

QMS

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Quality Management System of Lockheed Martin

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Introduction

Quality Management System (QMS), according to ISO 9001, refers to the policies set, the procedures and processes required for executing and planning service in the core area of the business (9000 Store, n.d). These are the areas of a business operation that are critical to meeting the customers' requirements. The concept of QMS integrates the internal processes in a firm while providing the execution of a project with a process approach (Zimon, 2017). Although simplistic, it is a system that requires a recognition of the interested parties and their requirements ensure that their requirements are met, while at the same time ensuring that employees receive the required training for safety system requirements. Additionally, it should also provide a means to monitor, measures and report the QMS performance for control action to improve the system (Stolzer et al., 2008). It is important for firms to have quality management systems to foster organizational culture, reduced production costs, increase its market share, improve customer satisfaction, enhance its service delivery, boost productivity and efficiency, and raise its competitive advantage. The requirements of a QMS ensure that the system is easy to understand in terms of its scope, the normative references, the terms and definitions used, the organizational context, planning and support, operations and improvement (LaHood, 2018). The QMS under consideration is for Lockheed Martin Corporation. The corporation follows a standard process of QMS in first evaluating the needs of the customers and their expectations, then designs and implements the desired service, operating the service and achieving the desired outcome, measuring the service quality, and evaluating the corrective actions.

Description of the Company

² Lockheed Martin is a global security and aerospace company employing over 105,000 employees globally. The firm is headquartered in Bethesda, Maryland and its primary activities for the firm range from conducting research, developing, designing, manufacturing, integrating and sustaining advanced technology systems, services, and products. The operating units include the following:

- Aeronautics- the firm made sales of over \$21.2 billion in 2018 from airlift, tactical equipment, and in the research of aeronautical ² and development of business lines.
- Missiles and fire control- the firm generated over \$8.5 billion from this sector in 2018 with products and services including ² Terminal High Altitude Area Defense System and PAC-3 missiles
- Rotary and mission systems- in 2018, the firm generated over \$14.3 billion in sales from this department which is inclusive of naval systems, Sikorsky military and commercial helicopters, simulation and training lines of business, and platform integration.
- Space- the space division generated sales amounting to \$9.8 billion in 2018 inclusive of commercial satellites, launch, government satellites, and strategic missiles.

The firm's mission is "solving complex challenges, advanced scientific delivery and deliver innovative solutions to assist our customers to keep people safe" while the vision is "Be

the global leader in supporting our customers' missions, strengthening security and advancing scientific discovery.” Its values are inclusive of doing what’s right, respecting others, and performing with excellence. The firm has a global presence but most of the businesses are done with the US department of defence federal government agencies. Additionally, Sikorsky engages in the provision of military commercial operators and services in over 40 countries. The best part of the organization comprises of international government and commercial sale of platforms, products, and services.

Equipment Maintenance Requirements

Lockheed Martin regularly improves all aspects of its activities starting from the equipment used and the manufacturing services to customers through constant training and technological upgrades (Lockheed Martin, n.d). It has prioritized the quality of products that customers get by optimizing the processes existing and synchronizing them with its various departments. All its manufacturing processes are considered carefully from commencement to the end while they are also designed in such a way that guarantees that the customers get value owing to the high-quality standards. The maintenance of equipment, which involves ensuring that the continuing equipment has prerequisite worth and serviceability includes overhauling, inspecting, replacing, rectifying the defects, embodying the modifications, repairing, and complying with the directives from airworthiness bodies (Molinero et al, 2018).

Equipment maintenance is a highly regulated area for ensuing safety and correct functioning of the plane during a flight. Lockheed Martin follows the national regulations which are constantly coordinated strictly following the International Civil Aviation Organization (ICAO). It not only uses the local authorities in ensuring airworthiness and maintenance tasks

but also delegates their personnel and inspection systems (Stolzer et al., 2008). Lockheed Martin ensures that its equipment undergoes scheduled maintenance checks, runs the power-by-the-hour programs to predict budgets, among other measures. Currently, the facility is in the process of automating the inspection systems which are safer and more reliable. There various method proposed like a digital tapestry, next-generation electronics, additive manufacturing, and advanced materials.

