Lessons Learned from the Red Bead Experiment

1. All the variation comes from the process. There was no evidence that any worker was better than another.

2. The workers could, under no circumstances, do any better. The best people doing their best does not matter. Therefore, as managers, we must not rush to blame employees. We must improve our processes and make them so robust that they produce acceptable products no matter who runs them. So, when a problem with a process occurs, we must first investigate what went wrong with the process. If we find the process to be in order, we can then begin to determine if there was an operator error.

3. Pay for performance can be futile. The performance of the workers was governed by the process.

4. Inspection after the process is complete does not improve quality but merely catches defects before they leave the plant. The quality inspectors in the red bead experiment were not adding value to the process. They are there just to make sure defective product did not reach the customer. Since no inspection process is perfect, we can assume that even with 2 quality inspectors, some defective product still made it to the customer. As managers, we must instill quality efforts at all stages of the process so that defects can be caught as soon as they are made rather than discovering them after we have performed more valued added activities to them. The beads may have been defective when we received them from our supplier, but with “end-of-the-line” inspection, we will not discover them until we have wasted a lot of time and effort working on them.

5. Clear instructions to workers will only increase the probability that the process will behave as intended. Clear instructions will not improve a process that is out of control (a process that has wild variation from day to day).

6. Intimidation creates FEAR which does nothing to improve a process.

7. Praise will encourage a person to perform the process as they have learned to perform it. It will not improve a process.

8. Banners and Slogans raise the awareness of quality as an issue to be concerned with, but also tells people that management believes that a reminder is required to produce a quality product, thus creating an environment of mistrust.

9. Incentives will not improve a process and have a short effect on employee moral.

10. The process has natural variation. Each day the process will produce data different from the day before within a natural range of values. We must collect data about the process to understand the range and variance of the variation.

11. To satisfy the customer consistently, the process must be capable of meeting customer requirements. If the customer’s requirements are tighter than we can produce on a consistent basis, then we will only produce acceptable
products by accident.