

Report of Inspection, Testing & Maintenance of Fire Pump Assemblies



ALL QUESTIONS ARE TO BE ANSWERED AND ALL BLANKS TO BE FILLED
(Weekly inspection tasks are NOT included in this report)

Inspecting Firm: _____ Inspection Contract# _____

Name of Inspected Property: _____

Inspector Name: _____ Date: _____

Inspection Frequency: Monthly Quarterly Annually Other

**Items necessary only in the absence of manufacturer's recommendations*

Monthly Inspection, Testing and Maintenance for Fire Pump Assemblies				
	Y	N/A	N	
A.1.0 System in service before conducting tasks				
A.1.1 Pertinent parties notified before conducting tasks				
A.2.0 Control valves in normal open or closed position				
A.2.1 Control valves properly locked or supervised				
A.2.2 Control valves accessible				
A.2.3 Control valves provided with appropriate wrenches				
A.2.4 Control valves free from external leaks				
A.2.5 Control valve identification signs in place				
A.2.6 Control valve sign indicates area served				
A.3.0 Backflow prevention assembly valves are locked or electrically supervised in open position				
A.3.1 Reduced pressure backflow prevention assembly not in continuous discharge				
A.4.0 *Battery case visually inspected				
A.4.1 *Battery case corrosion removed				
A.4.2 *Battery case exterior cleaned and dried				
A.4.3 *Battery case changed as necessary				
A.4.4 *Battery system tested for specific gravity or state of charge				
A.4.5 *Battery system charger and charge rate operational, normal, and equalized				
A.4.6 *Circuit breakers or fuses checked				
A.5.0 *Isolating switch exercised				
A.5.1 *Circuit breaker exercised				
A.6.0 Fire pump assembly maintenance performed in accordance with mfg. recommendations				
A.7.0 Pertinent parties notified of completion of tasks				
A.8.0 ALARM PANEL CLEAR				
A.9.0 SYSTEM RETURNED TO SERVICE				
A.10.0 COMMENTS:				

Quarterly Inspection for Fire Pump Assemblies				
	Y	N/A	N	
B.1.0 System in service on inspection				
B.2.0 FDC is visible				
B.2.1 FDC is accessible				
B.2.2 FDC swivels/couplings undamaged/rotate smoothly				
B.2.3 FDC plugs/caps in place/undamaged				
B.2.4 FDC gaskets in place and in good condition				
B.2.5 FDC identification sign in place				
B.2.6 FDC check valve not leaking				
B.2.7 FDC automatic drain valve in place and operating properly				
B.2.8 FDC clapper is in place and operating properly				
B.2.9 FDC interior inspected where caps missing				
B.2.10 FDC obstructions removed as necessary				
B.3.0 Pressure control valve (PRV) not leaking				
B.3.1 Pressure control valve maintaining downstream pressure per design				
B.3.2 Pressure control valve in good condition				
B.4.0 *Crankcase breather inspected and in good condition				
B.4.1 *Engine exhaust system insulation in place				
B.4.2 *Engine exhaust system fire hazard safeguards in place				
B.4.3 *Battery system terminals clean and tight				
B.4.4 *Electrical wiring subject to movement free from chafing				
B.5.0 Fire pump assembly maintenance performed in accordance with mfg. recommendations				
B.6.0 ALARM PANEL CLEAR				
B.7.0 COMMENTS:				

Quarterly Testing and Maintenance for Fire Pump Assemblies				
	Y	N/A	N	
C.1.0 System in service before conducting tasks				
C.1.1 Pertinent parties notified before conducting tasks				
C.2.0 Adequate drainage provided before flow testing				
C.2.1 One main drain test conducted downstream from backflow preventer				
C.2.2 One main drain test conducted downstream from pressure reducing valve				
C.2.2 Supply water gauge reading before flow (static) _____ psi				
C.2.3 Gauge reading during stable flow (residual) _____ psi				
C.2.4 Time for supply pressure to return to normal _____ sec				
C.3.0 *Strainer, filter, or dirt leg (or combination thereof) cleaned				
C.3.1 *Crankcase breather cleaned (as necessary)				
C.3.2 *Crankcase breather changed (as necessary)				
C.3.3 *Water strainer cleaned				
C.4.0 Fire pump assembly maintenance performed in accordance with mfg. recommendations				
C.5.0 Pertinent parties notified of task conclusion				
C.6.0 ALARM PANEL CLEAR				
C.7.0 SYSTEM RETURNED TO SERVICE				
C.8.0 COMMENTS:				

