Testing, Adjusting, and Balancing (TAB) Seminar

November, 14-17 2024

NEBB Firm Disciplines

- Professionals with a strong background in HVAC and TAB work considering an extensive review to enhance their technical education.
- Facility Managers
- Facility Operators
- Mechanical Contractors
- Engineers
- Energy Auditors
- Building Commissioning Agents
- Other Professionals interested in learning about TAB.
- Qualified Candidates for the NEBB TAB CP.
- Experienced NEBB CT seeking to advance to the NEBB CP level

Location

Smart Building Center at Pacific Tower
1200 12th Ave S.
Suite 110
Seattle, WA 98144

Registration Deadline:
October 1, 2024

Seminar Instructors

Travis Short, NEBB CP

Travis Short is a Lead Commissioning Specialist for Henderson Building Solutions, a Nationwide Commissioning and Construction Management firm. Travis has 22+ years' experience and received his Bachelor of Science in Mechanical Engineering from the Missouri University of Science & Technology. Travis is a NEBB Certified Professional in both Building Systems Commissioning and Testing, Adjusting and Balancing of Environmental Systems. His capabilities range from large central utility plants to geothermal heat pump technologies and all mechanical systems in-between. His advanced knowledge of Building Automation & Management Systems stems from the fact that he has designed, built, installed, and programmed various systems ranging from HVAC controls to PLC's. He is a published author with chapters in the following: "Web Based Energy Information and Control Systems" and "Web Based Enterprise Energy and Building Automation Systems." Mr. Short serves on the NEBB TAB Committee.

George Martin, NEBB CP

George Martin is a Senior Commissioning Engineer at Loring Consulting Engineers and has over 20 years of experience in the Mechanical HVAC industry, with over a decade of this in the field of Testing, Adjusting and Balancing. In addition to his TAB experience, he has helped design, install, program, and troubleshoot HVAC and building automation systems for large scale commercial, educational, and medical facilities. He has been a NEBB TAB Certified Professional since 2018, currently serves on the NEBB TAB Committee, and has published multiple articles for the NEBB Professional.

Donald Pittser, NEBB CP

Donald Pittser, President of JEDI Balancing Inc. founded in 2000 in Colorado, has more than 35 years' experience with his first TAB project in 1986. He obtained NEBB TAB Certified Professional Certification in 1999. Mr. Pittser was awarded the Golden Castle Award by the United States Army Corps of Engineers (USACE) for his work in Afghanistan from 2012-2015 completing 68 projects for the USA Department of Defense (DoD) under Combat Zone security threat and completing over 165 DoD International Projects. Donald is a NEBB Certified Professional in Testing, Adjusting and Balancing of Environmental Systems (1999), Whole Building Technical Commissioning of New Construction (2005), and Sound Measurement & Vibration Measurement (2017)), and Building Enclosure Testing (2022). Mr. Pittser serves in the TAB Committee.

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About This Seminar

Building owners and tenants are concerned that environmental performance of buildings must be optimal while operating costs should be minimal. These goals can only be accomplished when a building's HVAC and hydronic systems are properly balanced. Three major steps used to achieve the proper operation of the HVAC and hydronic systems and a desirable climate are testing, adjusting, and balancing (TAB).

Formulas and Their Use

Formulas are used daily by a TAB professional and should be memorized and applied appropriately as needed. Formulas include ratios of speed vs volume vs pressure vs BHP for air and hydronic systems. Other formulas that become necessary on occasion include V-belt length, BTUH, sensible, latent, and total heat, and others. Attendees will receive a list of commonly used formulas for their use and application.

Electricity

Attendees will re-familiarize themselves with single vs three phase systems, how to measure voltage and amperage, overload protection, calculation of brake horsepower, and the need for using safe practices and safety equipment for protection while gathering necessary measurements.

Fan Laws & Curves

Fan affinity laws will be covered, and attendees will review how to apply known data to fan curves. Instructors will discuss individual fan systems as well as fans in series and fans in parallel.

Pump Laws & Curves

Pump affinity laws and how to apply known data to pump curves will be discussed and demonstrated. Individual pumping systems as well as open systems, closed systems, pumps in series, and pumps in parallel, and NPSH requirements will be covered.

