paper titled “The Future of Asset Management” Brad Peterson, Founder and President of SAMI, stated, “This article explores a broader vision for *asset management than has been previously articulated and brands this vision Strategic Asset Management (SAM). Based on successful experience with our clients, SAM is an integrated set of processes that systematically derive the highest value from plant assets, through a consistent philosophy, plans and objectives, and cooperative involvement by everyone in the plant. SAM represents a higher level of performance than is currently practiced or even recognized by the manufacturing community today.*”



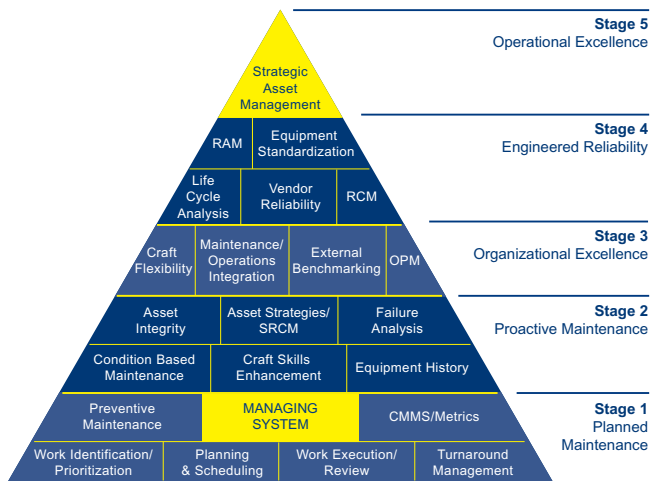
“Any useful model to guide action will have several characteristics:

- **Simplicity:** All of the greatest ideas are simple in concept. If not kept simple, they are not fully understood or remembered, and fail as guiding principles.
- **Intuitive:** Readers should be able to understand the underlying principles without guidance.
- **Utility:** The model should work consistently in application.
- **Completeness:** All necessary elements of success should be contained.

Our experience with the SAM model indicates these criteria are met. However, you as the reader will need to make your own judgments.”

MARAFIQ

A good example of the move toward privatization among the



- Underutilization of the SAP system to manage the assets

His Highness Prince Saud Bin Abdullah Bin Thunnayan Al-Saud, Chairman has said, *“Jubail and Yanbu industrial cities are two beacons of light on the Kingdom’s road to national economic development and privatization. The two cities have been a resounding success in establishing an industrial support base and infrastructure to encourage investment in primary and secondary industries, provide job opportunities for Saudi nationals, and diversify the Kingdom’s income to reduce its dependence on oil.*

With initiatives such as the establishment of Marafiq, the Kingdom has been able to sustain its growth and development program, keep pace with global economic changes and requirements, and supply existing and future industries with essential services at competitive prices. The founding of Marafiq has been a wise and visionary decision at the right time, and fitting testimony to the farsightedness of King Fahd Bin Abdulaziz Al-Saud, Custodian of the Two Holy Mosques.

GCC Countries is MARAFIQ, the Power and Water Utility for Jubail and Yanbu in Saudi Arabia. MARAFIQ is a Saudi Joint Stock company established by Royal Decree, to serve the industrial (petrochemical, steel, refining, fertilizer, and others) utilities requirements in the Industrial Cities of Jubail and Yanbu, Saudi Arabia. The MARAFIQ founding partners are as follows:

1. Saudi Arabian Oil Company (Saudi Aramco) – 24.81%
2. Saudi Basic Industries Corporation (SABIC) – 24.81%
3. The Public Investment Fund (PIF) – 24.81%
4. The Royal Commission for Jubail & Yanbu (Royal Commission) – 24.81%
5. Seven (7) Saudi Private Investors – 0.76%

On the shoulders of Marafiq, by the grace of Allah, rests the challenge to establish and build further on a strong foundation of competitiveness, and to spearhead the national drive to privatise public enterprises that are economically viable and sustainable. With its sound commercial foundation, state-of-the-art technology and extensive infrastructure, Marafiq is well positioned to provide efficient, economical and reliable utility services as a self-sufficient enterprise.”

Prior to the inception of MARAFIQ, the Utility was owned and operated by the Royal Commission. Started in late 1982, the Royal Commission operated the business as an interim service provider to the industrial companies locating or building manufacturing and processing facilities on Royal Commission land in Jubail and Yanbu.

Under the visionary leadership of President Abdullah Al-Marei and his management team, MARAFIQ initiated a project In July of 2004 to develop a strategic plan for Asset Management. Strategic Asset Management Inc. (SAMI) was selected to support the development of the strategic plan based on proven strategic planning methodology, a logical model of maintenance and reliability progression (the SAMI Asset Healthcare Triangle), and a track record of successful implementations. MARAFIQ appointed a Strategic Planning Team and a Senior Management Steering Committee to conduct the Strategic Planning.

