

A Healthcare Owner's Perspective on Commissioning

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Synopsis

Stony Brook University Hospital (SBUH) has been among the largest proponents and procurers of commissioning services among regional healthcare institutions in terms of their scope, magnitude and financial investment in commissioning. Established in 1980 in Stony Brook, Long Island, this 504-bed tertiary care facility is part of the State University of New York system. In 2001 the institution embarked on a \$300 million, 400,000-square-foot modernization of SBUH facilities, for which rigorous commissioning services would be a requirement of the construction manager. This session will discuss the early experiences SBUH had with CM-based commissioning and why ultimately the institution made the decision to contract directly with an independent commissioning provider working under contract to the hospital. This session further explores the benefits of operating experience, dedicated service and direct communication with the owner to commissioning success, and the importance of commissioning to the systems performance and operational reliability of the healthcare institution's critical infrastructure.

Introduction

For the past several years Stony Brook University Hospital (SBUH) has been among the largest proponents and procurers of commissioning services among regional healthcare institutions in terms of the scope, magnitude and financial investment in commissioning. Established in 1980 in Stony Brook, Long Island, this 504-bed tertiary care facility is part of the State University of New York system.

In 2001, the institution embarked on a \$300 million, 400,000-square-foot modernization of hospital facilities, and decided to require that the construction manager provide commissioning services on the project. While in an ideal world the design would be perfect and the installations completed in full compliance with the plans and specifications, all too often on past academic projects the facility would be turned over to the campus needing post-construction and pre-occupancy commissioning. This cost the campus a considerable amount of money and time and, in some cases, delayed occupancy of the building until most of the bugs were worked out. For any building this is a nuisance; for healthcare facilities it represents a serious challenge to the safety and well-being of area residents and patients.

SBUH has gone through many projects over the past few years and we have noticed a trend that occurs within construction. The delivery of the space does not meet the high standards of quality and timely delivery that we require. As much as we are a hospital and are concerned about the well being of people we are a business as well. The untimely or improper turn over of a facility can severely impact the hospital's cash flow, as well its reputation. Making sure that the project is turned over at the completion date allows the hospital to see patients and schedule procedures, therefore generating revenue.

Commissioning is not merely about energy savings anymore. We look at it as a documented quality assurance program that will allow us to delivery a project on time and on budget. A hospital is a mission-critical facility, and if something goes wrong the consequences and impacts are felt in unimaginable ways. That is why we must make sure that issues are resolved before beds are filled and procedures are performed.

Buildings are built in a more complex mannerism today and are more sensitive to external conditions such as hospital MRIs and linear accelerators. For these devices to work correctly there can not be any harmonic distortion within range of these devices. In addition, today's systems are more complex and the designs have been tailored to meet these technological advances. However the understanding of how these systems are operated and maintained are usually left out of the equation. That is why having a commissioning team that has this operational focus will allow my operations group to succeed in their positions once the facility is in our hands.

The construction managers (CM) in this type of construction environment have to multitask across many levels and deviate from their core objectives of the project, creating a hindrance to their commitment in any one arena. Having a dedicated resource of commissioning to coordinate the design issues and operational objectives as well as the proper installation and start up of equipment will relieve the CM of the necessary burden that today's building are subjected to.

In healthcare we can not afford to have items overlooked in the building systems due to the nature of our business. Every system must have the documented assurance that things are working correctly this is why we have an independent auditor, evaluator or hospital from both a clinical side as well as an operational side. That independent agency is called the Joint Council on Accreditation of Healthcare Organizations (JCAHO).

JCAHO

Once every three years, JCAHO inspectors evaluate every hospital. The amount of federal funding that each hospital receives is based upon how high of a score it obtains from the auditors. In addition all the top doctors and research professionals are more attracted by a facility that has a higher JCAHO rating. Their evaluation touches all aspects of the hospital from the clinical side to the operations side. They give little to no notice that they will be inspecting the facility. This creates an environment within the hospital of a constant state of readiness.

To earn and maintain the JCAHO Gold Seal of Approval, an organization must undergo an on-site survey by a JCAHO inspection team at least every three years, and laboratories must be surveyed every two years. So we as hospital administrators must have our building systems in top condition or have a plan in place to ensure that when issues arise, there is a plan for improvement to repair these systems.

