



Building Analyst Field Guide

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Fuel Delivery

Correctly inspected gas / propane system for leaks, potential problems
 Appropriate locations checked and speed checking
 Identified pre-1973 flexible lines, kinks, corrosion
 Proper location of the fuel storage tank if present
 Mentioned method of verifying significant gas / propane leak (bubble solution) - ask
 Looked for visual signs of oil leaks, proper installation of fuel line to avoid damage, line, filter

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Combustion Safety Tests

Correctly identified heating / cooling system types
 e.g., Atmospheric, sealed combustion, power vented, etc
 Correctly identified basic heating / cooling system operating components
 e.g., burner, valves, supply, return, etc
 Visual inspection of venting system for problems
 Determined condition accurately
 Identified existing heating/cooling system components safety concerns
 e.g. P&T valve, blow off discharge, fire hazards, exposed wires
 Set up for natural conditions
 Proper manometer setup
 Correctly measured baseline pressure differential
 Correctly setup home in worst case condition
 All exhaust appliances running
 Correct door closures - measured quantitatively or qualitatively
 Air handler operation impact checked
 Correctly measured worst-case CAZ depressurization
 Took into account baseline pressure differential
 Calculated minimum draft pressure based on existing weather conditions
 Checked for worst case spillage in heating system
 method used_e.g., mirror, smoke, etc
 Checked for worst case spillage in DHW
 method used_e.g., mirror, smoke, etc
 Correctly identified time limits for spillage based on BPI Standards – Ask candidate
 Correctly determined if the appliance passes the spillage test
 What steps should be taken if it does not pass
 Performed worst case draft test on heating system
 Proper probe placement
 Performed worst case draft test on DHW
 Proper probe placement
 Candidate performed testing under natural conditions (use sections above to assess)
 (only necessary if spillage detected under worst case)
 Made appropriate recommendations according to BPI standards (using right table)
 Compared diagnostic results to appropriate table in the standards
 Identified the need for further evaluation when other combustion sources exist
 (fireplace, space heater, etc)

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CO Testing

Tested ambient CO outdoors

Properly interpreted measurements

Tested ambient CO indoors

Properly interpreted measurements

Measured heating system flue gas CO during combustion safety testing

- Proper probe placement, before mixing with ambient air, appropriate to venting type

Measured DHW flue gas CO during combustion safety testing

- Proper probe placement, before mixing with ambient air

Appropriate application of BPI action levels based on test results for CO in flue

Correctly identified Action Levels based on worst case CO results – Ask candidate

Monitored ambient CO levels in the CAZ during entire combustion safety tests

Tested for CO in oven

Checked for items, excessive debris inside oven

Oven test sampling location appropriate

Appropriate application of BPI action levels based on test results for CO in oven

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Duct system inspection

Properly identified supplies and returns

Indicated the need to check condition of filter

Identified areas of significant leakage

Determined duct insulation needs

Made appropriate recommendations on insulation levels based on BPI standards

Mentioned need for additional testing of the duct system

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Alternate - Hydronic – Steam distribution inspection

Determined locations of supply and return piping

Determined piping insulation levels and

Made appropriate recommendations on insulation levels based on BPI standards

Checked distribution system for leaks

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Infiltration Evaluation

Combustion appliances set to pilot or disabled

Proper set-up of the blower door frame/shroud/fan

Proper set-up of the manometer

Proper house set-up for testing

Correctly measured baseline pressure differential

Accurate CFM50 measurement

Measured existing ventilation fan flow

Discussed ventilation needs in relation to existing fans

Conducted sample room by room inspection with blower door running

Recommended air sealing appropriately

Mentioned: Top plates and penetration through top and bottom floor

Recommended mechanical ventilation appropriately

Mentioned need for further pressure differential testing as appropriate

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General home investigation

Determined insulation levels and effectiveness in attics / knee walls

Determined insulation levels and effectiveness in basements / crawlspaces

Discussed methodology used to determine the insulation levels within the exterior walls

Identified bypasses low and high in the building

Identified areas of potential bypasses

Identified air barrier/thermal boundary alignment issues

Inspected doors for fit and performance

Inspected windows for fit and performance

Discussed heat loss / savings potentials and understands implications

Indicated areas of heat loss, discussed benefits of adding insulation / airsealing, etc

Discussed fossil fuel/electric consumption based on initial observations

Inefficient heating /cooling / DHW equipment, water consumption, electrical use, etc

Identified need for utility usage review

Identified moisture problems and made appropriate recommendations

Identified IAQ problems and made appropriate recommendations

e.g. exposed fiber glass in occupied spaces, etc

Identified fire hazards and/or VOC pollutants

Identified major electric appliance upgrade opportunities

Identified significant lighting upgrade opportunities

Mentioned: CFL's, motion switches, etc

Discussed methods for verifying electrical efficiency improvements

Discussed important fuel-switching opportunities (including use of renewable energy)

Use of less expensive fuels, possibility of renewable sources, etc

Identified the need for low flow water consuming devices

Mentioned: aerators, low flow toilets, etc

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DHW Inspection

Correctly identified DHW type

Checked condition of basic safety controls

Discussed appliance condition

Identified additional DHW energy-saving measures as appropriate

e.g. lowering temperature, tank insulation, pipe insulation, tank upgrade, timer, etc

Notes: