



CERTIFIED BUILDING COMMISSIONING PROFESSIONAL - CBCP EXAM PREP

KRISHNAJI PAWAR, LEED AP BD+C, GSAS CGP, ISO 14001:2015, GCP
COMMISSIONING SPECIALIST CURRICULUM





TAB FUNDAMENTALS

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LEARNING OBJECTIVES



- Engineering Fundamentals
- Terminology & Calculations
- TAB Procedures (Checklist)
- NEBB Helpful Resources



INTRODUCTION

Studies show that proper testing, adjusting, and balancing, along with commissioning, can result in energy savings of 15 to 30 percent. Also, a building that is properly commissioned has better indoor air quality, needs less maintenance, and receives fewer complaints from people who live there.

Building owners and tenants know that in order to keep operating costs down, a building's environmental performance must be consistently optimized. These goals can only be reached, though, if a building's heating, ventilation, air conditioning, and hydronic (HVAC) systems are well-balanced.

Utilizing highly educated and certified technicians who are current with the latest TAB procedures and equipped with the most technologically advanced instrumentation available, they adjust and balance building systems to achieve the highest possible levels of efficiency, so as to reduce operating costs and increase occupant comfort.

INTRODUCTION +

In general, we have seen three types of approaches to the TAB/commissioning interface, all dictated by the particular facility owner's preferences, past experiences, and budget.

Option #1: A successful TAB process and documentation are prerequisites to initiating commissioning functional performance testing. The commissioning provider reviews the TAB report prior to moving into functional testing.

Option #2: A successful TAB process and documentation are prerequisites to initiating commissioning functional performance testing. The commissioning provider reviews the TAB report and witnesses a random sample of the TAB contractor's measurements in the field.

Option #3: The TAB process is incorporated into the commissioning provider's scope of services.

TAB is an integral part of the process of making systems work and documenting that they perform according to the design intent and contract document requirements. In that regard, the TAB contractor straddles the world of quality control and the world of commissioning

TESTING, ADJUSTING, AND BALANCING (TAB)

Testing, adjusting, and balancing (TAB) is a process where air and hydronic flows in a building are measured, adjusted, and documented to meet design specifications and local building codes to ensure thermal comfort, indoor air quality, and system energy efficiency are optimized. In order to improve the quality of the TAB process, tests should follow a standardised methodology and be completed by a certified technician.

TAB certified specialists use their knowledge and experience to verify, test, and adjust heating, ventilation, and air conditioning (HVAC) systems after installation or retrofit, during a building's commissioning process, or anytime evaluation of existing buildings is needed.

NEBB's Procedural Standard for Testing Adjusting and Balancing of Environmental Systems is currently in its 9th edition. Similar to AABC and TABB, it establishes a uniform and systematic set of criteria for TAB. NEBB is ASD certified and publishes two standards for building commissioning that are ANSI approved. However, their TAB standards are not approved under the ANSI ASD program.

TAB INSTRUMENTS

■ **Manometers**—Used to measure pressure drops that can be translated into flow rates. Available in tube types, both u-tube and inclined-vertical use a fluid in a tube to represent the difference in pressure between two points.

■ **Digital manometers**—At very low pressure differentials, such as those found across air filters and expansion cooling coils, they can provide very accurate readings, automatically adjust for barometric pressure, store readings with recall in average or total numbers, and some can provide additional functions such as temperature measurements.

■ **Anemometers**—Available in several configurations—rotating vane, deflecting vane, and thermal—and used primarily to measure air velocities at registers, grilles, hoods, coils, etc.

■ **Flow measuring hoods**: directly measure the CFM of air distribution devices.

Temperature Measuring Instruments

■ **Glass tube and dial thermometers**—Measurement of air and fluid temperatures

■ **Thermocouples**—Measures surface temperatures

■ **Psychrometers and electronic thermo-hygrometers**—Determines relative humidity

SECTION 01815:9 TESTING,ADJUSTING,BALANCING

It delineates what is needed from the Contractor to perform the services of testing, adjusting, and balancing, and defines the Commissioning process regarding testing, adjusting, and balancing (TAB) all equipment and systems.

The systems requiring TAB might include the following, among others: heating, ventilation, air cooling and air conditioning, supply air, air exhaust systems, heating hot water, centrally cooled and/or chilled water, condenser water, special piping, and high purity piping. As part of the TAB work, a clean copy of the drawings and specifications should be obtained that can be marked with the variations (and any associated problems) found during the TAB reviews.

NEBB RESOURCES

NEBB was founded in 1971 as a result of standards written in collaboration between the Mechanical Contractors Association and the Sheet Metal and Air Conditioning Contractors National Association (SMACNA). NEBB quickly grew and by 1977 had finished the second edition of their Procedural Standards for Testing, Adjusting, Balancing of Environmental Systems publication. NEBB is now a separate organization from SMACNA and has grown to 25 regional chapters in the USA, Canada, and Australia.

The supervisor level NEBB certification is referred to as the TAB Certified Professional (CP). To become a TAB CP, individuals must meet additional prerequisites that amount to a 4 year degree with 2 years of leadership experience

■ **Building commissioning** is a complex, multidisciplinary process that continues to evolve as a result of industry demands and building codes. Conducting proper testing, adjusting, and balancing as part of the commissioning process benefits the building owner and occupants by ensuring that the criteria specified in the building design are met. Beyond comfort, a balanced HVAC system will use less energy and provide better indoor air quality. Using a TAB contractor ensures quality work by requiring the contractor and technician to meet specific qualifications that are certified by a third-party.

SUMMARY

In the future, TAB certifications are expected to become even more valuable. As building control systems become more complex, and new energy efficient equipment becomes standard, technicians will need more in-depth knowledge to balance HVAC systems. Additionally, local building codes are expected to evolve and become stricter as states move toward more ambitious energy efficiency goals. Building managers can stay ahead of the curve by making sure their TAB contractors are well qualified.



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