On January, 2003, the Royal Commission turned over management and majority ownership to the group listed above, retaining a sizable, but not controlling, interest in the new company, MARAFIQ. During their 22 years of ownership, the Royal Commission pursued a service mission to the exclusion of a profit mission. The impact has been to leave the new company with legacy problems. Most notable of these are:

Asset Management Business Processes cut across all enterprise functions: operations, engineering, management, production, purchasing, and maintenance. This implies that each of these organizations has an opportunity to contribute to enhanced equipment reliability and to benefit from the results. The members of these organizations will have roles to play in the core business processes that are integrated into the Strategic Plan.

- Inventory overstocks of parts & materials, much of which is obsolete
- Different management structures between Jubail and Yanbu operations
- Issues in the Work Management system
- Maintenance and Operations contractor management issues
- Inadequate definition of roles and responsibilities

The Strategic Plan documents the current status, provides a future operations vision and identifies of a set of detailed strategies and projects for achieving the future vision.

It establishes effective leading and lagging performance indicators and goals that clearly reflect the adoption of new behaviors and trend the achievement of stated objectives resulting from these changes. The Strategic Planning process aligns Senior Management as to strategy, objectives, performance indicators, and the means by which we will achieve success.

The strategic plan was presented to the Steering Committee in the final Challenge Session, on October 10, 2004. The Asset Management strategic plan content, developed over a thirteen week period, is summarized in the following sections.

CURRENT STATE ASSESSMENT

The site visits and analyses that the MARAFIQ Strategic Planning Team (SP Team) performed for this Strategic Plan, found three broad themes or issues consistently:

- The organization structure and functioning do not support or align with Asset Management requirements
- There is no unified process to manage the flow or objectives of maintenance work.
- The emphasis in the last 1 ½ years has been on the tools (SAP) of work management, not on efficiency or effective application

The analysis performed by the Strategic Planning Team sought to specify the general situation at MARAFIQ as a way to express the base or platform needs of the organization. Their focus was on the first two stages of the Asset Healthcare Triangle; Planned Maintenance and Proactive Maintenance. Although the organization has a large amount of data, a very significant percentage lacks context. As to trends and history, much useful performance data was lost at the time of transition from Royal Commission control to MARAFIQ control. This is a significant finding in itself, in that no one knew or saw the value of retaining several years of performance data. Of necessity then, the analysis was done at a strategic level, addressing broad organizational issues, and using detailed data when available.

The primary areas of weakness the Strategic Planning Team identified are:

- Planning and scheduling
- Crafts skills development
- Preventive Maintenance processes
- Materials management system
- Employee productivity and effectiveness
- Use of Key Process Indicators or performance metrics. Managing system processes
- Equipment performance and maintenance histories

The Strategic Planning Team identified six current projects and/or initiatives that either created a foundation for

maintenance improvement or acted directly upon the maintenance function. The gaps identified in the preceding paragraphs, and others related to these, were identified as such by the creation of a future vision.

VISION

The MARAFIQ Strategic Planning Team, in association with Key Stakeholders, developed a vision for the company's future state. This was accomplished primarily through a series of facilitated exercises in which the Strategic Planning Team were brought to a deeper understanding of what their organization could be like, in other words, what was possible. The MARAFIQ Asset Management Vision is:

“To implement the Asset Health Care program (later renamed the Palm Program) to meet customer needs at competitive costs leading to higher company profitability by ensuring plant availability and optimizing business processes.”

STRATEGY

This vision will be achieved through the execution of the Strategic Plan by:

- Establishing standard work management business processes coupled with consistent KPI's to measure performance and productivity
- Fully utilizing SAP to measure and manage all maintenance and related material activities
- Developing and maximizing Asset Healthcare related competencies, including Risk Management, Root Cause Failure Analysis and Human Resources' policies
- Adopting a ZERO failures strategy and reducing associated, unintended downtime
- Ensuring equipment is operated within specified operating limits
- Optimizing equipment maintenance strategies
- Improving Material & Warehousing management systems
- Improving current Maintenance Planning & Scheduling processes
- Implementing effective contracting-out strategies to ensure O & M contracted work meets required performance standards

The act of comparing this Vision to the Current State, identified during the Assessment portion of the planning, readily illuminated the nature, size and importance of MARAFIQ's various problems. It also illuminates the tremendous opportunity for improvement and benefit the company has.

STAKEHOLDERS

Obtaining clarity and consensus about the problems and issues often requires more than simple communication. In every organization there are individuals whose position, influence and knowledge set them apart. These are the

Stakeholders. In order to validate their findings, their conclusions and their recommendations, the Strategic Planning Team needed to identify the Stakeholders and include them in the Strategic Planning process. This was accomplished through the working sessions and a series of milestone Workshops to review progress to date and validate what had been developed so far.

