ANALYSIS AND IMPROVEMENT OF THE SECURITY BUILDING

AT PG&E DIABLO CANYON NUCLEAR POWER PLANT

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**Abstract**

A new Security building was recently designed and built at the Pacific Gas and Electric (PG&E) Diablo Canyon Power Plant (DCPP).This building’s staff and equipment are responsible for performing routine inspections on all personnel entering the facility in order to prevent security-related incidents from occurring at the nuclear power plant. Similar to airport security procedures, the DCPP security building routine inspections include the use of x-ray machines, metal detectors, and explosive detectors.

The Power Plant periodically experiences pre-planned, preventive maintenance outages, that last 4-6 weeks. During an outage, a power plant reactor is shut down for maintenance, repair, and re-fueling. Since the new security building’s grand opening DCPP experienced its first outage. Unfortunately, the security building processes were significantly challenged during the outage.

Before every outage hundreds of temporary outage workers are hired to perform outage-specific duties. The temporary workers are not as familiar with entrance security procedures as the permanent DCPP personnel, and their credentials are not as well established. Therefore, queues and delays may be caused, especially during peak times at the beginning of shifts, 5-7 am and 4-6 pm.

During the outage of February/March 2014 it became evident that waiting times of the larger flow of workers through the new security building were too excessive for permanent employees and temporary outage workers. In an attempt to reduce wait times and make waiting more comfortable security personnel implemented several changes to the security process. These changes included setting up a tent for the queuing lines outside the new building, where workers waited until adequate space became available inside the building. All processing stations inside the building were operated during peak times, and increased number of security officers manned these stations and directed the employees through the security processes. These changes resulted in significant additional operating cost, as well as security staff dissatisfaction due to higher levels of overtime work.

Our analysis of the security building internal layout design and processes revealed several areas for improvement, as follows.

1. Improvement of processes
2. Improvement of building layout and structure
3. Improvement of training
4. Improvement of signage and directions

The team created a number of deliverables: Facility redesign model using Visio, bin optimization policy, standard operating procedures (SOP), computer animated models that simulate existing and proposed processes using Simio modeling software, instructional video, effective signage designs, and a financial report that justified the costs of the recommendations. The proposed solutions achieve multiple objectives:

1. Decrease wasted time of employees at the security process
2. Decrease the number of security officers
3. Standardize the responsibilities of the security officers
4. Optimize asset usage, including inspection equipment and bins
5. Simplify the process via signage and video aids

The cost to implement these recommendations is approximately $275,265.06 and the savings are estimated to be $701,660. Therefore, net savings exceed $400,000. In addition, DCPP employee satisfaction should drastically increase, as the waiting lines will be eliminated or drastically shortened. Job satisfaction of security officers should increase as well, as a result of lower overtime and less stressful work environment.