FORM FOR SCORING OF TRAINING RESOURCE TO FULFILL FEDERAL BUILDING PERSONNEL TRAINING ACT (FBPTA) CORE COMPETENCIES

The FBPTA requires Federal building personnel to demonstrate compliance with a set of Core Competencies. The General Services Administration (GSA) accepts submissions for courses, certificates, certifications, accreditations, registrations, licenses, and other qualifications that demonstrate alignment with the FBPTA Core Competencies. GSA will post resources that sufficiently map to FBPTA Core Competency requirements on the FMI webpage (www.fmi.gov) and may incorporate them into the Core Competency Web Tool. The Web Tool allows Federal buildings personnel to immediately claim credit for competencies met by completing approved training. FMI and the Core Competency Web Tool help Federal employees identify appropriate training, and allow Federal agencies to share information on training sources. To qualify for consideration, submitters complete this form describing how a specific training resource, certification / accreditation, license or other resource aligns with FBPTA core competencies through AskFMI@gsa.gov.

Initial Review Conducted By: Maria Fara

Initial Review Submission Completion Date: August 30, 2013

Technical Review Conducted By: Angela Lewis

Technical Review Submission Completion Date: January 3, 2014

Alignment of Competency with Functional Roles

Often Aligned with Facility Management roles (24/43 Core Competencies)

Often Aligned with Building Operations Professional roles (6/43 Core Competencies)

Often Aligned with Energy Management Role (7/43 Core Competencies)

Often Aligned with more than one role (6/43 Core Competencies)

1. Please complete the following for each training course submitted for consideration:

Training provider: BOMI International

Provider address information (primary physical location, including address, city, state, zip code): One Park Place Suite 475, Annapolis, MD 21401

Provider's primary point of contact for this learning resource (name, primary physical location (if different from provider address information), phone, and email): Ron Bishop, (410) 974-1410 x1259, rbishop@bomi.org

Title of this training resource: Air Handling, Water Treatment, and Plumbing Systems

Type of training course: Property and Facilities Management

Does this course provide CEUs (Continuing Education Units) and if so, how many and for what occupation or field? Yes, 24 CE hours towards LEED Credential Maintenance Program.

Learning objective(s) associated with this certificate program course: Replace and/or maintain complicated HVAC systems, Understand the procedures to use when analyzing water samples for testing and treatment, Follow guidelines when installing and monitoring pipes and valves, Recognize, set up, and maintain a reliable and effective fire protection system.

Delivery method and learning methods (delivery methods may include online instruction, classroom instruction, or other means, and learning methods could include lecture, group work, essay work, quizzes, or other learning activities): Instructor Led Online, Self-Study, Live Classroom/Accelerated Review. Learning Methods, lecture, group work, quizzes, practice exam, 3rd Party proctored final exam.

Length of training (in hours): 24 Hours

URL link to information about the training course, content, and/or syllabus: http://www.bomi.org/Courses/Air-Handling,-Water-Treatment,-and-Plumbing-Systems/

2. Review the course objective(s) that have been submitted as being aligned with required FBPTA performance criteria. Review the learning methods in the course that will support that learning objective(s).

FBPTA Core Competency Area	FBPTA Core Competency	Required FBPTA performance criteria	Based on technical review of learning objectives and skills, does this resource map to the performance criteria?	Initial Review: Are all submission requirements included?	Initial Review: Are descriptions clear and logical?	Initial Review: Are all materials referenced included with the submission?	Technical Review: Learning Objectives Reviewed	Technical Review: Skills Reviewed	Technical Review: Are there any clarifications requested?	If clarification requested, note here	Clarification Response From Provider	Technical Review: Identify other materials submitted	Technical Review: Other Materials Reviewed
		1.1.1.Demonstrate familiarity with Building Systems.	Partial. Based on the scope of this course, partial credit is awarded for demonstration of knowledge of HVAC systems, plumbing systems, and fire protection systems. The course does not cover other building systems, such as electrical systems, structural and roofing systems.	Yes	Yes	Yes	Yes	Yes	Yes		This course does focus specifically on Air Handling, Water Treatment and Plumbing Systems. Additional information on unique systems can be found in other BOMI specific system courses to include: Electrical Systems and Illumination; Boilers, Heating Systems and Applied Mathematics; Energy Management and Controls; Refrigeration Systems and Accessories; Building Design & Maintenance; The Design Operations & Maintenance of Building Systems Part I & The Design Operations & Maintenance of Building Systems Part II.		