In addition to their periodic involvement in working sessions and Workshops, MARAFIQ's Stakeholders were kept up-to-date at least weekly through personal contacts from the team and by e-mail. The extent to which it was deemed important to work with each Stakeholder was determined by the Strategic Planning Team's analysis of the extent to which each Stakeholder was either positively or negatively disposed to the Strategic Planning process.

From this analysis, the Stakeholders were each assigned a team contact person whose job it was to ensure that the Stakeholders were updated frequently, that they understood the process and that any questions or concerns were addressed immediately. Their buy-in to the Strategic Planning process and the Strategic Plan is critical to a successful implementation.

STRATEGIC INITIATIVES AND PROJECT PLANS

A major output of the strategic plan is the development of a set of strategic objectives that must be achieved for the plan to be effective. These objectives are goals for the future-state vision and are supported by a compilation and grouping of a variety of individual projects. These individual projects were identified to strengthen the many business processes contained in the day-to-day business of maintaining MARAFIQ's asset base and assuring their long-term reliability. It is this set of strategic objectives that the individual work projects have been designed to address and linked to achieve.

There are six strategic objectives that must be met to make the strategic plan, and therefore, the future vision, successful. They are listed as follows:

1. **Organizational Structure & Functioning** – MARAFIQ is developing a competence-based, coaching oriented Organization capable of managing and supporting MARAFIQ Asset Management effectively and economically. As the need for support, decision-making and resource allocation for Asset Management initiatives increases, there will be an increasing need for a broad-based organizational understanding of and familiarity with the principles of Asset Management and their complex interaction.
2. **Managing System** – MARAFIQ is implementing a set of KPI's and reports to formulate and support standard Work Management Processes and supporting elements (i.e. leading and lagging KPI's,) to maximize MARAFIQ

Asset Management performance. In addition to well-defined and well understood work processes, there is a real need at MARAFIQ to collect and report meaningful, actionable data. With all the Asset Management processes mapped to their desired metrics. The data will be accurate, short-cycle and meaningful.

3. **SAP Utilization** – MARAFIQ leadership is learning to fully utilize the capabilities of SAP in controlling the work and accessing meaningful data to optimize MARAFIQ Asset Management. SAP is extremely complex and not easy to use. Essential programs and data will be trained.
4. **Work Management Efficiency** – MARAFIQ is developing and implementing Asset Management procedures, in areas such as Work Identification, initial Priority setting, Planning, Backlog Management, Scheduling, Work Execution and feedback, that enable efficient management of maintenance activities. These are foundation elements upon which the future enhancements in Asset Management are built. The higher productivity levels of the workforce that are produced by this level of competency represent the most significant improvement opportunity.
5. **Materials & Resources** – MARAFIQ will assure the availability and full utilization of all resources, including all parts and materials, contractors, tools and analytical data, necessary to support MARAFIQ Asset Management. The proper logistic support must be in place for the work management process to function efficiently. Materials, for example, are a significant component of the cost structure. There are opportunities for reducing the overall cost, while increasing ease of access of materials.
6. **Work Management Effectiveness** – MARAFIQ is evolving into a sustainable Asset Management culture through Proactive Reliability and equipment integrity activities such as Predictive Maintenance, Condition Monitoring and Failure Analysis programs. The approach is to proactively "prescribe" which activities are required to support the operating reliability requirements. In a stable work management environment, identification and execution of the appropriate healthcare activities will systematically mitigate and/or eliminate chronic and acute failure modes.

Within each of the objectives, a set of project plans were identified. These projects are grouped and linked to support the six Strategic Initiatives defined in the previous section. These project plans will be initiated to close the gaps in efficient and effective functioning. The project plans are the least common denominator of the strategic planning process and will be used to develop the implementation plan.

BUSINESS CASE

The business case has been built on five elements and

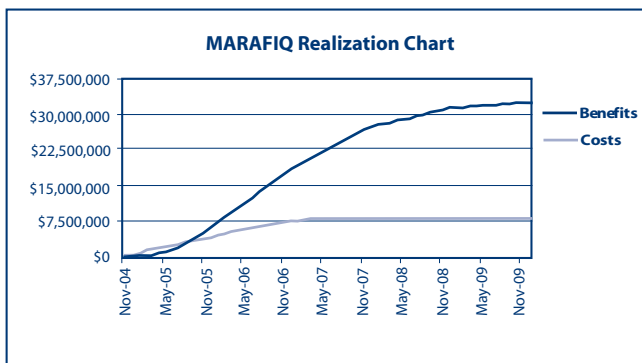
extends from the start of plan implementation until the end of the Strategic Plan. The chart below summarizes key elements of the Business Case:

Efficiency benefits from cost savings in the areas of:

1. Labor Utilization
2. Materials Management

Effectiveness benefits from cost savings and revenue improvement in the areas of:

3. Mix of Work Orders, reduced overall and more focused on proactive work
4. Asset utilization effectiveness from more effective management of capacity
5. Capacity benefits resulting from decreased downtime



The cumulative gross benefits identified are SR 89.8 MM in efficiency gains and SR 31.5 MM in effectiveness gains. The SAMI fees and expenses for implementation assistance are estimated to be SR 29.3 MM, over 2 ½ years, generating an annualized return of 4.1 to 1.