Air Systems

Various configurations of air systems such as supply, return and exhaust systems as well as constant volume, variable volume heat recovery, induction systems, active chilled beam systems, and makeup air systems will be reviewed.

Psychometrics

The use of a psychrometric chart as it applies to TAB and related to the physical properties of air and the relations of the properties to each other will be reviewed. Attendees will spend considerable time learning to plot psychrometric charts and understand the principles.

Problem Solving

TAB Professionals identify problems and determine solutions or provide necessary information for responsible parties to address and correct the problem. This involves solid logic capabilities requiring the professional to exercise a systematic approach to the identification and resolution of problems or difficulties exposed by the TAB process.

Engineering Fundamentals

The course will cover basic Heat Transfer and Fluid Mechanics as they relate to TAB.

TAB Procedural Standards and TAB Reports

The course will cover the requirements of the NEBB TAB Procedural Standards and will address what constitutes a certified NEBB TAB Report.

This Seminar has been approved for 27.50 Continued Education Credits

Thursday, November 14, 2024
(7 CECs)

7:30 am: Registration
8:00 am – 4:30 pm: Heat & Heat Transfer, Fluid Mechanics, and Psychometrics (Lunch provided)

Firday, November 15, 2023
(7 CECs)

8:00 am – 4:30 pm: Electricity, Motors, Controls, Fans, Fan System Relationships, and DUct Systems (Lunch provided)

Saturday, November 16, 2024
(7 CECs)

8:00 am – 4:30 pm: Hydronic Systems, Pipe Sizing, Pumps, and Pump System Relationships (Lunch provided)

Sunday, November 17, 2024
(6.5 CECs)

8:00 am – 4:00 pm: TAB Reports, TAB Procedural Standards, TAB INstruments, TAB Measurements, Safety/ ARC Flash, and Other Requirements (Lunch provided)

Monday, November 18, 2024

Optional Exam Day
7:30 am: Registration
8:00 am – 1:00 pm: TAB CP Exam

Travel Information

Registration form and payment must reach the NEBB office on or before August 21, 2023. Pre-registration and payment of fees are necessary to ensure your participation in the seminar.

Hotels

Attendees can make reservations directly with the hotel of their choice. Below is a short list of hotels in close proximity to the training center. Hotel and transportation costs are not covered by the seminar registration fee.

Courtyard Seattle Downtown/ Pioneer Square
612 2nd Ave. Seattle, WA 98104
206-625-1111 (Instructors Stay Here)
Booking Here

Embassy Suites by Hilton Seattle Downtown Pioneer Square
255 South King Street Seattle, WA 98104
206-859-4400 (Parking $60 per night)
Booking Here

Silver Cloud Hotel Seattle - Stadium
1046 1st Ave. Seattle, WA 98134
206-204-9800
Booking Here

Airport

Seattle- Tacoma International Airport (SEA):
serves the Seattlearea. The Training Center and the hotels listed below are approximately 15-20 miles from the airport (about a 30 minute drive).

Important Dates and Times:

Arrival in Seattle, WA
Wednesday, November 13, 2024

Seminar Dates:
Thursday-Sunday, November 14 - 17, 2024

Optional TAB CP Paper-based Exam
Monday, November 18, 2024

Seminar Location:

Smart Building Center at the Pacific Tower
1200 12th Ave
Suite 110
Seattle, WA 98144
Their Website

NEBB SEPT. TAB SEMINAR REGISTRATION FORM

Registration form and payment must reach the NEBB office on or before October 1, 2024. Pre-registration and payment of fees are necessary to ensure your participation in the seminar.

Registration Form and Payment

1. Online through the Certelligence Portal
2. Email this form to training@nebb.org
3. Mail this form to: NEBB, 8575 Grovemont Circle, Gaithersburg, MD 20877.