INSPECTOR'S INITIAL _____ (All "NO" answers to be explained.) OWNER/DESIGNATED REP. INITIAL _____ DATE _____

REV. 3/03

Report of Inspection, Testing & Maintenance of Fire Pump Assemblies...continued

Inspecting Firm: _____ Inspection Contract# _____

Name of Inspected Property: _____

Inspector Name: _____ Date: _____

Inspection Frequency: Monthly Quarterly Annually Other

**Items necessary only in the absence of manufacturer's recommendations*

Semi-Annual Inspection, Testing and Maintenance for Fire Pump Assemblies							
	Y	N/A	N		Y	N/A	N
D.1.0 System in service before conducting tasks				D.4.1 *Manual starting means of electrically driven pumps operated			
D.1.1 Pertinent parties notified before conducting tasks				D.4.2 *Antifreeze protection level tested and adjusted as necessary			
D.2.0 Control valve supervisory switches initiate distinct signal during first two hand wheel revolutions or before valve stem moved one-fifth from normal position				D.4.3 *Electrical system safeties and alarms operated			
D.2.1 Signal restored only when valve returned to normal position				D.4.4 *Electrical system boxes, panels, and cabinets cleaned			
D.3.0 Adequate drainage provided before flow testing				D.5.0 Fire pump assembly maintenance performed in accordance with mfg. recommendations			
D.3.1 Main drain test conducted				D.6.0 Pertinent parties notified of task conclusion			
D.3.2 Supply water gauge reading before flow (static) _____ psi				D.7.0 ALARM PANEL CLEAR			
D.3.3 Gauge reading during stable flow (residual) _____ psi				D.8.0 SYSTEM RETURNED TO SERVICE			
D.3.4 Time for supply pressure to return to normal _____ sec				D.9.0 COMMENTS:			
D.4.0 *Flexible exhaust section inspected and in good condition							

Annual Inspection for Fire Pump Assemblies			
E.1.0 System in service on inspection			
E.2.0 Hangers and seismic bracing appear undamaged and tightly attached			
E.3.0 Piping appears free of mechanical damage			
E.3.1 Piping appears free of leakage			
E.3.2 Piping appears free of corrosion			
E.3.3 Piping appears properly aligned			
E.3.4 Piping appears free of external loading			
E.4.0 Building is secure such as not to expose piping to freezing conditions (prior to freezing weather)			
E.4.1 Adequate heat is provided maintaining temperatures at 40°F or higher (prior to freezing weather)			
E.5.0 *Pump shaft end play within specified tolerances			
E.5.1 *Pressure gauge and sensor accuracy verified to be within 5%			
E.5.2 *Pump coupling alignment within specified tolerances			
E.5.3 *Electrical connections tightened as necessary			
E.5.4 *Mechanical moving parts lubrication verified (excluding starters and relays)			
E.5.5 *Pressure switch setting calibration verified			
E.5.6 *Fuel tank vents and overflow piping free from obstructions			
E.5.7 *Fuel piping in good condition			
E.5.8 *Combustion air ductwork and louvers in good condition			
E.5.9 *Exhaust system hangers and supports in place and in good condition			
E.5.10 *Electrical control and power wiring connections checked for tightness			
E.6.0 Fire pump assembly maintenance performed in accordance with mfg. recommendations			
E.7.0 ALARM PANEL CLEAR			
E.8.0 COMMENTS:			

