

NCBC 2007 CONFERENCE WORKSHOP

The Business of Commissioning: Litigation and Risk Mitigation



**Commissioning as Evidence in Litigation:
Are you ready to take the stand?**

Ray Dodd, P.E.

Architectural Energy Corporation



The Good.....



Commissioning is a quality-assurance process that guarantees:

- building systems operate efficiently
- meet the needs of the end user
- maintain occupant comfort

Commissioning also includes the promise:

- costs of commissioning can recovered through operating savings
- improved staff performance
- avoidance of construction or warranty period problems

The Bad, and the Ugly



But.....sometimes functional testing, rather than solving problems, reveals:

- Persistent pattern of poor workmanship
- Under-design
- Communication mishaps
- Mis-applied technology

Not Performing To Expectations?



- Design errors
- Contractor errors
- Poor workmanship
- Miscommunication
- Misapplication of technology
- Equipment coordination problems
- Lack of start-up
- Controls programming errors

Dark Clouds Form.....



Unresolved issues resulting from commissioning can cause:

- Hold backs in retainage in new construction projects
- Attempts to recover damages in leased properties or properties for sale

Retainage



- A security device by holding back, or retaining, a certain percentage of progress payments made to contractors. The holdback is intended to provide an owner with a bank of funds to be used to finance completion or correction of a defaulting contractor's work.

Buildings for Sale



Purchase Requires Due Diligence

- *Due Diligence* - the “effort made by a prudent or reasonable party to avoid harm to another party.” Due diligence is a term used for a number of scenarios involving the performance of a professional inspection with a certain standard of care.

Projects in Dispute



What can you expect?

Discovery process:

- Deposition
- Interview about qualifications, standards of care, measurements, and professional standards

Trial is a repeat of the discovery process.

Deposition



- Evidence given under oath and recorded for use in court at a later date. A deposition is a part of the *discovery process* in which litigants obtain information from each other in preparation for trial.

The Discovery Process



- What are your qualifications?
- What were your findings?
- How were your measurements made?
- How did you come to your conclusions?

What Are Your Qualifications?



- Document your experience
- Curriculum Vitæ
- National certification for commissioning agents

Qualifications



- National Environmental Balancing Bureau (NEBB)
Program: Systems Cx Administrator
- The Building Commissioning Association (BCA)
Program: Certified Cx Professional (CxP)
- Association of Energy Engineers (AEE) Program:
Certified Building Cx Professional (CBCP)
- The Associated Air Balance Council (AABC) Program:
Certified Commissioning Authority (CxA)

What Was Your Methodology?



Standard of Care

- “The degree of prudence and caution required that a reasonable individual would be expected to exercise under such circumstances.”

Accepted Standards of Care in Cx



- Design review
- Cx plan
- Equipment submittals review
- Pre-functional test plans
- Construction observations
- Review start-up documentation
- Review controls point-to-point documentation
- Review test and balance reports
- Devise and execute functional test plans



Calibration

- Applied *metrology* protocol- refers to the application of measurement science ensuring the suitability of measurement instruments, their calibration and quality control of measurements.

Measurements



Traceability

- "...the property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards." Traceability is most often obtained by calibration, establishing the relation between a measuring instrument and the value of a measurement standard."

Measurements



NIST

The National Institute of Standards and Technology

- A federal technology agency that develops and promotes measurement, standards, and technology.

Measurements



Third-party instrument accuracy certification

- NIST traceable calibration vendor can provide a certified NIST traceability document that can be produced in a deposition or trial.
- NIST Accredited Calibration performed by a laboratory with NVLAP accreditation (National Voluntary Laboratory Accreditation Program)

Instrument Management Program



- Is every measurement easily traced back to a specific instrument with a carefully documented history of calibration, service and repair?
- Has the person operating the instrument received training on the use of the instrument and how to make proper and accurate measurements?

Instrument Management Program



- Equipment ID's
- Equipment checkout and tracking protocols
- Calibration schedules, dates and certificates
- Operator training certification
- Standard Testing procedures
- Incident reports (equipment that didn't work) and service records

Professional Standards



- How did you come to your conclusions?
- What professional standards are relevant to the issue?

Professional Standards



- ASHRAE – American Society of Heating, Refrigeration and Air-conditioning Engineers
- SMACNA – Sheet Metal and Air-conditioning Contractors
- NEBB – National Environmental Balancing Bureau
- NFPA – National Fire Protection Association
- IBC – International Building Codes
- ANSI – The American National Standards Institute
- ASME – American Society of Mechanical Engineers

Uh Ohh.....



- If a building project does not meet performance expectations after commissioning, the deposing attorney may suggest that the commissioning agent is partially responsible for the failure of the building systems to operate efficiently, meet the needs of the end user, and maintain occupant comfort.

Documentation



- Contract
- Specifications
- Cx Plan
- Observation reports
- Reviews
- Pictures
- Issues Log
- Final report

Are you ready to take the stand?

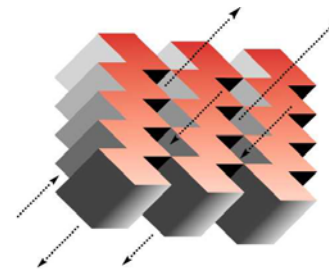


- Thoroughly document your scope, roles and responsibilities, communication, methodology, and verification of results throughout the commissioning process.

Commissioning as Evidence in Litigation



Ray Dodd, P.E.
Mechanical Design Engineer
Commissioning Engineer
Expert Witness



ARCHITECTURAL ENERGY
C O R P O R A T I O N
Integrated Engineered Solutions