1.Management of Facilities O&M	1.1 Management of Building Systems	1.1.3.Demonstrate ability to oversee the acquisition, installation, and operation of building systems.	Partial. Based on review of the learning objectives and skills/materials covered, this course covers the ability to oversee the acquisition, installation and operation of Air handling, water, and plumbing systems.	Yes	Yes	Yes	Yes	Yes	Yes	Request clarification. From review of the learning objectives and skills/materials covered, it is clear that the course provides learners knowledge of acquisition, installation and operation for fans, and the operation of sprinkler systems. However, it is not clear that the course includes information about the acquisition of sprinkler systems, or other building systems, such as electrical systems. The course also does not appear to provide learners with the opportunity to gain the ability to operate HVAC, plumbing or sprinkler systems.	Acquisition of sprinkler systems - Under premise of LO 11.4--List and describe five types of sprinkler systems, and discuss how they operate and are maintained - course discusses requirements for sprinkler systems in terms of acquisition. Emphasizes focuses selection based on building code requirements, occupancy, type of construction, type and quantity of stored materials as well as height and use of the building; electrical system acquisition is addressed in the unique BOMI course on this topic - Electrical Systems and Illumination; While classroom does not offer hands-on practice with sprinkler systems the course does demonstrate visually how sprinkler systems work - such as a Dry-pipe system which becomes a component of class discussion - LO 11.4 - List and describe 5 types of sprinkler systems and discuss how they operate and are maintained. Detail is given to sprinkler heads, piping and maintenance. Reference to NFPA standards are included as well. Plumbing Systems Operations - Course LOs focus on systems for maintaining water pressure, management of backflow and prevention strategies, design and operations of sanitary and storm drainage systems, design and operation of flush valves - visuals are offered for clarification of operations. Air Handling Operations - Course focuses on global overview of Air Handling addressing Human Comfort, Air Properties/Heat; Duct Work; Air Handling Units, Fans, Building Pressurization and Principles of Thermal Comfort Devices. Topics covered include: structure and function of air handling system, fan types and capacity, fan laws, fan and system performance curves, fan motors, air handling unit maintenance , building pressurization, thermal expansion valves, function of evaporators, compressors, condensers in the refrigeration process, refrigerants, types of cooling systems - all supported with visuals		
		1.1.7.Demonstrate ability to manage corrective, preventive and predictive maintenance.	Partial. Based on review of the learning objectives and skills/materials covered, this course covers the ability to manage corrective and preventive maintenance for air handling, water, and plumbing systems.	Yes	Yes	Yes	Yes	Yes	Yes	Request clarification. Although the information provided about the learning objectives and skills/materials covered provide details about various installation and maintenance activities, it is not clear that the course describes the specific maintenance strategies listed: corrective, preventive and predictive. Please specifically state how the course addresses the three maintenance strategies. Please provide additional information or course material.	BOMI International courses do not typically call out "Predictive" and "Preventive" and "Corrective" as unique maintenance strategies but instead often integrate these all under "Preventative Maintenance". Preventive and ongoing maintenance in BOMI courses includes testing, maintaining operations logs, reviewing logs and performance data, and other steps characteristic of predictive maintenance. In this course maintenance is addressed in fan performance and air-handling unit maintenance in terms identifying sources of potential issues based on dirt, dust and oil accumulations, conditions of inlets and outlets, and various system components. Solutions and strategies to minimize as well as timing of these are discussed in relation to individual system components to include filter installation and maintenance. Course offers instruction on the use of the Psychometric Chart to manage building comfort levels and be proactive in assessing impact of changes to air systems. Chapter 7 of this course offers a complete overview of how to address Water Systems Challenges and Treatment maintenance needs such as scale, corrosion and how to resolve/be proactive on these issues. Other system maintenance issues discussed: idle Boiler Management; types of fire alarms systems and ways to maintain to ensure correctly, designed, installed and maintained; ventilation system monitoring, duct maintenance, fan and damper balancing; management of indoor air quality and contaminant detection/monitoring and corrective actions; refrigeration cooling coil maintenance		