Name: _____

Company: _____

Address: _____

City, State, Zip: _____

Phone/Cell: _____

Email: _____

Please list any dietary restrictions and or ADA accommodations:

_____

Seminar Fees (Check all that apply)

☐ $2000 Seminar Registration Fee (Does not include candidacy application or exam fees)

Publication Fees

☐ $95 NEBB/ $125 Non-NEBB: NEBB Procedural Standard (Please indicate preference: hard copy or electronic)

☐ $250 NEBB/ $300 Non-NEBB: TAB Technician Manual (Please indicate preference: hard copy or electronic)

☐ $200 NEBB/ $250 Non-NEBB: Environmental Systems Technology

☐ $600 NEBB/ $800 Non-NEBB: TAB Professional Home Study Course for CP's

**Prices for publications do not include shipping and handling.*

Date: _____

Optional Exam Opportunity:

Please check the box below. If interested, please email certification@nebb.org for the candidacy application process. Pre-approval and payment are required before the deadline.

☐ Yes, interested in taking the exam

☐ No, not interested in taking the exam

Payment Method

☐ Check enclosed made payable to NEBB

☐ Visa ☐ MasterCard ☐ American Express

Name on Card _____

CC Number _____

Expiration Date _____

Security Code _____

Signature _____

$_____ **Total Amount Due**

Note: Any candidacy or exam fees will be invoiced separately.

Location

Cancellation by registrants, regardless of reason, will be subject to a $250 service charge to cover NEBB's expenses. A refund of the prepaid registration will be made less the $250 service charge. No Shows or late cancellations (those who registered for the seminar who do not cancel at least 14 days prior to the seminar and subsequently do not attend the course) will forfeit the entire registration fee unless a replacement can be found. NEBB reserves the right to cancel any seminars having insufficient registrants, in which case, all prepaid registration fees will be refunded in full. Please advise NEBB and your hotel of your cancellation as soon as possible.

Attendee and Seminar Requirements:

1. Verifiable practical TAB experience.
2. Minimum working capability in mathematics, including geometry and second-year high school algebra.
3. Well-versed in the application of mathematical formulas that are pertinent to TAB.
4. Possess full working knowledge of the instruments required for certification by NEBB.
5. Possess a full understanding of when, where, and how to use the instruments.

Attendees are required to bring the following to the seminar:

1. Straight edge
2. Hand calculator (with square, square root, cube, and cube root functions)
3. Pencils
4. Laptop/iPad to review course materials.
5. NEBB Formula Sheets Printed Out

Recommended Publications:

To achieve the best learning results, it is highly recommended that attendees read the following publications BEFORE attending the seminar:

- Testing, Adjusting & Balancing Specifications (available for download at www.nebb.org)
- 2019 Procedural Standard for TAB of Environmental Systems – 9th Edition
- Environmental Systems Technology, 1999
- Instructor's Guide to TAB Manual for Technicians (available to NEBB-certified firms only)
- TAB Manual for Technicians, 2020
- Testing, Adjusting, and Balancing Study Course for CPs
- BoK approved 9/3/18, v. 8

Other:

1. Registrations will be filled on a "first come-first served" basis. Please note that class sizes are limited due to Covid Social Distancing Protocol.
2. Seminar fees include course instruction, lunch, am/pm breaks.
3. Seminar fees do not include anything pertaining to certification. 4. For information on certification or exams please contact certification@nebb.org.

Our COVID-19 Response Plan

Considering COVID-19, NEBB has taken several proactive steps to help ensure the health and safety of our attendees and instructors. Precautions such as constant sanitization of the seminar area, increased attention to high-touch areas in the rooms, limits on the number of attendees during the seminar and protective gear for our instructors are in place. NEBB also will be practicing social distancing and maintaining 6 feet apart.

Our COVID-19 Response Plan

- If you are experiencing any symptoms of COVID-19 like running a fever, coughing, or shortness of breath, please do not attend the seminar.
- You have been exposed to someone who has tested positive for COVID-19 in the last 14 days.
- You have a compromised immune system or are considered “high risk.”
- Wearing a mask is requested during the seminar and gloves can be worn if desired.
- Sanitize hands prior to entering the seminar location.
- Avoid shaking hands or engaging in any unnecessary physical contact.
- Signing a waiver prior to the seminar