Annual Maintenance for Fire Pump Assemblies			
F.1.0 System in service before conducting maintenance			
F.2.0 Pertinent parties notified before conducting maintenance			
F.3.0 Operating stems of OS&Y (including backflow) valves lubricated			
F.3.1 Valve completely closed and reopened			
F.4.0 Adequate drainage provided before flow testing			
F.4.1 Main drain test conducted			
F.4.2 Supply water gauge reading before flow (static) _____ psi			
F.4.3 Gauge reading during stable flow (residual) _____ psi			
F.4.4 Time for supply pressure to return to normal _____ sec			
F.5.0 Fire pump assembly maintenance performed in accordance with mfg. recommendations			
F.5.1 *Pump bearing lubricated			
F.5.2 *Gauges recalibrated or changed (when 5% or more out of calibration)			
F.5.3 *Wet pit suction screens checked (cleaned as necessary) after every operation			
F.5.4 *Mechanical transmission coupling lubricated			
F.5.5 *Mechanical transmission right-angle gear drive lubricated			
F.5.6 *Electric drive motor bearings lubricated			
F.5.7 *Fuel tank voided of water and foreign material			
F.5.8 *Diesel engine lubrication system oil and filter changed (or 50 hrs whichever comes first)			
F.5.9 *Diesel engine cooling system antifreeze changed			
F.5.10 *Diesel engine cooling system heat exchanger rodded out			
F.5.11 *Electrical system circuit breakers or fuses changed (every 2 years)			
F.6.0 Pertinent parties notified after conclusion of maintenance			
F.7.0 ALARM PANEL CLEAR			
F.8.0 SYSTEM RETURNED TO SERVICE			
F.9.0 COMMENTS:			

INSPECTOR'S INITIAL _____ (All "NO" answers to be explained.) OWNER/DESIGNATED REP. INITIAL _____ DATE _____

REV. 3/03

Report of Inspection, Testing & Maintenance of Fire Pump Assemblies...continued

Inspecting Firm: _____ Inspection Contract# _____

Name of Inspected Property: _____

Inspector Name: _____ Date: _____

Inspection Frequency: Monthly Quarterly Annually Other

**Items necessary only in the absence of manufacturer's recommendations*

Annual Testing for Fire Pump Assemblies				
	Y	N/A	N	
G.1.0 System in service before testing				
G.1.1 Pertinent parties notified before testing				
G.1.2 Adequate drainage provided before flow testing				
G.2.0 Main drain test conducted				
G.2.1 Supply water gauge reading before flow (static) _____ psi				
G.2.2 Gauge reading during stable flow (residual) _____ psi				
G.2.3 Time for supply pressure to return to normal _____ sec				
G.3.0 Control valves (including backflow and PIVs) operated through full range and returned to normal position				
G.3.1 PIVs opened until spring or torsion felt in rod				
G.3.2 PIVs and OS&Ys backed 1/4 turn from full open				
G.3.3 Main drain test conducted				
G.3.4 Supply water gauge reading before flow (static) _____ psi				
G.3.5 Gauge reading during stable flow (residual) _____ psi				
G.3.6 Time for supply pressure to return to normal _____ sec				
G.4.0 Backflow prevention assembly forward flow test conducted				
G.4.1 System demand flow was achieved through the device				
G.4.2 Forward flow test conducted at maximum rate possible (only where connections do not permit full flow test)				
G.4.3 Forward flow test conducted without measuring flow (device $\leq 2\text{''}$ and outlet sized to flow system demand)				
G.4.4 Backflow prevention assembly internal inspection conducted (where shortages last more than 1 year and rationing enforced by AHJ)				
G.4.5 Forward flow test satisfied by annual fire pump flow test				
G.4.6 Backflow prevention assembly performance test conducted as required by the AHJ				
FLOW TEST:				
G.5.0 Care taken to prevent water damage by verifying adequate drainage				
G.5.1 Flow test conducted under minimum, rated, and peak fire pump flows				
G.5.2 Flow test conducted by controlling quantity of water discharged through test devices				
G.5.3 Fire pump operated at maximum allowable discharge (where available suction supplies do not allow flowing of 150 percent of rated pump capacity)				
G.5.4 Fire pump suction supply provided required flow at 0 psi or higher gauge pressure at pump suction flange (except installations where NFPA 20 permitted negative suction gauge pressures)				
G.5.5 Electric fire pump driver did not overload beyond rating (including service factor allowance) while delivering necessary brake horsepower				
G.5.6 Pump suction and discharge pressures and flow measurements at each hose stream used to determine total pump output where hose streams used in testing (must be conducted every 3 years at minimum)				
G.5.7 Pump suction and discharge pressures and flowmeter measurements used to determine total pump output where flowmeter used in testing (not to exceed 2 consecutive annual tests)				
G.5.8 Flow meter adjusted immediately prior to testing in accordance with mfg. inst.				
G.5.9 Test results using flow meter consistent with previous annual test results (if "no" – complete flow test using hose streams OR calibrate flow meter)				
WHILE PUMP IS RUNNING:				
G.6.0 At churn, circulation relief valve checked for operation and water discharge				
G.6.1 At churn, pressure relief valve checked for proper operation				
G.6.2 At churn, pressure control valve checked for proper operation				
G.6.3 At churn, test continued for minimum of ____ hour				
G.6.4 At each flow condition, electric motor voltage and current in all lines recorded (see appropriate section on page 5)				
G.6.5 At each flow condition, pump speed recorded (see appropriate section on page 5)				
G.6.6 At each flow condition, simultaneous readings of pump suction and discharge pressures and pump discharge flow recorded (see appropriate section on page 5)				
G.6.7 Pressure relief valve closely observed during each flow condition				
G.6.8 Pressure control valve closely observed during each flow condition				
G.6.9 Pressure relief valve functioning properly (pump discharge pressure did not exceed normal operating pressure rating of system components)				
G.6.10 Pressure control valve functioning properly (system not exposed to pressures higher than rating)				
G.6.11 Pressure relief valve observed closing at proper pressure				
G.6.12 Pressure control valve observed closing at proper pressure (suction or discharge)				
G.6.13 Pressure relief valve closed by pilot adjustment during flow conditions (as necessary to achieve minimum rated pump characteristics)				
G.6.14 Pressure relief valve reset to normal position at pump test conclusion				
SYSTEMS EQUIPPED WITH AUTOMATIC TRANSFER SWITCH:				
G.7.0 Power failure condition simulated while pump operating at peak load				
G.7.1 Transfer switch transfer of power to alternate power source verified				