1.Management of Facilities O&M	2.1. Operating and Maintaining HVAC Systems	2.1.1.Demonstrate ability to collect Operating Data on system.	Partial. This course receives partial credit for providing information that will allow learners to demonstrate an ability to read and collect pressure and temperature data by reading gauges and meters. The course does not include information about how to check oil or other fluid levels.	Yes	Yes	Yes	Yes	Yes	Yes	Request clarification. It is not clear that the course includes information about collecting operating data for the systems included within this performance criteria. The information provided about fans, such as fan performance curves, is primarily used during HVAC design, not to collect data or read operating parameters. Please provide additional information about how the course provides learners with the ability to read pressure and temperature data by reading gauges, meters and other sensors; how to check oil levels and log equipment readings for HVAC systems.	Course discusses DDC technology and how to use/understand in terms of heat loads - LO 1.5 = Name the sources of heat loads placed on a building's HVAC; duct pressure measurement demonstrated in terms of Pitot Tube measuring's of static, total and velocity pressure; use of magnehelic gauge and manometers are also discussed. Building pressurization and measurement is a complete topic in chapter 3 of this course discussing control systems, pressure regulators, sensors, etc.; use of psychometric chart to manage building comfort levels and be proactive in assessing impact of changes to air systems. Additional content regarding operating data can be found in BOMI's Refrigeration Systems and Accessories course		
		2.1.2.Demonstrate ability to adjust System Parameters as required.	Yes, based on review of the learning objectives and skills/materials covered, the course appears to provide learners with the opportunity to gain the ability to adjust system parameters.	Yes	Yes	Yes	Yes	Yes	No				
		2.1.3.Demonstrate understanding of indoor air quality and how to test and adjust it.	Yes, based on review of the learning objectives and skills/materials covered, the course appears to provide learners with the opportunity to understand indoor air quality, including how to test and adjust ventilation levels and remove contaminants.	Yes	Yes	Yes	Yes	Yes	No				
		2.1.6.Demonstrate knowledge and ability to maintain all HVAC Systems.	Partial. This course receives partial credit for providing learners with information that will allow them to demonstrate knowledge and ability to maintain air handling systems. Other system types are not included.	Yes	Yes	Yes	Yes	Yes	Yes	Request clarification. Based on review of the learning objectives and the skills/materials covered, it is clear that the course provides learners with the opportunity to gain knowledge of HVAC maintenance. Please describe how the course provides learners with the opportunity to gain the ability to maintain HVAC systems. The learning methods provided state that simulation and other resources are used. Is simulation used to demonstrate ability? If so, please provide more information or course material.	Simulations are used to show system flows versus immerse students in a repair exercise and are available in online courses for systems flows such as a "Basic Refrigeration System Cycle" as outlined in the BOMI Refrigeration Systems and Accessories course via a graphic representation. Maintenance in this course (Air Handling) for HVAC focuses on duct systems and layouts in terms of heat gains/loss, maintenance and oversight of supply air outlets, sidewall grills, diffusers, dampers; approaches for noise mitigation; structure/function of air handling system units; fan performance and maintenance; building pressurization measurement and control. Additional HVAC information on maintaining HVAC systems is available in the BOMI Refrigeration Systems and Accessories course.		

