



BUILDING COMMISSIONING FROM A COMMISSIONING AGENT'S PERSPECTIVE

Presented To

Government/Industry Forum
Building Commissioning: Evolving Approaches & Documented Results
National Academy of Sciences
Federal Facilities Council
Washington, DC

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October 9, 2003

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- Case Studies of Commissioning
 - Cx Agent Responsibilities
 - Staffing
 - Timing
 - Costs
 - Benefits
- Overview of Retro-Commissioning
- Owner's Responsibilities



Commissioning Agent Responsibilities

Help Develop Program of Requirements	As Built Drawing Reviews
Prepare Commissioning Plan	Commissioning Meeting Facilitation
Design Reviews	Construction Meeting Attendance
Prepare Commissioning Specification	Test & Balance Witnessing & Report Review
Prepare System Checklists & Test Procedures	Direct, Witness & Document Functional Testing
Scheduling Assistance	Systems Training
Equipment Submittal Reviews	Provide Monthly Input into Award Fee Determination
O&M Manual Reviews	LEED™ Documentation for Commissioning
Training Plan Reviews	Final Commissioning Report



Staff Expectations

- Full time on-site presence
- Ability to witness testing per the contractors' "schedule" requirements





Timing

- Start during pre-design
- Continue until contractor final completion
- Assistance in transition to on-going facility management





\$ Costs \$

1.5% of Total Construction





Benefits

- ✓ Life safety
- ✓ Mission critical operation
- ✓ Sustainable objectives
- ✓ LEED™ certification
- ✓ Political



Commissioning Agent Responsibilities

Prepare Commissioning Plan	Recommissioning Management Manual Compilation
Commissioning Process Facilitation	LEED™ Documentation for Commissioning
Prepare System Test Procedures	Final Commissioning Report
Collect Documentation of Functional Testing Performed by Others	



Staff Expectations

- Long distance facilitation and communication
- Minimal on-site presence





Timing

- Start during early construction
- Continue until contractor final completion





\$ Costs \$

0.4% of Total Construction





Benefits

- ✓ LEED™ Silver certification
- ✓ Laboratory safety
- ✓ High profile success for alumni



Commissioning Agent Responsibilities

Prepare Commissioning Plan	Commissioning Meeting Facilitation
Design Reviews	Construction Meeting Attendance
Prepare Commissioning Specification	Test & Balance Witnessing & Report Review
Prepare System Checklists & Test Procedures	Direct, Witness & Document Functional Testing
Scheduling Assistance	Compile Systems Operations & Maintenance Manuals
Equipment Submittal Reviews	Systems Training
O&M Manual Reviews	Final Commissioning Report
Training Plan Reviews	



Staff Expectations

- Average bi-weekly site visits and meetings
- Ability to witness testing per the contractors' "schedule" requirements





Timing

- Start during late design
- Continue until contractor final completion
- Warranty period activities to be determined





\$ Costs \$

0.8% of Total Construction





Commissioning Agent Responsibilities

Help Owner Define Goals of Retro-Commissioning	Identify Capital Project Needs
Evaluate Existing Conditions	Commission the Recommendations
Evaluate Existing Processes	Measure & Verify Achievement of Goals
Analyze Existing vs. Desired	Full Documentation
Recommend Low Cost/No Cost Solutions	Train O&M Staff



Staff Expectations

- Heavy presence during initial investigation phase
- Off-site evaluation and report preparation
- Availability to help owner to plan for implementation
- Periodic site visits during implementation and startup





Timing

- Depends on need to benchmark existing metrics
- Depends on seasonal operation issues
- Independent schedule





Existing Building Retro-Commissioning

\$ Costs \$

\$0.10 to \$1.00 per square foot



Benefits

- ✓ Energy savings
- ✓ Improved comfort
- ✓ Improved indoor air quality
- ✓ Reliable emergency systems
- ✓ Reliable documentation
- ✓ Improved maintenance
- ✓ Increased asset value
- ✓ Occupant retention



Owner Responsibilities

- Support the Cx provider
- Involve O&M staff early and often
- Commitment to the Cx process
- Deliver consistent message about Cx
- Track and publicize benefits
- Financial leverage
- Sustained enthusiasm