

SECTION 5 STANDARDS FOR REPORTS AND FORMS

5.1 REPORTS

The NEBB *Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems* establishes minimum requirements of a NEBB Certified TAB Report. The standards have been developed and written using “**Shall, Should, and May**” language. It is important to note these particular words throughout this document and how they pertain to NEBB Procedural Standards.

NEBB does not require the use of NEBB produced forms. Customized forms are acceptable based on the data acquisition requirements of this section. Where contract document data reporting requirements exceed the minimum requirements of NEBB, the NEBB Certified TAB Firm is responsible to meet the requirements of the contract documents.

NEBB Test, Adjust, and Balance Reports shall include the following information:

- A. REPORT TITLE**
- B. REPORT CERTIFICATION**
- C. TABLE OF CONTENTS**
- D. REPORT SUMMARY / REMARKS**
- E. APPROPRIATE FORMS**
- F. INSTRUMENT CALIBRATION**
- G. ABBREVIATIONS**

5.2 REQUIRED FORMS

Listed below are the requirements for each NEBB Certified TAB Report in **Shall, Should, and May** language.

5.2.1 REPORT TITLE

Shall Data: The heading: “Certified Test; Adjust; Balance Report”; Project Name / Address; Engineer Name; HVAC Contractor Name; NEBB Certified TAB Firm Name / Address / Certification Number.

May Data: Architect Name; Architect Address / Contact Numbers; Engineer Address / Contact Numbers; HVAC Contractor Address / Contact Numbers.

5.2.2 REPORT CERTIFICATION

The certification page SHALL bear the stamp of the NEBB Qualified TAB Supervisor. The stamp on the certification page SHALL be signed as evidence that the NEBB Supervisor has reviewed and accepted the report. *Signature stamps are specifically prohibited.*

Shall Data: Project Name; Certifying NEBB Qualified TAB Supervisor's Name; Firm Name; Certification Number; Expiration Date; Certifying NEBB Qualified TAB Supervisor's NEBB Stamp (signed & dated); and the following exact verbiage:

"THE DATA PRESENTED IN THIS REPORT IS A RECORD OF SYSTEM MEASUREMENTS AND FINAL ADJUSTMENTS THAT HAVE BEEN OBTAINED IN ACCORDANCE WITH THE CURRENT EDITION OF THE NEBB PROCEDURAL STANDARDS FOR TESTING, ADJUSTING, AND BALANCING OF ENVIRONMENTAL SYSTEMS. ANY VARIANCES FROM DESIGN QUANTITIES, WHICH EXCEED NEBB TOLERANCES, ARE NOTED IN THE TEST- ADJUST- BALANCE REPORT PROJECT SUMMARY."

(This data may be included on the report title page or on a separate certification page.)

5.2.3 TABLE OF CONTENTS

The table of contents shall serve as a guide to the organization of the TAB report.

Shall Data: Page numbers of system and component information in the report.

5.2.4 REPORT SUMMARY / REMARKS

A NEBB Certified TAB Report includes a narrative description of system set-up conditions established prior to testing adjusting and balancing. The narrative should explain the rationale for posturing a system, such as to establish a full load condition, and the steps taken to achieve the desired set-up.

This section also includes a listing of deficiencies in the summary and identifies the appropriate pages in the report. "Deficiency" can be subjective when performing TAB work. Part of the NEBB Supervisor's responsibilities is to determine "noteworthy" deficiencies.

Shall Data: Summary of all items that exceed NEBB / Contract Document tolerances or any other items that require discussion / explanation.

5.2.5 ALL REPORT PAGES

All tested items included in the NEBB TAB Report shall be clearly identified with a unique designation. The method of identification may use schematic diagrams, mechanical plans where permissible, or a narrative description. Each data form supplied in a NEBB TAB Report shall include the name of the responsible technician / NEBB Qualified TAB Supervisor who reported the information, and the time period the data was collected.

