



# Pre-Functional Checklist

## BOILER: BO-XXX

**PROJECT:**

**PROJECT NUMBER:**

**REPORT ID:**

**EQUIPMENT DESCRIPTION:** Boiler

**TAG NO:** BO-XXX

**LOCATION:**

This Pre-Functional Checklist is used during the Performance Assurance Process to insure the correct equipment is delivered, installed and properly started in preparation for Functional Testing of related building systems. This checklist does not take the place of the Manufacturer's recommended checkout and startup procedures.

This Checklist is divided into 6 Sections and is to be completed by the Contractor in 6 separate steps. When completing each Section, be sure to check and initial EACH line item as being completed. Each Section's items must ALL be checked complete and initialed before the form is submitted to the PAC. Any item which does not apply can be marked as "N/A" in the initial section. **If this form is not used for documenting, one approved by NMPSFA of similar rigor shall be used.**

This filled-out checklist has been reviewed with the exceptions noted below.

**COMMENTS:**



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### 2. Requested documentation submitted

Check if Okay. Enter comment or note number if deficient.

Check	Equip Tag->	Boiler BO-XXX	Contr.
Manufacturer's cut sheets			
Performance data (fan curves, coil data, etc.)			
Installation and startup manual and plan			
Sequences and control strategies			
Point-to-Point checklist			
O&M manuals			

- *Documentation complete as per contract documents* .....  YES  NO

### 3. Model verification

Equip Tag--->	Boiler BO-XXX
Manuf.	
Submitted	
Installed	
Model	
Submitted	
Installed	
Serial #	
Capacity	
Submitted	
Installed	
Pressure	
Submitted	
Installed	
Temp	
Submitted	
Installed	
Volts/Ph/A	
Submitted	
Installed	
Other	
Submitted	
Installed	

- *The equipment installed matches the specifications for given trade* .....  YES  NO



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## BOILER: BO-XXX

### 4. Physical Installation Checks

Check if Okay. Enter comment or note number if deficient.

Check	Equip Tag->	Boiler #1	Boiler #2	Boiler #3	Contr.
<b>General Installation</b>					
General appearance good, no apparent damage					
Site sufficiently clean for testing					
Equipment labels affixed					
Tube pulling, and access door space adequate					
Required seismic restraints in place					
Flue completely installed and sloped properly					
Flue lagging installed properly					
Combustion air supply complete					
System filled					
Thermometers installed					
Pressure gages installed					
P/T plugs installed as per drawings					
Multiple boiler interlocks completed and functional					
Aqueous ammonia system complete					

<b>Piping</b>					
Gas piping installed and tested (supply is at proper pressure)					
Hydronic piping complete, including blow-down system, condensate system, makeup water piping and safety reliefs					
Hydronic system flushing complete and strainers cleaned					
Steam piping complete, including steam condenser, strainers, and safety reliefs					
Isolation valves and balancing valves installed					
Cooling Tower installation complete, including pumps and strainers.					
Pipe fittings and accessories complete					
Test ports installed near all control sensors and per spec					
Flow switch installed as required					
Flow meters installed as required					
Piping type and flow direction labeled on piping					
Chemical treatment system and/or plan installed					
ASME pressure vessel data sheet or certification tag posted and inspection complete for each expansion tank					
Expansion tanks verified to not be air bound and system completely full of water					
Operating Instructions Posted at unit; automatic, manual, emergency					
Ammonia system piping complete					
Air vents and bleeds at high points of systems functional					
<b>Electrical and Controls</b>					
Power to unit and disconnect installed in close proximity					



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Check if Okay. Enter comment or note number if deficient.

Check	Equip Tag->	Boiler #1	Boiler #2	Boiler #3	Contr.
Electrical Verified: Source Panel, Panel Location, Circuit (List in Comments above)					
All electrical components grounded					
Sensors calibrated (see below)					
Control system interlocks hooked up and functional					
All control devices, pneumatic tubing and wiring complete					
Motorized valves, dampers and float switches functional					
Fire / smoke sensing, alarm, and suppression components functional					

Final					
Static Startup checklist completed with this checklist attached					
Startup report includes written certification from boiler manufacturer that all specified features, controls and safeties have been installed and are functioning properly and that the installation and application comply with the manufacturer's recommendations.					
Safeties installed and safe operating ranges for this equipment provided to the commissioning agent					
Steam piping, pressure regulators, and isolation valves pre-functional checklists completed					
Boiler Pre-start Checklist complete-Heery form <b>B-02 (must be completed before continuing)</b>					
Boiler Boil-Out complete					

- **The checklist items of Part 4 are all successfully completed for given trade.** \_\_\_ YES \_\_\_ NO

**5. Operational Checks** (These augment mfr's list. This is not the functional performance testing.)  
 Check if Okay. Enter comment or note number if deficient.

Check	Equip Tag->	Boiler #1	Boiler #2	Boiler #3	Contr.
Boiler safeties energized and tested					
Startup report includes optimal and actual percent CO <sub>2</sub> , CO, O <sub>2</sub> , NOX, VOC, Ammonia, stack temperature, and combustion efficiency					
Specified sequences of operation and operating schedules have been implemented with all variations documented					
Specified point-to-point checks have been completed and documentation record submitted for this system					
Start-up report includes all operating temperatures and pressures for all modes of operation.					
Boiler Capacity Recorded					
Fuel consumption rate recorded					

- **The checklist items of Part 5 are all successfully completed for given trade.** \_\_\_ YES \_\_\_ NO



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**6. Sensor and Actuator Calibration**

All installed temperature, relative humidity, emissions, and pressure sensors & gages - all actuators (dampers and valves) on the boiler equipment shall be calibrated using the methods and tolerances given in the specification / design documentations. All test instruments shall have had a certified calibration within the last 6 months: Y/N \_\_\_\_\_. All sensors including those installed at the factory shall be field calibrated.

Sensor or Actuator Identification	Location OK	Test instrument Measured Value	Local gage / meter Value	Preliminary BMS Display Value	Final BMS Display Value	BMS Display Offset Used	% of Accuracy Throughout Operational Range	Pass Y/N?

Gage reading = reading of the permanent gage on the equipment. BAS = building automation system. Test instrument = Certified Calibrated test equipment. Visual = actual observation. The Contractor’s own sensor check-out sheets may be used in lieu of the above, if the same recording fields are included and the referenced procedures are followed.

**ALL FIELDS MUST BE ENTERED. NO BLANKS. IF NOT INVOLVED, N/A.**

RESPONSIBLE PARTY	VERIFIED BY (Name)	COMPANY	DATE
<b>Mechanical Contractor</b>			
<b>Plumbing Contractor</b>			
<b>General Contractor</b>			
<b>Controls Contractor</b>			
<b>Electrical Contractor</b>			



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**BOILER: BO-XXX**

<b>PAC Consultant</b>			
<b>NMPSFA RFM</b>			
<b>Manufacturer Rep.</b>			

-- END OF CHECKLIST --