In US\$, the cumulative gross benefits are US\$23.9 MM in efficiency gains and US\$8.4 MM in effectiveness gains. The SAMI fees and expenses for implementation assistance are \$5.6MM.

IMPLEMENTATION

Implementation began in February of 2006 following the SAMI Closed Loop Improvement Process as shown in the adjacent illustration. The first step was a thirteen week Design Process. MARAFIQ formed a Design Team to develop and validate the detailed activities that will support the implementation activities. This group included client personnel from various organization areas, guided by Subject Matter Experts from SAMI. Design was completed in May of 2006 and the Install / Sustain / Certify process has begun in Jubail and Yanbu.

Developing and implementing SAM requires significant effort and knowledge. Most companies have difficulty finding a sufficient supply of these valuable commodities to implement

a SAM Program internally while continuing to perform their rather demanding daily functions. Many companies also struggle with figuring out how to get started and in what direction to proceed. The ability to create and implement SAM and realize the associated benefits is dependent on success in three areas:

1. Development of three to five year operational strategy that clearly identifies the current status, future vision, gaps and strategies for closing the gaps, project plans to execute the strategies, and a compelling business case.
2. Design of the business processes, management systems, and performance indicators that, when implemented, will accomplish the business case.
3. Integration of the Asset Management Strategy with existing business processes and systems and establishing a new culture that will sustain the changes into the future.

KEY PERFORMANCE INDICATORS (KPI'S)

Effective measurement of the results is a critical success factor for SAM. Performance indicators will be identified at each phase of the implementation

Key Performance Indicators (KPI's) are established to track or trend all critical aspects of an organization's business processes. Accurate KPI's provide a firm base for making decisions that will increase the organization's efficiency, effectiveness, and success. Two integrated levels of KPI's are used in implementing SAM:

The KPI's are a key element in the Change Management Process, and are the primary method for tracking progress in the implementation of the new business processes. The value of KPI's can be enhanced through benchmarking internally, among your sites, as well as externally within and outside your industry, and using the comparisons to establish stretch goals.

IN CLOSING

Executive management in pace setter companies in the Arabian Gulf have begun to realize the benefits of implementing SAM across the full spectrum of their enterprise. Millions of dollars in savings combined with increased profitability are available to pacesetter companies who are capable of designing and implementing an effective SAM strategy.

It is not enough to define the functions that need change. A useful SAM initiative must also define the roles and responsibilities of those who are to implement it. It must be designed to change the organizational culture to a "Reliability Culture" where everyone involved assumes ownership of the assets and focuses on improving financial performance by making reliable production a primary target.

The critical success factors for such an effort include:

- Highly visible top-down management commitment to the initiatives. People must perceive active leadership versus authoritative management during the course of implementation and in the future culture.
- The “Right People” on the bus to develop the Strategy and implement sustainable change to a new culture.
- A measurement system (KPI’s) and committed goals to track the progress. This weaves accountability into the initiatives and provides a tangible picture of the organization’s efforts.
- Internal and external benchmarking of the organization’s products, services, and processes. This information inevitably leads to a “significant emotional event” as the organization can truly understand its relative position.
- Stretch goal setting (10x, 100x, etc.). Such goals focus people on changing the process by which the work gets done rather than “tweaking” the existing process. This leads to “leap-frog” rates of improvement.
- Provision of education and development plans to all levels of the organization. Without the necessary mind-tools, people cannot make breakthrough improvement happen.
- Communicating success stories that demonstrate how the tools of improvement can be applied and the results that can be achieved.

Beginning without full commitment to these principles will rarely achieve success. This is not a journey to be undertaken by the faint of heart.....commitment to change and strong leadership are required. Engagement of a qualified outside agency as a catalyst and facilitator for sustainable change is most often needed.

REFERENCES

Title	Author	Copyright	Publisher
The Future of Asset Management	S Bradley Peterson	2003	Strategic Asset Management, Inc.
Maintenance Engineering Handbook	Lindley Higgins	1994	McGraw-Hill
Improving Profitability Through Reliability	Carol Vesier, PhD	2001	RonaMax
The Six Sigma Way	Peter Pande et al	2000	McGraw-Hill
Uptime: Strategies for Excellence	John Dixon Campbell	1995	Productivity Press