Shall Data: Project name. All pages shall be numbered consecutively.

May Data: Remarks section to record any information pertinent to the data reported on the data sheet.

5.2.6 INSTRUMENT CALIBRATION

This is a listing of the instruments that will be used to verify the reported data.

Shall Data:

Instrument type	Instrument serial Number
Instrument manufacturer	Instrument calibration Date
Instrument model Number	Dates of use

5.2.7 ABBREVIATIONS

This is a list of definitions of the relevant abbreviations used in the report.

Shall Data: A listing of all abbreviations and their definition as used in the report.

5.3 AIR HANDLING UNIT TEST DATA (CENTRAL STATION)

Shall Design / Submittal Data:

Unit designation	Fan rpm
Manufacturer	Fan motor HP (kW)
Model number	Fan motor rpm
Total design airflow	Fan motor voltage
Total outlet airflow	Fan motor phase
Outside airflow	Total SP or External SP

Shall Actual / Test Data:

Unit serial number	Fan motor rated voltage
Supply airflow	Fan motor rated amperage
Return airflow	Fan motor service factor
Outside airflow	Fan motor operating voltages
Total suction SP	Fan motor operating amperages
Total discharge SP	Motor sheave OD / bore
Total SP	Fan sheave OD / bore
Fan motor HP (kW)	Sheave centerline distance
Fan motor rpm	Fan rpm
Fan motor operating HZ	Number belts / size

Should Design / Submittal Data:

Unit type / size / arrangement / class	
External SP	

Should Actual / Test Data:

Fan motor manufacturer	External discharge SP
Fan motor frame	External suction SP
External SP	All coil and filter pressure drops (ΔP)

May Design / Submittal Data:

Fan discharge position	
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May Actual / Test Data:

Sheave manufacturer	Fan motor no load amperages
Belt manufacturer	Fan motor BHP (kW)
Supply airflow in economizer mode	Number filters / type / size
Fan motor amperage in economizer mode	Adjustable sheave operating diameter

5.4 AIR HANDLING UNIT TEST DATA (PACKAGE / UNITARY BELT DRIVE)

Shall Design / Submittal Data:

Unit designation	Fan rpm
Manufacturer	Fan motor HP (kW)
Model number	Fan motor rpm
Total design airflow	Fan motor voltage
Total outlet airflow	Fan motor phase
Outside airflow	Total SP or External SP

Shall Actual / Test Data:

Unit serial number	Fan motor rated voltage
Supply airflow	Fan motor rated amperage
Return airflow	Fan motor service factor
Outside airflow	Fan motor operating voltages
External suction SP	Fan motor operating amperages
External discharge SP	Motor sheave OD / bore
External SP	Fan sheave OD / bore
Fan motor HP (kW)	Sheave centerline distance
Fan motor rpm	Fan rpm
Fan motor operating HZ	Number belts / size

Should Design / Submittal Data:

Unit type / size / arrangement / class	External SP
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Should Actual / Test Data:

Fan motor manufacturer	Fan motor frame
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May Actual / Test Data:

Sheave manufacturer	Fan motor no load amperages
Belt manufacturer	Fan motor BHP (kW)
Supply airflow in economizer mode	Number filters / type / size
Fan motor amperage in economizer mode	All coil and filter pressure drops (ΔP)
	Adjustable sheave operating diameter

5.5 AIR HANDLING UNIT TEST DATA (PACKAGE / UNITARY DIRECT DRIVE)

Shall Design / Submittal Data:

Unit designation	Fan rpm
Manufacturer	Fan motor HP (kW)
Model number	Fan motor voltage
Total design airflow	Fan motor phase
Total outlet airflow	Total SP or External SP
Outside airflow	

Shall Actual / Test Data:

Unit serial number	Fan motor HP (kW)
Supply airflow	Fan rpm or speed setting
Return airflow	Fan motor rated voltage
Outside airflow	Fan motor rated amperage
External suction SP	Fan motor service factor
External discharge SP	Fan motor operating voltages
External SP	Fan motor operating amperages
	Fan motor operating HZ