Annual Testing Tasks for Fire Pump Assemblies continued on page 4

INSPECTOR'S INITIAL _____ (All "NO" answers to be explained.) OWNER/DESIGNATED REP. INITIAL _____ DATE _____

REV. 3/03

Report of Inspection, Testing & Maintenance of Fire Pump Assemblies...continued

Inspecting Firm: _____

Inspection Contract# _____

Name of Inspected Property: _____

Inspector Name: _____

Date: _____

Inspection Frequency: Monthly

Quarterly

Annually

Other

**Items necessary only in the absence of manufacturer's recommendations*

Annual Testing for Fire Pump Assemblies continued from page 3

	Y	N/A	N
G.7.2 Pump maintenance of peak load performance verified			
G.7.3 Power failure condition removed			
G.7.4 Pump reconnected to normal power source after a time delay			
G.8.0 Alarm conditions simulated			
G.8.1 Local or remote alarm indicating devices (visual and audible) observed for operation			
G.8.2 Legally required safety precautions taken during inspecting, testing, and maintaining electric controllers			
G.8.3 After water-flow portions of annual testing or fire protection system activations, suction screens inspected and cleared of debris or obstructions			
G.8.4 Engine generator sets supplying emergency or standby power to fire pump assemblies tested in accordance with NFPA 110			
G.8.5 Automatic transfer switches tested in accordance with NFPA 110			
G.8.6 Pump room environmental heating equipment automatic operation verified			
G.8.7 Pump room environmental illumination equipment manual operation verified			
G.8.8 Pump room environmental ventilation equipment automatic operation verified			
G.8.9 Parallel and angular alignment of pump and driver checked			
G.8.10 Parallel and angular misalignment corrected			

TEST RESULTS AND EVALUATION:

G.9.0 Theoretical rated speed correction factors not applied to determine pump compliance per testing			
G.9.1 Engine speed not increased beyond pump speed rating at rated condition to achieve rated pump performance			
G.9.2 Fire pump assembly considered acceptable because test matches initial unadjusted field acceptance test curve			
G.9.3 Fire pump assembly considered acceptable because test performance matches performance characteristics on nameplate			
G.9.4 Investigation initiated where degradation in excess of 5 percent of initial acceptance test pressure or nameplate pressure			
G.9.5 Voltage readings at motor within 5 percent below or 10 percent above rated voltage			
G.9.6 Abnormalities observed during inspection, testing, and maintenance promptly reported to responsible party			
G.10.0 Circulation relief valve verified to close in accordance with mfg. spec.			
G.11.0 Fire pump assembly maintenance performed in accordance with mfg. recommendations			
G.11.1 *Circuit breaker tripped (if provided)			