2. Performance of Facilit	2.2. Operating and Maintaining Electrical and Mechanical Systems	2.1.7.Demonstrate knowledge and ability to repair all HVAC Systems.	No, based on review of the learning objectives and skills/materials covered, this course does not provide learners with the ability to repair all HVAC systems. The course is limited to knowledge of troubleshooting and identifying operational issues, which are included in other performance criteria.	Yes	Yes	Yes	Yes	Yes	Yes	Request clarification. Based on review of the learning objectives and the skills/materials covered, it is not clear that the course provides learners with the opportunity to gain knowledge of how to repair HVAC systems or the ability to repair them. The learning methods provided state that simulation and other resources are used. Is simulation used to demonstrate the ability to repair HVAC systems? After finishing this course, would the student leave with the ability to physically perform repair of HVAC systems? If so, please provide more information or course material.	Learners would not be "certified" to repair an HVAC system but will have knowledge/understanding of how to troubleshoot, identify and work to resolve HVAC issues based on a thorough review of system components and understanding of fundamental principles associated with HVAC operations. Additional information on HVAC issues can be found in BOMI's Refrigeration Systems and Accessories course.		
		2.2.4.Demonstrate knowledge and ability to maintain plumbing fixtures, sewage injectors, and water heaters.	No, based on review of the learning objectives and skills/materials covered, this course does not provide learners with the ability to gain knowledge or the ability to maintain plumbing fixtures, sewage ejectors or water heaters.	Yes	Yes	Yes	Yes	Yes	Yes	Request clarification. It is clear that the course provides learners with the opportunity to gain knowledge of plumbing fixtures and water heaters. However, it is not clear that the information is about the maintenance of these systems. It is also not clear if the course includes information about how to maintain sewage ejectors. Performance criteria 2.2.6 also requires the course provide learns with the opportunity to gain the ability to maintain plumbing fixtures, sewage ejectors and water heaters. The learning methods provided state that simulation and other resources are used. Is simulation used to demonstrate this ability? After finishing this course, would the student leave with the ability to physically maintain plumbing fixtures, sewage ejectors, and water heaters? If so, please provide more information or course material.	Simulations are used to show system flows versus immerse students in a repair exercise and are available in online courses for systems flows such as a "Basic Refrigeration System Cycle" as outlined in the BOMI Refrigeration Systems and Accessories course via a graphic representation of this process. Chapter 9 of this course offers and complete overview of Piping and Valves used in various building system equipment. Types of connections are reviewed, gaskets, fittings and valves are reviewed in detail. In terms of plumbing fixtures specifically the course reviews flush valve operations and components and vent systems in relation to building drainage.		
		2.2.6.Demonstrate knowledge and ability to all drains and backflow preventers.	Partial. This course receives partial credit because it provides learners with information to allow them to demonstrate knowledge of backflow preventers and drains. The course does not provide learners with the ability to maintain backflow preventers or drains.	Yes	Yes	Yes	Yes	Yes	Yes	Request clarification. It is clear that the course will provide learners with knowledge of drains and backflow preventers. However, it is not clear that the course provides learners with the ability to maintain drains. After finishing this course, would the student leave with the ability to physically maintain drains and backflow preventers? If so, please provide more information or course material.	Backflow is discussed in detail in terms of reasons it occurs (pressure, siphonage, connection). Backflow preventers are reviewed and strategies for prevention. Building drainage reviews fixture traps, interceptors, vent systems, flush valves, storm drainage systems and septic tanks.		
	2.3. Operating, Maintaining and Testing Life Safety Systems	2.3.3.Demonstrate knowledge and ability to test fire pumps and sprinkler systems.	Partial. This course receives partial credit because it provides learners with information to allow them to demonstrate knowledge of testing fire pumps and sprinkler systems. The course does not provide learners with the opportunity to gain the ability to test fire pumps or sprinkler systems.	Yes	Yes	Yes	Yes	Yes	Yes	Request clarification. It is clear that the course provides learners with knowledge of testing fire pumps and sprinkler systems. However, it is unclear that the course provides learners with the opportunity to gain the ability to test them. The learning methods provided state that simulation and other resources are used. Is simulation used to demonstrate this ability? After finishing this course, would the student leave with the ability to physically test fire pumps and sprinkler systems? If so, please provide more information or course material.	Simulations are used to show system flows versus immerse students in actual hands on system exercises. There is not a simulation for a process flow for testing of fire pumps and sprinkler systems. Class sessions often involve building tours to supplement course content in terms of "hands-on" experience. This course covers thoroughly through use of graphics and text LO 3.4 - List 5 types of sprinkler systems and discuss how they operate and are maintained - sprinkler systems reviewed are: wet pipe; dry pipe; deluge; preaction; combined dry pipe and preaction; discussion of sprinkler head types and fire pumps also under this learning objective. Fire pump discussion addresses purpose and use as well as how to maintain and check with flow tests		
6. Design	6.2. Infrastructure Systems	6.2.1.Demonstrate knowledge and understanding of the design basis of all applicable Architectural and Engineering Systems.	Partial. Based on the scope of this course, partial credit is awarded for demonstration of knowledge of HVAC systems, plumbing systems, and fire protection systems. The course does not cover other building systems, such as roofing systems, building envelope systems, window systems, electrical systems, telecommunication systems, lighting systems, BAS, IT systems, interior design, landscape architecture systems, or discuss occupant needs and requirements or resource flows.	Yes	Yes	Yes	Yes	Yes	No		This course is one of a series in a program designed to offer a comprehensive overview of system topic areas and does focus on the areas addressed in partial credit. Other BOMI courses that offer specific system knowledge include: Electrical Systems and Illumination; Boilers, Heating Systems and Applied Mathematics; Energy Management and Controls; Refrigeration Systems and Accessories; Building Design & Maintenance; The Design Operations & Maintenance of Building Systems Part I & The Design Operations & Maintenance of Building Systems Part II.		