Managers' Roles and Responsibilities

The manager is responsible for maintaining the processes and the standards of the company. They are also charged with the responsibilities of evaluating and interpreting data to determine the prevalent risks. Other than creating the audit plans to evaluate the risks, they also execute the plans through additional data analysis and interviews. The managers create their reports on the findings and may also be required to travel to various plants and suppliers to ensure the quality of the supplies. The ICAO requires that an equipment maintenance manager be a certified engineer, mechanic or a technician. Although the ICAO does not differentiate the three roles, it gives the local contracting states to decide which term to use and they thus essentially perform the same role (Allison, 2018). The roles are used n different states as having different roles, qualifications, and responsibilities. The facility administration places reserves significance in implementing the QMS in the facility to enhance its competitiveness internationally and locally. Through consistency, the firm has implemented the ISO 9001:2015 for the clients to be assured that the services and the products offered by the firm are of the highest standards.

The basic qualifications are a bachelor's degree in engineering, science or math or any related discipline from accredited institutions. The desirable skills require that the manager be conversant with AS9100 and over 4 years' experience in a similar position. Ability to manage people and work in a team is also preferred. The roles of the operations staff include ensuring that the equipment has a safe movement, the personnel comply with the FAA's requirements and proper equipment. The maintenance department makes sure that the infrastructure, the facilities assets, and the equipment are operating at their best level inclusive of the regulatory and code compliance. The maintenance staff are inclusive of the electrical personnel lighting the airfield under the FAA's regulatory standards.

Human Factors

As a firm that is ISO certified, its products and services are more likely to be of high quality consistently if the correct processes and procedures are duly followed. However, such products and services cannot be achieved without assistance from the experts in the field, and by this, all employees are experts in the field they man (LaHood, 2018). The audits of ISO offer independent oversight of affairs, but the form also needs to oversight itself through effective human factors. The following are the human factors necessary in Lockheed Martins:

a) Planning

The firm must use the employees and the experts to ensure that they plan for achievable objectives. The equipment must be correctly checked before leaving the engineers and mechanics.

b) Documentation

It is important to accurately and comprehensively document the building and the assembling parts the correct way and each time. It can only be achieved if inputs are solicited at all stages of repair, production, and development. All persons involved should also document for the QMS to have objectivity. The documentation is critical for the excellence achieved once, to be repeated while the past mistakes can be avoided.

c) Traceability

The firm should ensure that the repairs and maintenance in the QMS are traceable to attribute product failure. Through them, a process and a procedure can be followed for the experts to know what and how something went wrong. Although it might seem like a way to assign blame, it is not a failure in the person but a system (Kumar et al, 2018). This way, the involved parties learn, and they devise means of how to improve the human factors along the process.

d) Training

The firm must conduct training every time it updates its QMS to ensure that the employees understand it not just as a drawing or a document, but to comprehend it. Through training, the employees get to know their immediate processes, what is expected of them and how the actions and inactions in the process affect them (Allison, 2018).

e) Verification

An effective QMS ensures that everyone verifies what the unit produces, and the services offered to the clients. In this case, Lockheed Martin's employees should ensure that all the services rendered to the customers exceed the customers' expectations. It is not the responsibility

of one person, but rather, an overall responsibility. All the QMS processes commence and end with human factors as the most important aspects (Zimon, 2017). If the firm fails to ascertain the excellence in its system, then the firm will have challenges in assessing customer satisfaction.

Quality Requirements

At Lockheed Martin, quality is the end product of all employees, but it only commences with one of the employees and is handed over to the other one until it reaches the customer. The main issue is whether the employees have a quality attitude because, without it, it will be impossible to achieve. It can be gauged during the recruitment processes by the HR managers or any other viable means. Quality is important to all roles in the organization as they all interact with the clients differently (Kumar et al., 2018). It is a choice to produce quality products and services and thus must emanate from deep within. Every process involves some aspect of quality, no matter how disconnected the processes may seem. Lockheed Martin ensures quality requirements are considered by making sure that it abides with certifications on its employees and also abiding with the relevant regulations. Usually, most of the quality services are important as they ensure the client's safety while also attending to their requirements and also surpassing expectation every time. Regardless of the industry, quality can only be achieved through the human factors in QMS.

Regulations and Laws

The aviation industry is a sensitive industry that is closely regulated using laws and regulatory bodies to ensure set standards are followed and that risks are minimized. The major regulators in the aviation industry are governmental agencies. It not only regulates aviation but

also all the transportation modes. Air transport in the US is regulated by the US Department of Transportation which is a federal executive agency.

Facility for America (A4A) provides an advocacy organization for the aviation industry (commercial). There are also Federal regulations (14 CFR) covering all the facility aspects that include the carriers themselves, the equipment, and the pilots. Additionally, the codes are inclusive of air traffic and airspace regulations. The 14 CFR regulates several other aspects, such as maintenance and the design of the equipment, training services of pilots, the typical flights of a facility, the structures like man-made heights, model rocket launches, kite flying, hot-air ballooning, flight attendant, etc.