May Design / Submittal Data:

Fan motor BHP (kW)	
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May Actual / Test Data:

Fan motor manufacturer	Fan motor amperage in economizer mode
Fan motor calculated BHP (kW)	All coil and filter pressure drops (ΔP)
Supply airflow in economizer mode	Number filters / type / size

5.6 FAN TEST DATA (BELT DRIVE)

Shall Design / Submittal Data:

Unit designation	Fan rpm
Type of service	Fan motor HP (kW)
Manufacturer	Fan motor rpm
Model number	Fan motor voltage
Total design airflow	Fan motor phase
Total outlet airflow	Total SP or External SP

Shall Actual / Test Data:

Unit serial number	Fan motor service factor
Total airflow	Fan motor operating voltages
Suction SP	Fan motor operating amperages
Discharge SP	Motor sheave OD / bore
TSP or ESP	Fan sheave OD / bore
Fan motor HP (kW)	Sheave centerline distance
Fan motor rpm	Fan rpm
Fan motor rated voltage	Number belts / size
Fan motor rated amperage	Fan motor operating HZ

Should Design / Submittal Data:

Unit type / size / arrangement / class	External SP
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Should Actual / Test Data:

Fan motor manufacturer	
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May Actual / Test Data:

Sheave manufacturer	Fan motor no load amperages
Belt manufacturer	Fan motor calculated BHP (kW)
All filter pressure drops (ΔP)	Adjustable sheave operating diameter

5.7 FAN TEST DATA (DIRECT DRIVE)

[Required for fans of 1/6 HP (125 W) and greater]

Shall Design / Submittal Data:

Unit designation	Total SP or External SP
Type of service	Fan speed
Manufacturer	Fan motor HP (kW)
Model number	Fan motor voltage
Total design airflow	Fan motor phase
Total outlet airflow	

Shall Actual / Test Data:

Unit serial number	Fan rpm or speed setting
Total airflow	Fan motor rated voltage
Suction SP	Fan motor rated amperage
Discharge SP	Fan motor operating voltages
Total SP or External SP	Fan motor operating amperages
Fan motor HP (kW)	Fan motor operating HZ

Should Design / Submittal Data:

Unit type / size / arrangement / class	External SP
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Should Actual / Test Data:

Fan motor manufacturer	
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May Actual / Test Data:

All filter pressure drops (ΔP)	Fan motor calculated BHP (kW)
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5.8 FAN TEST DATA (DIRECT DRIVE)

[Required for fans less than 1/6 HP (125 Watts)]

Shall Design / Submittal Data:

Unit designation	Model number
Type of service	Total design airflow
Manufacturer	

Shall Actual / Test Data:

Total airflow	
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5.9 AIR OUTLET TEST DATA (ALL)

Shall Design / Submittal Data:

System designation Outlet number Area served Size	Design airflow System total design airflow Code or type
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Shall Actual / Test Data:

Final velocity (when Ak ≠1.0) Ak factor (when Ak ≠1.0)	Final airflow
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May Actual / Test Data

First test reading	Instrument used for testing
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5.10 VARIABLE VOLUME TERM. TEST DATA (PRESSURE DEPENDENT)

Shall Design / Submittal Data:

VAV terminal designation Terminal type Size	Design maximum airflow Minimum design cooling airflow Heating design airflow
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Shall Actual / Test Data:

Final maximum airflow Final minimum cooling airflow Final heating airflow	<i>Include connected Grille, Register, and Diffuser data for each VAV address</i>
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May Actual / Test Data:

First test reading	Instrument used for testing
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5.11 VARIABLE VOLUME TERM. TEST DATA (PRESSURE INDEPENDENT)

Shall Design / Submittal Data:

VAV terminal designation Terminal type Size	Design maximum airflow Minimum design cooling airflow Heating design airflow
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Shall Actual / Test Data:

Final maximum airflow Final minimum cooling airflow Final heating airflow DDC flow correction / calibration factor(s) (where available) DDC max / min flows (where available)	<i>Include connected Grille, Register, and Diffuser data for each VAV address</i>
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May Actual / Test Data:

First test reading	Instrument used for testing
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5.12 FAN POWERED TERMINAL TEST DATA (PRESSURE DEPENDENT)

Shall Design / Submittal Data:

VAV terminal designation Primary maximum airflow Primary minimum airflow(s)	Terminal type Size Fan airflow
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Shall Actual / Test Data:

Final maximum airflow Final minimum cooling airflow Final primary heating airflow Fan airflow	Fan speed (High, Medium, Low, Variable etc.) Include connected Grille, Register, and Diffuser data for each VAV address
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May Actual / Test Data:

First test reading	Instrument used for testing
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5.13 FAN POWERED TERMINAL TEST DATA (PRESSURE INDEPENDENT)

Shall Design / Submittal Data:

VAV terminal designation Primary maximum airflow Primary minimum airflow(s) Fan airflow	Terminal type Size DDC address
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Shall Actual / Test Data:

Final maximum airflow Final minimum cooling airflow Final primary heating airflow Fan airflow Fan speed (High, Medium, Low, Variable etc.)	Include connected Grille, Register, and Diffuser data for each VAV address DDC flow correction / calibration factor(s) (where available) DDC max / min flows (where available)
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May Actual / Test Data:

First test reading	Instrument used for testing
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5.14 DUCT TRAVERSE TEST DATA

Shall Design / Submittal Data:

System designation Traverse designation Location	Design airflow Duct size, I.D. (width, height, diameter) Duct area
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Shall Actual / Test Data:

Average velocity in duct Duct airflow	Static pressure at traverse location. Instrumentation used to measure flow
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May Actual / Test Data:

Velocity readings (presented in grid form to represent location in duct) Altitude	Duct air temperature Correction factor
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5.15 HYDRONIC PUMP TEST DATA

Shall Design / Submittal Data:

Unit designation Type of service Manufacturer Motor HP (kW) Impeller size	Model number / size Design flow Design head Pump / Motor RPM
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Shall Actual / Test Data:

Unit serial number Motor manufacturer Motor HP (kW) Pump / Motor rpm Motor operating voltages Motor rated amperage Motor running load amperages Motor operating HZ	No flow suction pressure No flow discharge pressure No flow head Impeller diameter Final suction pressure Final discharge pressure Total dynamic head Final flow
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May Actual / Test Data:

Motor calculated BHP (kW) Calculated water HP (kW)	Calculated pump efficiency Static fill pressure
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5.16 HYDRONIC BALANCING VALVE TEST DATA (FIXED OR ADJUSTABLE ORIFICE)

Shall Design / Submittal Data:

Unit designation Service Manufacturer	Model number Size Flow
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Shall Actual / Test Data:

Dial setting ΔP	Flow
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5.17 HYDRONIC BALANCING VALVE TEST DATA (SELF-ADJUSTING)

Shall Design / Submittal Data:

Unit designation Service Manufacturer Model number	Size Flow Operating pressure range
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Shall Actual / Test Data:

ΔP	Flow
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5.18 ULTRASONIC FLOW MEASUREMENT TEST DATA

Shall Design / Submittal Data:

Reading designation Service	Location Flow
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Shall Actual / Test Data:

Pipe size Transducer size Spacing distance Application	Pipe material Pipe wall thickness Water flow
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5.19 COOLING COIL TEST DATA (HYDRONIC)

Shall Design / Submittal Data:

Coil designation System served Coil location	Water flow Airflow
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Shall Actual / Test Data:

Final airflow	Water flow
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May Design / Submittal Data:

Coil manufacturer Model number Airside face area Entering air DB / WB temperature Leaving air DB / WB temperature Airside sensible MBH (kW) Airside total MBH (kW) Airside ΔP	Airside face velocity Number of rows Number fins per inch (cm) Entering water temperature Leaving water temperature Waterside total MBH (kW) Waterside ΔP
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May Actual / Test Data:

Entering air DB / WB temperature Leaving air DB / WB temperature Entering air enthalpy Leaving air enthalpy Calculated airside sensible MBH (kW) Calculated airside total MBH (kW) Airside face velocity	Entering water temperature Leaving water temperature Waterside ΔT Waterside ΔP Calculated waterside total MBH (kW) Airside ΔP
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5.20 COOLING COIL TEST DATA (DX)

Shall Design / Submittal Data:

Coil designation System served	Airflow Coil location
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Shall Actual / Test Data:

Final airflow	
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May Design / Submittal Data:

Entering air DB / WB temperature Leaving air DB / WB temperature Airside total MBH (kW) Coil manufacturer Model number Airside face area	Airside ΔP Airside sensible MBH (kW) Airside face velocity Number of rows Number fins per inch (cm)
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May Actual / Test Data:

Entering air DB / WB temperature Leaving air DB / WB temperature Entering air enthalpy Leaving air enthalpy	Calculated airside sensible MBH (kW) Calculated airside total MBH (kW) Airside ΔP Airside face velocity
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5.21 HEATING COIL TEST DATA (HYDRONIC)

Shall Design / Submittal Data:

Coil designation System served Coil location	Water flow Airflow
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Shall Actual / Test Data:

Final airflow	Final water flow
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May Design / Submittal Data:

Entering air DB temperature Leaving air DB temperature Airside total MBH (kW) Airside ΔP Coil manufacturer Model number Airside face area	Entering water temperature Leaving water temperature Waterside total MBH (kW) Waterside ΔP Airside face velocity Number of rows Number fins per inch (cm)
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May Actual / Test Data:

Entering air DB temperature Leaving air DB temperature Calculated airside total MBH (kW) Airside ΔP Airside face velocity	Entering water temperature Leaving water temperature Waterside ΔT Waterside ΔP Calculated waterside total MBH (kW)
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5.22 HEATING COIL TEST DATA (STEAM)

Shall Design / Submittal Data:

Coil designation System served	Airflow Coil location
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Shall Actual / Test Data:

Final airflow	
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May Design / Submittal Data:

Entering air DB temperature Leaving air DB temperature Coil manufacturer Model number Airside face area	Airside total MBH (kW) Airside ΔP Airside face velocity Number of rows Number fins per inch (cm)
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May Actual / Test Data:

Entering air DB temperature Leaving air DB temperature Airside ΔP	Airside total MBH (kW) Airside face velocity
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5.23 HEATING COIL TEST DATA (ELECTRIC)

Shall Design / Submittal Data:

Coil designation System served Coil location	KW Voltage / Phase
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Shall Actual / Test Data:

Final airflow Voltages	Amperages
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May Design / Submittal Data:

Airside total MBH (kW) Number of Stages	Airside ΔP
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May Actual / Test Data:

Entering air DB temperature Leaving air DB temperature Airflow	Calculated airside total MBH Calculated KW Airside ΔP
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5.24 CHILLER TEST DATA (WATER COOLED)

Items not included below are outside the scope of TAB responsibilities

Shall Design / Submittal Data:

Unit designation Manufacturer Model number Evaporator water flow	Evaporator ΔP Condenser water flow Condenser water ΔP
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Shall Actual / Test Data:

Unit serial number Evaporator water flow Evaporator water ΔP	Condenser water flow Condenser water ΔP
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May Actual / Test Data:

Evaporator entering water temperature Evaporator leaving water temperature Evaporator ΔT	Condenser entering water temperature Condenser leaving water temperature Condenser ΔT
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5.25 CHILLER TEST DATA (AIR COOLED)

Items not included below are outside the scope of TAB responsibilities

Shall Design / Submittal Data:

Unit designation Manufacturer Model number	Evaporator water ΔP Evaporator water flow
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Shall Actual / Test Data:

Unit serial number Evaporator water flow	Evaporator water ΔP
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May Actual / Test Data:

Evaporator entering water temperature Evaporator leaving water temperature	Evaporator ΔT
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5.26 COMPRESSOR / CONDENSER TEST DATA

Testing of these components is outside the scope of TAB services.

