

TAB Report Verification

Mike Kelly, TBE, CxA
American Testing, Inc.
3:00 p.m. – 4:30 p.m.

Understanding how to evaluate and verify an AABC Certified test and balance report is key to ensuring that HVAC systems are performing as designed.

Topics will include:

- TAB documentation requirements & evaluation.
- TAB report usage as a resource for detailed system information.
- Guidance for engineers and commissioning providers to perform a thorough verification.



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Course Description

“This presentation will review the AABC National Standards – Chapter 28 - TAB Report Analysis & Verification”

A presentation to review AABC Certified Total System Balance Reports as related to the Commissioning process – Engineering Practices – Owner acceptance. Using practical and objective method to the Analysis and Verification of the TSB reporting document is preferred practice for successful building systems review.

Learning Objectives

AABC Total System Balance TAB report – Chapter 28

- Content? – test data recorded measurements – listed discrepancies – installation conformance
- Usage? – Capacity Evaluations – Data records – Bench marking – Maintenance
- Verification? – performance-conditions



Pre-TSB Report Review

- Review Basis of Design/Design intent –vs- Actual installed Design parallel
 - * Many times variations occur between design and install that will effect the perception of what the TSB report should indicate
- Review of project specific TAB plan and strategies to get acquainted with the what, why, how and when equipment & systems were to be TSB tested.
- Review Current updated Blueprints (as-builts) for modifications and revisions relative to the effects of TSB
- Review Specifications for TSB requirements
- Discussions with Installation team, designer, owner to determine extenuating project circumstances that would have effected TSB in a positive or negative manner.

TSB Report Content

- Project Name – Engineer of record – Architect – Owner
- Table of Contents – Instrument list – Code sheet (appendix) – Executive summary (noted action items or deficiencies)
- Air & Water Balance recorded data for equipment & systems
 - Locations (equipment & Systems), Data is System organized, quantities, pressures, velocities, airflow summaries (terminal units-AMDs etc), RPMs, voltages, amperages, hertz, calculated BHP, calculated BTU, impeller size.
- Summary sheets or collaborative data detailing:
 - Controls verification - Area, Floor, Space, Building pressures - Air Change Calculations – stairwell pressurization – Duct Air leakage results – smoke zone testing – any additional testing detailed data.....

TSB Report Usage

Confidence in a Factual & Accurate statement of the operating conditions of the systems on the referenced project

- ❖ Used for Capacity Evaluations:
 - ❖ Design is the creative result of abstract ideas and calculations
 - ❖ TSB report is a concrete report of achievement to the design and systems capabilities
 - ❖ Opportunity to evaluate and calculate if designed intent was met
 - ❖ TSB report can show Unanticipated job conditions that effect performance can offer the opportunity to improve performance
- ❖ Used as Verification document:
 - ❖ Notations of installation omissions & errors
 - ❖ Component (Equipment & System) Performance calculations
 - ❖ Documented non-conformance to design conditions
 - ❖ Temperature Control system compliance
- ❖ Used for Data Record:
 - ❖ Operating value setpoints for Building Operations & Temp Control System
 - ❖ Equipment recordation for replacement parts and future modifications
 - ❖ Establishes a baseline for Building operations for reference in Energy Audits, Retrofits, troubleshooting & maintenance

TSB Report Interpretation

Field Report Conditions vs Laboratory/Manufacturer rating conditions

“Important to understand that there may be differences between TSB report field recorded data and design intent – equipment rating conditions!!!”