Safety

The Lockheed Martin does not directly employ safety employees but rather, as the industry norm, the facility subcontracts to eliminate the increasing unionized crew jobs which may halt the activities of the facility when agitating for their dues. However, as noted, the subcontractors underpay the employees and offer them fewer benefits, expose them to harsh working conditions while also inadequately training them to handle some of the tasks. A study conducted by NYCOSH at the facility revealed that the potential health and safety mechanisms may have been compromised by the subcontractors offering services in the dockets like baggage handlers, terminal cleaners, equipment cabin cleaners, and the wheelchair attendants. Additionally, most of the manufacturing ground workers, for instance, cleaners and general workers, are contracted by the facility and offer services to more than one facility while exposing the workers to hazardous working conditions and providing the minimum protective gear. However, the conditions are not permanent as they can be improved upon and such exposure

prevented under OSHA regulations as it is unnecessary. Further, the conditions not only pose a threat to the workers as, by extension, but they also threaten the customers as they interact with the workers.

The safety of the workers is compromised to huge extents considering that the workers are transported from the equipment in passenger vans and trucks and with them, the supplies, garbage, and the soiled items. It is unhygienic and poses a risk of injury or even death if an employee improperly uses the items. The conditions are also a health risk as the trucks and lifts have no safety belts and neither do they have seats, their rears are also open and lack railings to prevent the workers from falling. A worker can thus fall from the lift and plunge to their death or even fall on the tarmac and be hit by another vehicle. The workers have also complained of extreme temperatures or extreme cold during the extreme weathers. Both conditions lead to serious health concerns. The facility has thus not considered the safety of its employees carefully as there are also noise hazards, workplace stress, among others. The firm needs to carry out an intense training program to sensitize its employees against some of the hazards and how to avert them and where necessary, the firm should also act responsibly and provide a human work environment.

Security

Lockheed Martin delivers full-spectrum cyber capabilities and systems that are resilient in defending the country, offering intelligence to the community, and global security customers. The firm is all about security by offering cutting edge technologies in security and helping the government and militaries in protecting their systems, platforms, data, and networks. It achieves secure resources by hardening cyber weapons, training and mission systems. It also outfits cyber

warriors with offensive and defensive technologies. It is an innovative firm aimed at producing advanced technologies while helping the intelligence communities in collecting, analysis, and dissemination of threat intelligence. The firm is thus a security hub not only for the US as a country but to the world.

Environmental Responsibilities

The facility has enhanced sustainability goals and recognizes its impact on the environment and the duty to lead sustainable activities. In this regard, the firm engages in wildlife hazard management, noise impacts, energy and GHG emission, water conservation and water quality, and solid waste management. Under the guidance of the FAA, the firm is obligated to recognize the hazards that pose safety issues about the wildlife and devise means on how to mitigate, monitor, and eliminate the hazards (Sustainability report, 2014). The firm has developed and integrated wildlife hazard management programs including habitat and construction management, garbage disposal, insect management, wildlife training, monitoring, and reporting on strikes and ensuring there are patrols.

It also conducts wildlife population control and community outreach. In terms of noise impacts, the organization has adopted a noise monitoring system which aims to reduce through the noise compatibility program. In terms of energy and GHG emissions, the firm is in the frontline for advocating for advanced aviation biofuels as a source of energy and reducing the greenhouse gases. On water conservation and the quality of the resource, the firm continually evaluates the methods through which the quality of water can be maintained if not improved while reducing the consumption of water throughout its facilities. It has included benchmarks in places which efficacy can be achieved to reduce the water consumption at the plants. Lastly,

another environmental aspect that boggles even the other industries is the solid waste management where the firm aims at economically and technically reusing or recycling its solid wastes in environmentally acceptable ways.

Other Management Factors Considered

Lockheed partners with the customers in accelerating manufacturing from inception of an idea to the lab to its production. It achieves the small successes alike with the global crisis solutions like deeper travels into the space or the need for cleaner water by aiming and attaining human revolution. Its management ensures that the engineers concerned, and the manufacturing processes learn and apply new technologies towards better production. For instance, the use of additive technologies leads to better products that are not only durable but also affordable. The next-generation electronics are being used in better ways. The firm engages innovative technologies for the manufacture of aero products but also to improve national security, communications, space exploration, medical industries, and communications technology.

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