INTERRELATIONSHIP BETWEEN SAFETY AND QUALITY CONTROL MANAGEMENT

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Abstract. An increasing number of articles in business publication address the natural fit between safety and quality. As a group, safety professionals strive to improve organizational performance through application of loss control and safety management techniques. The quality management philosophy also emphasizes improvement of overall organizational performance via application of quality management concepts and techniques.

This paper presents a conceptual model and framework for developing a comprehensive safety analysis which includes potential hazards and accidents prevention along with major quality control procedures affecting equipment operational effectiveness. Safety analysis with quality control methods and procedures is a proven systematic approach to identify hazards and influence quality design to provide timely documentation of potential hazards and risks associated with systems, facilities, and equipment.

Key words: safety, quality, system analysis, management, hazard, control, program

Introduction.

The presence and use of mechanical and electrical equipment and systems, associated with storage, handling, and transfer of hazardous materials, flammable and combustible liquids, compressed gases is commonplace at most industries, R&D and test facilities. Number of recent accidents reported by many countries have served to focus public concern and legislative attention on the safety regulations associated with the operations and quality control associated with design and manufacturing (Blyukher, 2011). While sharing the public concern about plant operational safety and quality assurance, management at most industries have the additional, financial incentive to implement an effective safety and quality analysis system since the financial impacts of major incidents are large and appear to be growing.

Total Quality Management.

To effectively address occupational safety and quality control procedures industrial companies, research institutions, experimental and testing settings have to establish policies and programs embracing total quality management (TQM). The "total" in TQM means just that- covering every facet of company's operations. It means improving performance (for the ultimate benefit of paying customer) of every company function: financial management, human resources development, manufacturing process, warehousing and distribution systems, customer service and product design and development. A proactive approach to safety and quality should be reflected in companies design, manufacturing, and operational

documentation (Blyukher, 2003). While safe operations are important, quality designs areprerequisites to operational safety. The deficiencies in system's components that have an accident potential have to be detected, identified, and controlled at the equipment, product, and process design stage.

The goal of safety and quality analysis is to analyze the systems and processes components' interfaces and interrelationships to ensure that they meet specified safety and quality criteria, identify failures and hazardous events that would create other hazards, and locate impacts on the safety of the total system. Quality Policy is an organization's overall quality intentions and direction, as formally expressed by top management.Quality Management is the aspect of the overall management function that determines and implements quality policy. Attaining desires quality and safety requires commitment and participation of all organization members, while responsibility for quality management belongs to top management. Quality management includes strategic planning, resource allocation, and other systematic activities such as quality planning, operations and evaluations. Quality systems are the organization structure, responsibilities, procedures, processes and resources for implementing quality management (Adams, 1995).

An important part of this united quality and safety management system is quality control including operational techniques and activities used to fulfill quality requirements. This includes monitoring processes to eliminate causes of unsatisfactory performance and, thus, continually improve safety of those processes. All of the listed above aspects are parts of Quality Assurance procedures utilizing planned systematic actions needed to ensure that a product or service will satisfy given quality and safety requirements.

Quality and safety management major elements.

Quality and safety are the features and characteristics of a product/ service that impact its ability to satisfy stated or implied needs. Needs are usually translated into fractures and characteristics with specific criteria, which may include aspects of usability, safety, availability, maintainability, economics, and environment (ISO 8402, 1995). Related aspects include ongoing evaluation of the design or specification, and audits of production, installation and inspection operations. The following activities properly and timely implemented provide confidence to quality and safety management.

- Design Review as a formal, documented, comprehensive, systematic examination of a design to evaluate its requirements and capability to meet those requirements. Examination should also identify problems and propose solutions. Design capability encompasses such things as fitness for purpose, feasibility, manufacture ability,

measurability, performance, reliability, maintainability, safety, environmental, and quality aspects, time scale and life cycle cost.

