Research and Development: Commissioning Authority Occupational Analysis

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PECI
Learning Objectives

1. Explain why an occupational analysis is needed
2. Describe the contents of an occupational analysis
3. Discuss the process of determining the knowledge, skills, and abilities for a commissioning authority
Overview

• Background – The Problem
• Occupational Analysis Defined
• Development Process
• Knowledge, Skills, & Abilities
• Validation, Ranking, & Results
• Utilization – Training
Background

Occupation: Commissioning Authority

• Job Specification – Define job activities
• Training - Determine knowledge & skills requirements
• Certification – Define performance measurement
• Recruiting/Outreach – Describe Cx work, job classifications, & career areas
Occupational Analysis Defined

• Describes the occupation in a standard specific language
  • Employs expert workers in occupation
  • Describes effectively in terms of the tasks successful workers perform
  • Successful task performance is directly related to the knowledge, skills and abilities (KSA’s)
## Occupational Analysis

### Building Maintenance Technician

<table>
<thead>
<tr>
<th>Duties</th>
<th>Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintain HVAC/R Equip.</td>
<td>Replace Air Filters</td>
</tr>
<tr>
<td></td>
<td>Program control system</td>
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<tr>
<td></td>
<td>Diagnose refrigeration system</td>
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<tr>
<td></td>
<td>Order parts</td>
</tr>
<tr>
<td></td>
<td>Repair refrigeration system</td>
</tr>
<tr>
<td>Maintain Plumbing System</td>
<td>Check water meter</td>
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<td></td>
<td>Replace fixtures</td>
</tr>
<tr>
<td></td>
<td>Repair Valves</td>
</tr>
<tr>
<td></td>
<td>Check shower faucets</td>
</tr>
<tr>
<td>Maintain Electrical System</td>
<td>Run Emergency Generator</td>
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<tr>
<td></td>
<td>Repair Lighting Fixture</td>
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<tr>
<td></td>
<td>Replace Circuit Breaker</td>
</tr>
<tr>
<td>Manage Roof Repair</td>
<td>Review Project with Contractor</td>
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<tr>
<td></td>
<td>Negotiate Costs</td>
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<tr>
<td></td>
<td>Prepare Contract</td>
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<tr>
<td></td>
<td>Schedule Work</td>
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<tr>
<td></td>
<td>Inspect Work</td>
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</tbody>
</table>
Development Process

- Define Development Method
  - Develop Draft Occupational Analysis
  - Select Subject Matter Experts
    - SME Review Draft Occupational Analysis
      - SME Discussion
        - Reject
        - Approve
          - Validation
SME Review of Occupational Analysis

1. Orientation
2. Identification of duties
3. Review of specific tasks
4. Review and refinement of task statements
5. Sequencing of task statements
6. Identification of general knowledge, skills, attitudes, abilities, (KSA’s)
# Occupational Analysis

## Commissioning Authority

<table>
<thead>
<tr>
<th>Duties</th>
<th>Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review BOD</td>
<td>Verify BOD complies with OPR</td>
</tr>
<tr>
<td>Develop Cx Plan</td>
<td>Determine Cx scope</td>
</tr>
<tr>
<td>Review Submittals</td>
<td>Determine Submittals to review</td>
</tr>
<tr>
<td>Develop Tests Plans</td>
<td>Determine documents required</td>
</tr>
<tr>
<td>Develop Cx Report</td>
<td>Document Cx results</td>
</tr>
</tbody>
</table>
Knowledge, Skills, Abilities

• Knowledge
  • Engineering of mechanical (HVAC), electrical, & plumbing systems
  • Construction phase commissioning processes (ASHRAE, ACG, NEBB, LEED)
  • Installation requirements of mechanical (HVAC), electrical, & plumbing systems.
  • BAS control diagrams, points, sequences and configuration
  • Operation and Maintenance requirements
Knowledge, Skills, Abilities

- Skills
  - Writing plans & reports
  - Reviewing drawings & specifications
  - Creating checklists per project requirements
  - Documenting start-up procedures
  - Recording test data & results
  - Trending and trend analysis
  - Benchmarking Buildings
  - Interviewing building staff
Knowledge, Skills, Abilities

• Abilities
  • Determine the quality of engineering documents
  • Facilitate the performance testing process
  • Schedule resources
  • Determine condition of buildings and equipment
  • Coordinate system verification
  • Organize and track documentation
  • Facilitate the resolving of issues
Validation, Ranking, & Results

• Surveyed 7,555 individuals
• Response of 194 (2.5%)
• Top Ranked Items (100 items)
  • Commissioning Process
  • Direct Digital Controls
  • HVAC System Operation
  • Owners’ Project Requirements
  • Testing, Adjusting, Balancing (TAB) Process
  • Control System Trending Capabilities
Learning Goals & Objectives

• Examples
  • Describe the Owner’s Project Requirements
  • Explain the elements of a commissioning plan
  • Identify basic pump components and construction
  • Determine mixed air conditions using a psychrometric chart
  • Outline the mechanical design review process
  • Describe typical DDC network system installation and operation deficiencies and resolutions
  • Develop HVAC system performance tests
  • Conduct a HVAC system performance test
Commissioning Training Outline

Cx Fundamentals

- New Construction & Existing Building Commissioning Process

Systems & Equipment

- Envelope Energy Mechanical Electrical Controls

Systems Performance & Analysis

- Envelope Energy Mechanical Electrical Controls

Systems Testing & Evaluation

- Testing Verification
- Laboratory Activities
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Thank-you slide
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