	Y	N/A	N
G.11.2 *Operate emergency manual starting means (without primary power)			
G.11.3 *Exhaust system tested for excessive back pressure			
G.12.0 Pertinent parties notified of test conclusion			
G.13.0 ALARM PANEL CLEAR			
G.14.0 SYSTEM RETURNED TO SERVICE			

G.15.0 COMMENTS:

Five-Year Items for Fire Pump Assemblies

H.1.0 System in service before conducting tasks			
H.2.0 Pertinent parties notified before conducting tasks			
H.3.0 Check valves internally inspected			
H.3.1 Check valve internal components operate correctly			
H.3.2 Check valve internal components move freely			
H.3.3 Check valve internal components in good condition			
H.3.4 Check valve internal components cleaned/repaired/replaced as necessary			
H.3.5 Check valve internal inspection/maintenance date:			
H.4.0 Adequate drainage provided before flow testing			
H.4.1 Pressure control valves full flow tested			
H.4.2 Supply side static pressure _____ psi			
H.4.3 System side static pressure _____ psi			
H.4.4 Supply side residual pressure _____ psi			
H.4.5 System side residual pressure _____ psi			
H.4.6 Results compared to previous full flow test			
H.4.7 Adjustments made as necessary			
H.5.0 Fire pump assembly maintenance performed in accordance with mfg. recommendations			
H.6.0 Obstruction investigation conducted (required at 5 year intervals regardless of obstruction evidence) (see AFSA Form 114A)			
H.7.0 Pertinent parties notified after conclusion of tasks			
H.8.0 ALARM PANEL CLEAR			
H.9.0 SYSTEM RETURNED TO SERVICE			

H.10.0 COMMENTS:

INSPECTOR'S INITIAL _____ **(All "NO" answers to be explained.)**
OWNER/DESIGNATED REP. INITIAL _____ **DATE** _____

REV. 3/03

Report of Inspection, Testing & Maintenance of Fire Pump Assemblies...*continued*

Inspecting Firm: _____ Inspection Contract# _____

Name of Inspected Property: _____

Inspector Name: _____ Date: _____

Inspection Frequency: Monthly Quarterly Annually Other

Annual Test Data	
ELECTRIC PUMP SYSTEM:	
Time controller during the starting transition from Reduced Voltage to Full Voltage	sec.
Time required for motor to reach full speed:	sec.
DIESEL PUMP SYSTEM:	
Time required for engine to crank:	sec
Time required to reach running speed:	sec
Observations while Engine operating:	
Oil Pressure:	psi
Speed indicator:	rpm
Water temperature:	°F
Oil Temperature:	°F
PUMP:	
Make	
Type	
Rated Capacity	
Rated Pressure	
Rated RPM	
Date of last annual flow test:	
CONTROLLER:	
Make/Model	
Listed	
COMMENTS:	

NOTE: Pump Performance Curve Should Be Plotted On Page 8 of 8.

Test Data:

Flow	Suction Pressure (PSI)	Discharge Pressure (PSI)	Net Pump Pressure (PSI)	Pump Speed (RPM)	Pitot Pressure	Dia. of Nozzle Openings	No. of Nozzles Flowed	Flow Based on Pitot Pres.	Opening Coefficient C= _____	Actual Flow (GPM)
Churn										
100%										
150%										
	Volts	Lead #1	Lead #2	Lead #3		Amps	Lead #1	Lead #2	Lead #3	
Churn										
100%										
150%										

Notes: _____

Remarks on Test _____

Signature and Title of Person Making Test _____ Company Name & Address _____

Witness (Owner or Designated Rep.) _____ Date of Examination _____

INSPECTOR'S INITIAL _____ (All "NO" answers to be explained.) OWNER/DESIGNATED REP. INITIAL _____ DATE _____



FIRE PUMP TEST SUMMARY SHEET

FLOW POINTS	Suction Pressure (PSI)	Discharge Pressure (PSI)	Net Pump Pressure (PSI)	Pump Speed (RPM)	Pitot Pressure	Dia. of Nozzle Openings	No. of Nozzles Flowed	Flow Based on Pitot Press. C=	Opening Coefficient	Actual Flow (GPM)
Churn										
100%										
150%										
Churn	Volts	Lead #1	Lead #2	Lead #3		Amps	Lead #1	Lead #2	Lead #3	
100%										
150%										