- The following elements of quality design as appropriate to design phase and product, should be considered (Blyukher, 2003; ISO 9000, 1991; ISO 9004, 2009).
  - Items pertaining to customer needs and satisfaction: safety and environmental compatibility.
  - Items pertaining to product specification and service requirements: specification of materials and components, including approved supplies; disposability; characteristics of safety; failure modes and effects analyses, and fault tree analysis; labels, warnings and user instructions; packaging, handling and shelf-life requirements, especially safety factors related to incoming and outgoing items
  - Manufacturing and testing safety to minimize the risk of harm (to workers) and/or to reduce to an acceptable level. This program will lead to proper selection of an effective model for quality assurance and to achieving substantial reduction of production costs and elimination (minimizing) of potential restitution for loss related to personal injury, property damage or other harm caused by a product/service.
  - Design control and development planning, which should include plans for evaluating quality and safety, and specified characteristics of performance incorporated intothe product design. One of them is purchaser's requirements specification. To proceed with a product development, manufacturers should have concise set of functional requirements, which should include all aspects needed to satisfy purchaser's needed. These may include, but not limited to: performance, safety, quality, reliability, and security (ISO 9000, 1991).Development Planning requires detailed consideration of outputs from all the development phases. Required outputs from each development phase should be defined, verified, and documented. Identification of product characteristics is crucial to its safe and proper functioning.
  - Risk analysis for the customer: consideration must be given to risk related to the health and safety of people, dissatisfaction with a product quality, services, etc.
  - Management Responsibility. For the corporate quality policy, management should define objectives and key elements of quality, such as fitness for use, performance, safety, and reliability. Quality aspects of a design should clearly define characteristics important to quality, such as acceptance and rejection

criteria. Both fitness for purpose and safeguard against misuse should be considered.

- Product safety and liability. Safety aspect of product or service quality should be identified, with the aim of enhancing safety and minimizing liability. Steps should be taken to limit the risk of product liability and minimize the number of cases by identifying element safety standards in order to enhance product or service specifications; conducting design evaluation test and prototype testing for safety and documenting test results; analyzing instructions and warnings to the user, maintenance manuals and labeling and promotional material and labeling and promotional material in order to remove misinterpretation; developing a means of traceability to facilitate products recall when features that compromise safety and discovered and allow investigation of faulty products/services (Kozak and Krafcisin, 1997).

Summary.

In conclusion, comprehensive safety analysis is an effective and efficient tool for assessing the relative risks associated with various equipment items within a given facility and for assessing the comparative risk of similar facilities. It therefore provides a cost effective way of optimizing design, operation, test, inspection , and use procedures for the reduction of risk.A close relationship exists between quality and safety analysis and management. When coupled with a quality standard for a given task, safety analysis created a total job standard.

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THIRD PARTY RISK AROUND AIRPORTS AS AN ENVIRONMENTAL ISSUE

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Анотація. Аеропорти цивільної авіації чинять антропогенний вплив на навколишнє середовище за рахунок одночасної присутності небезпечних чинників різної ґенези і несприятливого позиціонування їх джерел. Серед домінуючих чинників екологічного ризику, характерних для аеропортів, є дорожньо-транспортні пригоди, зокрема авіаційні події та інциденти, які класифікуються використанням ризику третьою сторони.
Ключові слова: екологічна безпека, аеропорти, ризик третьої сторони.

Аннотация. Аэропорты гражданской авиации оказывают антропогенное воздействие на окружающую среду за счет одновременного присутствия опасных факторов различной генезиса и неблагоприятного позиционирования их источников. Среди доминирующих факторов экологического риска, характерных для аэропортов, являются дорожно-транспортные происшествия, в частности авиационные события и инциденты, которые классифицируются использованием риска третьей стороны.
Ключевые слова: экологическая безопасность, аэропорты, риск третьей стороны.

Annotation. Civil aviation airports create anthropogenic pressure on environment due to the simultaneous presence of hazardous constituents of different genesis and the unfavorable positioning of their sources. The dominant environmental hazards specific to airports are traffic accidents, notably aircraft accidents and incidentsб which are classified via third party risk.
Keywords: Environmental safety, airports, third party risk.

Environmental safety is a state of the environment which ensures the prevention of degradation (risks to ecosystems' health) and mitigates risks to human health. Environmental safety is a component of the national safety and security, providing protection for the vital interests of individuals, society, the environment and the state from real or potential threats posed by man-made or natural factors in the environment. At current stage of human development, the main real and potential threats to the national security of any country in the environmental domain are significant anthropogenic disturbances and technological (man-made) overloads, and increased risks of anthropogenic and natural disasters.

Aviation industry - one of the most striking examples of the existing dangers for human life, their sources and factors, in most cases – of a complex character. As an example - in the