Things that need to be addressed on the operations end range from ensuring the proper documentation is in place to ensuring the systems are performing correctly. Commissioning is a major component to that as the commissioning effort needs to be tailored around JCAHO requirements.

Fire Dampers

Every few years all the fire dampers must be actuated to determine the operational feasibility. This becomes a problem when we can not find them, have no access to them or they never were actuated correctly the first time during construction.

Fire Stopping

A document must be on record to indicate that inspections were periodically made on the facility and that fire stopping is applied in all the specific locations. We currently write in our commissioning contracts to inspect the fire penetrations to ensure there is adequate fire stopping applied to the penetration area.

Emergency Power systems

Once a month the emergency power system must be activated and operated under a load bank; however, on alternate months a test must be performed to check that the automatic transfer systems can turn on the emergency power generators. Commissioning helps to create that baseline data and validates these systems are working correctly.

Operating rooms

Each operating room must operate under negative pressure and the amount of fresh air changes that they need to operate under has to be accurate. Each year a plan must be put in place to validate that the correct amount of air changes are being performed in the operating room. Once again through the process of commissioning we can ensure that these air changes can be made, performance indicators are in place to measure those air changes and base line data does exist for that specific room.

Accurate record documents

Part of the inspection process is to ensure that the riser diagrams and record documents have been updated and are current. Part of the commissioning scope includes validating these documents. As much as commissioning helps with ensuring that systems are operating and working in accordance with the owner's requirements, it guides the establishment of baseline performance indicators that are required for JCAHO inspections as well as getting our documents prepared for the audit team when they arrive. Writing all these requirements in the commissioning contract is important when selecting your team.

Finding the Correct Team

The institution decided that it could ill afford to allow the hospital to be delayed because there would be severe fiscal impact if it were not able to generate the projected revenue to pay the debt service and the increased operating costs for the new areas. Commissioning services were a big part of the qualifications for the approved construction manager.

Our philosophy was that the hospital only had one opportunity to make sure the mechanical systems met the design intent; once the facilities were occupied the ability to modify existing mechanical systems to ultimately meet design intent would be severely limited. Our intent was to ensure that they were appropriately designed and properly installed the first time. Our commissioning authority was brought on early in the construction phase of the Heart Center

(Phase I), which in turn enlightened us to the inefficiency of waiting to procure commissioning services too late in the game. During construction, when the authority made a recommendation, it usually cost money in an added service for the architectural and engineering design team and a change order for the contractor.

I strongly believe that the commissioning authority must work directly for the owner and have no direct involvement in the actual design or construction of the project. This gives you objectivity on the part of the authority and removes any question of loyalty of the services. The authority must be firmly aligned with the owner and, in essence, become the owner advocate in order to be most effective. I look for a firm that is primarily a commissioning firm and does not rely on providing design services as their primary source of income. We want to hire commissioning providers who commission building, not ones that just design them. What is equally important is that the field personnel have operating experience, as there is a nuance to operators knowing how systems must look, sound and feel. Firms that hire former facilities personnel who have operated and maintained hospitals and other facilities bring a set of skills to the table that an engineer who has only design experience lacks.

The way we procured commissioning was not the most ideal scenario, since as a State University and public facility we could not purchase the commissioning services on our own. We were concerned that the right team was in place and the low bid scenario would not allow us to find the right commissioning provider that matched our needs of operations and maintainability. It was decided that the CM would hire the commissioning authority.

This brought the authority on board early and it was directed that they work for the CM, not directly for the owner. Having even this one degree of separation can become problematic in that the authority cannot take direction from the owner without getting the concurrence from the CM as they have the contractual relationship. Our experience has also taught us that while engineering design firms offer commissioning as part of their package of services, their inability to independently bring design flaws to the owner's attention makes this arrangement an unattractive one.

We are currently in our third year out of eight with the commissioning provider working for the CM. There have been difficult days where the CM has used their relationship to influence the commissioning provider; however, the provider we have has a close enough working relationship with the hospital when they are capable of dodging those situations.

It is our experience at Stony Brook University Hospital that has shaped our beliefs in the need for expert, dedicated and independent commissioning services to ensure the ultimately functional and reliable performance of our critical building systems.