



Specifying and Managing Performance and Burn-In Periods

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Performance Period and Burn-In Periods

Burn-in refers to working the bugs out

Per LEED (and other entities), burn-in is to demonstrate continuous, flawless performance.

“Performance period” would be more appropriate.

Why a Performance Period?

- Improved performance at the onset of occupancy
- Fewer contractor/installer callbacks
- Shorter fine-tuning period by the building operators

Are there adequate specifications?

Optimally the Commissioner has had an opportunity to review and comment on the performance period during the design development phase.

But usually not...

Always keep in mind

- Owners intent
- Realistic expectations
- Cost/schedule impact

Specifying Performance Periods

(summary)

- Duration
- Systems and Equipment Included
- Required System Exercising During the test
- Performance Criteria
- Period Restart Requirements
- Formal Documentation



But we're moving in furniture tomorrow...

Managing the Performance Period

- Duration

How long is the period and does it require night time operation or normal schedule control of equipment?

All the equipment?

Managing the Performance Period

- Included Systems

A list of each equipment type should be developed.

Also, list equipment that is excluded that may be a question in the contractor's mind.



Managing the Performance Period

- Exercising the Equipment

List any tests required to be done during the period, or expected specific responses such as:

- Raising and lowering set points to observe staging,

- Scheduling

- Optimum start/stop

etc.

Managing the Performance Period

- Performance Criteria

Each piece of equipment and parameter desiring to have its performance checked must have a specific performance criteria indicated, including:

- duration of deviations allowed,
- alarm limits
- alarm delays

Managing the Performance Period

- Period Restart Requirements

Describe specifics about what equipment must have its period restarted when any of its associated components fail or alarm.

Will this mean complementary equipment performance periods need to be restarted?

Managing the Performance Period

- **Formal Documentation Required**

List the required documentation for each system and parameter, including documentation of passing performance and a record of any deficiencies, their corrections and restart of the performance period.

Performance Period Plan

1. A list of the specification sections requiring the test period.

Be fair, do not demand onerous conditions to a task that may have not been priced into the project.

Achieve the intent, but be conscious of the occupancy schedule of the Owner.

Of course it's ready, except...

Performance Period Plan

2. The prerequisites to starting the test.

- Completion of all functional tests.
- Training completion
- O&M manual completion

Allow for the highest possibility of success the first time.

Performance Period Plan cont.

3. Systems, elements and spaces exempted from the test.

-Have an agreement which systems will NOT be part of the test.

Be specific, create a complete list

Sorry, didn't know you were doing that

Performance Period Plan cont.

4. Notification procedures for any work to be performed in the building during the performance period.

- Facilities shall not clear any alarms
- Subs shall inform GC of any planned work
- Facilities shall inform GC of any planned work

If a task is necessary and planned, it should not necessitate a system restart.

Performance Period Plan cont.

5. Summary reporting frequency (summary report given each day, for example).

- The responsible party (for the testing) will report periodic results

- Send results to Owner, GC, Cx (if Cx is not responsible party)

Lets try again next week...

Performance Period Plan cont.

6. Equipment failure and restarting of performance period timer

-Have an agreement which systems will NOT be part of the test.

Be specific, create a complete list

Let's do it right the first time

Performance Period Plan cont.

7. Pre-Test Preparation Checklist

- Summarize the plan in a table
- Have all involved sign off

Again, be specific, create a complete list of all needed prep work. Especially if starting EOD Friday.

Performance Period Plan cont.

8. Specific performance criteria

System	Method of Monitoring / Testing	Freq. of Report	Performance Criteria ¹
BAS Alarm Log	Print out full alarm log.	Daily	No alarms ¹
Chillers	Trend CHWST, CHWST set point. Record the day's alarms and diagnostics from each chiller panel. Review and print alarm log.	Daily	CHWST control to within 2F of set point (42 – 50). No alarms.
Cooling Tower	Trend CWST. Record the day's alarms and diagnostics from each chiller panel. Review and print alarm log.	Daily	CWST control to within 2F of set point (75F). No alarms.
Condenser water pumps	Review and print alarm log.	Daily	No alarms.
Chiller pumps	Review and print alarm log.	Daily	No alarms.
Secondary Chilled Water Pumps	Trend CHW dP and set point. Review and print alarm log.	Daily	CHW dP controls to within 3 psi of set point (20 psi). No alarms.
Boilers	Trend Bldg HWST. Review and print alarm log.	Daily	HWST control to within 16F of set point (180F) and not more than 10F for 8 minutes. No alarms.

Documentation

- Trends
- Alarms
- Field Observations
- BAS Screen Shots

Final Report

- Excerpts from Specification Sections concerning requirements
- Performance period Plan
- All Documentation of Passing Performance
- Description of Major Failures and Subsequent Corrective Actions
- Outstanding Issues Found During Performance Period (i.e. design issues)

Conclusion

- Performance Periods provide assurance to Owners and Contractors that a job was well done.
- Performance Periods can easily become a nightmare if not planned in advance.
- They can be specified and planned to be successful and efficient



Fire Away !



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