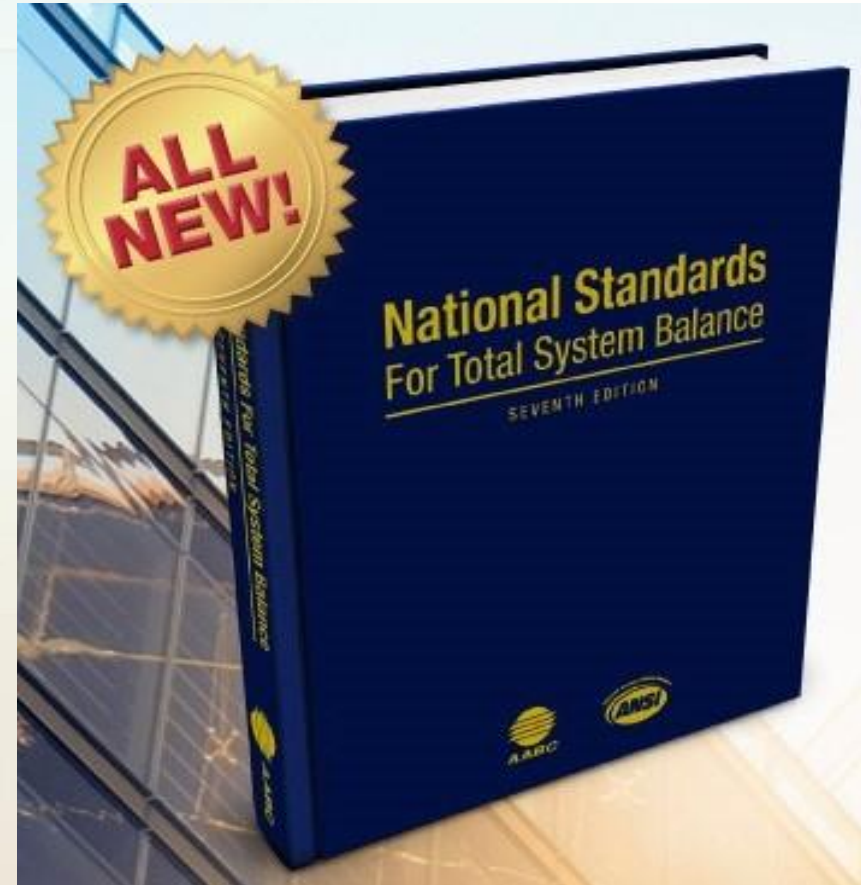
TSB Report Interpretation

- ❖ Fan & Pump Ratings are modified by system effect which are created by the connection method to the system, thereby effecting performance
- ❖ Air & Water flow across heat exchangers may not be uniform or as exact as laboratory rated and tested – many times these ratings are calculated creating another variation of false hope.....and then there's foreign material, fouling, temperature stratification or leakage.....
- ❖ Flow Station locations (Air & Water) leave many wondering what if any are accurate???
- ❖ Electrical line losses can occur between feed, motor and test location
- ❖ Differential Pressures – discrepancies do not infer inaccuracies in rated or field test data, it usually is as simple as field conditions differ from conditions during rating.

TSB Report - Verification

Report Verification & Field Inspections

“Work has been performed in accordance with AABC National Standards and the project specifications”



TSB Report - Verification

“This process establishes Accuracy, Repeatability and Integrity”

- ❖ Field Inspections: TSB verification can be performed while TSB actual work is in progress – recommended to be witnessed by Cx, owner, maintenance, engineer
- ❖ Office review: TSB report verification utilizing updated and latest contract documents - comparing change orders or addenda's
- ❖ Random Selection of 10% of TSB report data
- ❖ Once selection is made offer advanced notice for date of schedule verification
- ❖ TAB agency should setup system into the mode in which it was tested - relative to which system is selected for verification (this may require advanced scheduling and coordination for other trades to be involved)
- ❖ The same Technicians and Instrumentation used for field testing and recording should be utilized for verification – this will help alleviate discrepancies.

TSB Report - Verification

“This process establishes Accuracy, Repeatability and Integrity”

- ❖ Deviations in test data readings with repeatability at 10% or less shall be considered successful and expected.
- ❖ Sound testing verification repeatability to within 3 decibels is considered successful and expected.

Questions / Conclusion

1. What's the best formula for TSB success?
2. Why be objective?
3. How should deviations be handled – positively or negatively?
4. Approach all AABC TSB reports with confidence?

“Success is neither magical nor mysterious. Success is the natural consequence of consistently applying basic fundamentals.”

jim rohn