Government Quality Management Systems: Case Study from the Hawaii Missile Alert

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The unfortunate Hawaii False Ballistic Missile Alert event on January 13, 2018 provides many examples of how a Quality Management System (QMS, e.g. ISO 9001 *Quality Management Systems-Requirements*) can be applied to government operations, and illustrates the need for existing quality standards to provide more clarity in their applicability to services. The event provides a valuable case study for those who ask the question: how do QMS systems and standards apply to government services? The following information is taken from the Hawaii Emergency Management Agency (EMA) investigation report. [1]

The immediate message taken from a review of the report is that there was a lack of process and process control, as well as management commitment to ensure effective processes were in place. Different shifts performed the exercise differently. Related to that is the understanding that both the risks during a real event and the risk of a false alarm are monumental for the public, and the utmost discipline, clarity of process and training are warranted. There was no management action taken when employees pointed out flaws in the process from a previous drill. This important and highly risky drill was scheduled at shift change, which increases the probability of an error. There were no contingency plans for a false alarm and no one really in charge. Communication to clarify the false alarm with local, county, state and federal stakeholders was generally through a number of emergency phone calls to or from the various agency officials, social and news media, and took approximately 38 minutes. Training was considered inadequate, and there was no documentation of training, skills required, or skills mastered. Management did not address concerns over employee performance that had surfaced previously. There was no "two person rule" for sending the alert, which is standard for these types of critical operations.

Although expressed by the investigator in terms of management controls, software design and human factors, the investigator's recommendations run through the normal Quality Management System elements: management commitment, training, equipment and software appropriate for the job, process definition and clarity, process control, lessons learned and process improvement, benchmarking, communication with stakeholders and assessment of stakeholder needs, risk management, knowledge management, documentation and records management, periodic review and assessment of the operation, organized planning, and, in general, effective achievement of the desired outcome through effective performance of the above-listed QMS elements.

It is likely that benchmarking of hazardous or critical operations with other agencies or organizations would have identified the need for pre-operational briefings for the crew, some

[1] Oliviera, Brigadier General (Ret) B.E.

form of "incident commander" or "test conductor" for the drill execution, dry runs, table-top reviews, some kind of "second set of eyes" or "two person rule" protocol, correcting process shortcomings, and not planning for and conducting a critical test at shift change unless people are specifically trained for this contingency (which would be a good risk management strategy), and recording all announcements and telephone calls for future process evaluations. Critical procedures often have "run" numbers, including date, time and signature of the employee in charge, and are maintained for some period of time as a record. They might also have learned about the dangers of normalization of deviance. Drills and After Action Reports are only worthwhile if the shortcomings and improvements that are identified are implemented. Leaving problems uncorrected because it has always been that way, and nothing bad happened, is a slippery slope indeed. Leaving the employees confused and frustrated, as indicated by this report, is not an effective management strategy, and firing employees after the fact does not correct the root cause of the problem, if the root cause is an ineffective system, process, or culture.

W. Edwards Deming addressed many of these points in his lectures and publications at least as far back as 1982 and they remain true today. He is famous for his *14 Points for Total Quality Management*[2] , which include the need for leadership, process improvement, driving out fear, breaking down and removing barriers, and education and improvement for everyone. He went on to say that "Eighty-five percent of the reasons for failure are deficiencies in the systems and processes rather than the employee. The role of management is to change the process rather than badgering individuals to do better."[3]

Quality standards for manufacturing are often mandated by customers or market forces, and the structure they provide fits with an already structured environment. Even though the service community is huge and diverse, services can still be broken down into some form of requirements, inputs, processes and outputs or outcomes, that satisfy a need, and this can be done either consistently and with attention to detail, or haphazardly.

Government services have an enormous impact on everyone's daily life, as evidenced by the widespread fear and disruption that resulted from the false alert. It often helps when speaking or writing about government to use the term **performance**, rather than **quality**, since quality tends to be associated with products. Any agency, anywhere, can perform effectively by examining their services, engaging in organized planning, developing and improving processes, training personnel and making assignments based on aptitudes, skills and abilities, assessing and mitigating risks, and above all, holding management accountable.

Useful approaches would be Plan/Do/Check/Act or Plan/Do/Study/Act; Process Failure Modes and Effects Analysis, or Process FMEA; Design/ Measure/ Analyze/ Improve/Control, or DMAIC; Suppliers/Inputs/Process/Outputs/Customers, or SIPOC[4]. All of these methods involve establishing requirements, developing a process, executing the process, assessment of the outcome, and making adjustments or improvements as necessary. The Safety community often

[2] http://asq.org/learn-about-quality/total-quality-management/overview/deming-points.html
[3] http://www.azquotes.com/author/3858-W_Edwards_Deming
[4] http://asq.org/learn-about-quality/

uses the "Swiss Cheese Model" analogy[5], in which all of the possible failure modes and defects in a process ("holes in the cheese") will ultimately line up to allow a serious problem to occur. It explains why complacency can develop when processes are not well defined and executed, but people manage to accomplish the objective in spite of a bad situation-until luck runs out. Once the required processes are established, Mallory's *Process Management Standard* is an excellent tool for evaluating process effectiveness and maturity.[6]

This event would likely have been prevented if the Agency had planned ahead, and trained the employees to execute a clear, standardized, effective process, and had a false alarm protocol. It is incumbent on government agency managers at every level to begin looking at their operations and services in terms of these performance (QMS) elements. Management commitment, requirements definition, planning, training, records, processes and process improvement, and risk management are basic good practices that are the cornerstone of any successful organization. For those who advocate the running of government like a business, this is a good place to start. Complacency and poor performance a should not be acceptable for any government agency's public services, and this can change with a concerted effort to establish effective processes and constant efforts to improve.

References

Deming, W. Edwards, http://asq.org/learn-about-quality/total-quality-management/overview/deming-points.html

Deming, W. Edwards, http://www.azquotes.com/author/3858-W_Edwards_Deming

http://asq.org/learn-about-quality/

https://en.wikipedia.org/wiki/Swiss_cheese_model

Mallory, R. E., *Measuring Maturity*, Quality Progress, Sept.2016; http://asq.org/quality-progress/2016/09/process-capability/measuring-maturity.html

Oliviera, Brigadier General (Ret) Bruce E., *False Ballistic Missile Alert Investigation for January 13, 2018*, Hawaii Emergency Management Agency; retrieved on 2/01/2018 fromhttps://www.cnn.com/2018/01/31/us/hawaii-false-alarm-investigation-findings/index.html

[5] https://en.wikipedia.org/wiki/Swiss_cheese_model
[6] Mallory, R.E.