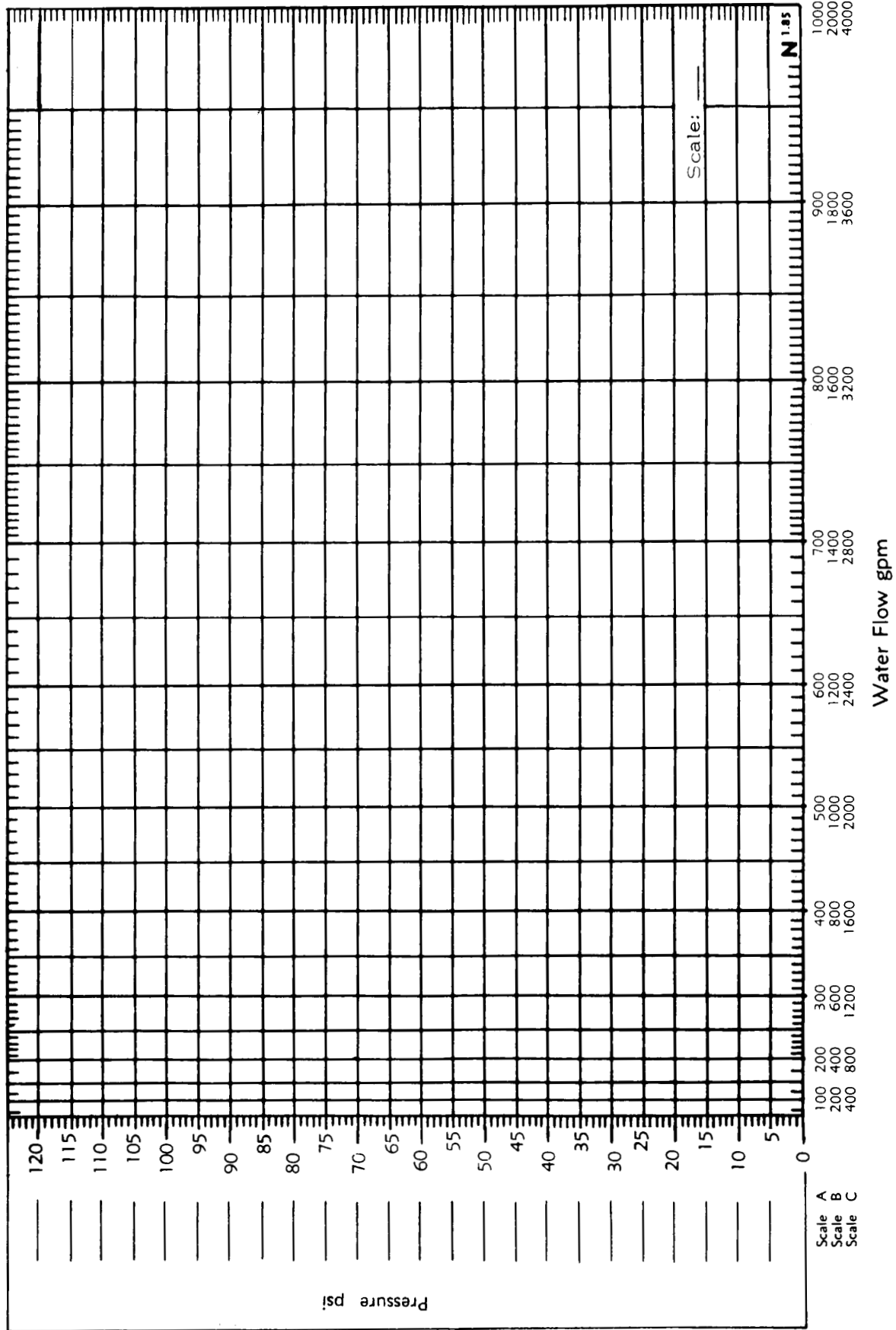
Date: _____ Time: _____

Cont. No. _____

Property Name: _____

Address: _____

City/State/Zip _____



INSPECTOR'S INITIAL _____ (All "NO" answers to be explained.)

OWNER/DESIGNATED REP. INITIAL _____ DATE _____