5.27 COOLING TOWER TEST DATA

Shall Design / Submittal Data:

Unit designation Manufacturer	Water flow Model number
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Shall Actual / Test Data:

Unit serial number	Water flow
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May Design / Submittal Data:

Entering water temperature Leaving water temperature	Water ΔT Water ΔP
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May Actual / Test Data:

Entering water temperature Leaving water temperature	Water ΔT Water ΔP
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5.28 HOT WATER BOILER TEST DATA

The testing of burner sections, burner / fuel controls, safety controls, and combustion gases are outside the scope of TAB services.

Shall Design / Submittal Data:

Unit designation Manufacturer Model number	Water flow Water ΔP
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Shall Actual / Test Data:

Unit serial number Water flow	Water ΔP
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May Actual / Test Data:

Entering water temperature Leaving water temperature	Water ΔT
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5.29 HEAT EXCHANGER TEST DATA (WATER TO WATER)

Shall Design / Submittal Data:

Unit designation Location Service Manufacturer Model number	Primary water flow Primary water ΔP Secondary water flow Secondary water ΔP
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Shall Actual / Test Data:

Unit serial number Primary water flow Primary water ΔP	Secondary water flow Secondary water ΔP
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May Design / Submittal Data:

Primary entering water temperature Primary leaving water temperature Primary water ΔT	Secondary entering water temperature Secondary leaving water temperature Secondary water ΔT
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May Actual / Test Data:

Primary entering water temperature Primary leaving water temperature Primary water ΔT	Secondary entering water temperature Secondary leaving water temperature Secondary water ΔT
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5.30 HEAT EXCHANGER TEST DATA (STEAM TO WATER)

Shall Design / Submittal Data:

Unit designation Location Service Manufacturer	Model number Water flow Water ΔP
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Shall Actual / Test Data:

Unit serial number Water flow	Water ΔP
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May Design / Submittal Data:

Water entering temperature Water leaving temperature	Water ΔT
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May Actual / Test Data:

Water entering temperature Water leaving temperature	Water ΔT
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5.31 ENERGY RECOVERY WHEELS

Shall Design / Submittal Data:

Unit designation Location Service Manufacturer Model number	Primary airflow Primary air ΔP Secondary airflow Secondary air ΔP
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Shall Actual / Test Data:

Unit serial number Primary airflow Primary air ΔP	Secondary airflow Secondary air ΔP
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May Design / Submittal Data:

Primary entering air temperatures Primary leaving air temperatures Primary air ΔT	Secondary entering air temperatures Secondary leaving air temperatures Secondary air ΔT
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May Actual / Test Data:

Primary entering air temperatures Primary leaving air temperatures Primary air ΔT	Secondary entering air temperatures Secondary leaving air temperatures Secondary air ΔT
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5.32 DUCT AIR LEAKAGE TEST DATA (OPTIONAL)

Duct Leakage testing is outside the scope of the NEBB Procedural Standards. If duct leakage testing is required of the NEBB Certified TAB Firm by the Contract Documents, the work should be performed in accordance with SMACNA Standards.

Design / Submittal Data:

System designation	Pressure class
Service	Seal class
Location / zone	Airflow volume
Altitude	Surface area
Density	Airflow per surface-factor
Leakage class	Percent allowable leakage
Design static pressure	

Actual / Test Data:

Test static pressure	Test section percent air leakage
Test section air leakage	Test witnesses