

**The city of
Milwaukee's
Sample
Preventative
maintenance
manual for
Electronically
monitored boilers**

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INTRODUCTION

Preventative maintenance of boiler components is required to maintain them in good working condition and to assure safety.

The primary objective of any PM System is to provide for managing maintenance and maintenance support in a manner, which will ensure maximum equipment readiness.

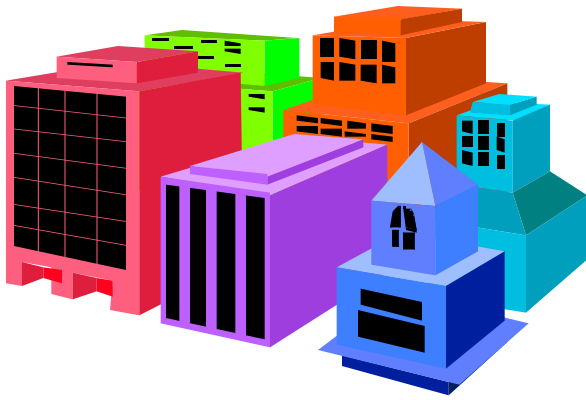
The intermediate objectives of the PM System is as follows:

- a)** Documenting information relating to maintenance and maintenance support actions.
- b)** Improvement of maintainability and reliability of systems and equipment by provision of documented maintenance information for analysis.
- c)** Provide the means to schedule, plan, manage, and track maintenance.
- d)** Provide data on which to base improvements in system.

Adequate precautions should be taken while maintenance is being performed to protect personnel (performing the work), building occupants, and the equipment.

Intention

It is not intended that this manual serve as operating instructions for any specific plant. Due to the wide variety of types and makes of equipment used, this guide should be supplemented with manufacturer's recommendations concerning the maintenance and care of your system. Specific written operating and maintenance instructions should be supplied.



City of Milwaukee

Boiler Inspection Division

Sample Letterhead

Corporate Authority Letter

Date: (today)

Our company has been furnished a copy of the city of Milwaukee code for boiler Electronic Monitoring systems. We have read the code and assume responsibility for complying with it and its preventative maintenance requirements.

The boiler preventative maintenance is an integrated maintenance management system which operates under the guidance of (enter name), which has been assigned overall responsibility for the development, coordination, and maintenance of said system. Refer to the documents "Organizational Relationship - Chain of Responsibility" and "Boiler room repair progression"

Boilers are located at: Company Name
 Company Address
 State Registration Number

The personnel listed below are responsible for the duties indicated.

Engineering manager; is responsible for the overall boiler preventative maintenance program and ensuring that an analysis program is carried out.(list duties)

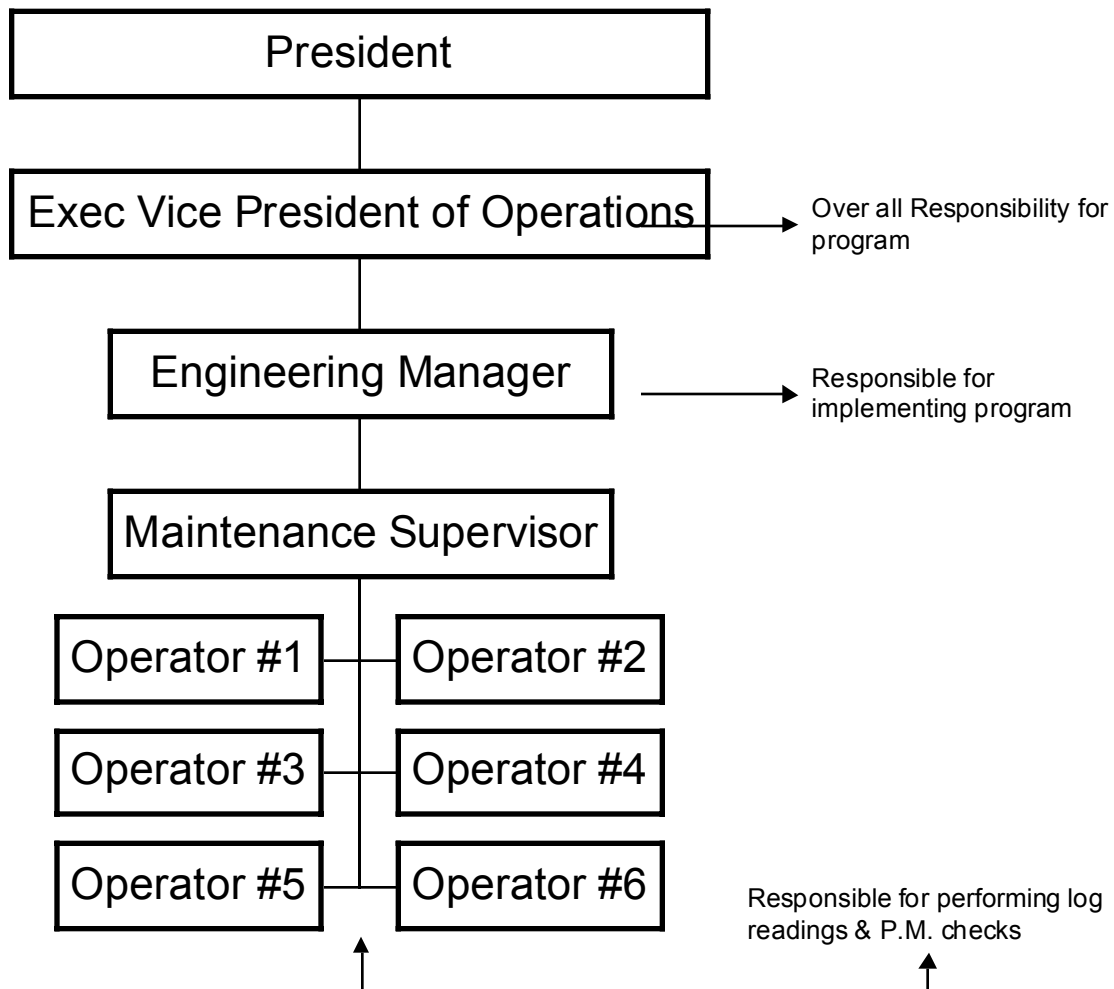
Maintenance supervisor; is responsible for implementing the boiler preventative maintenance and analysis programs.(List duties)

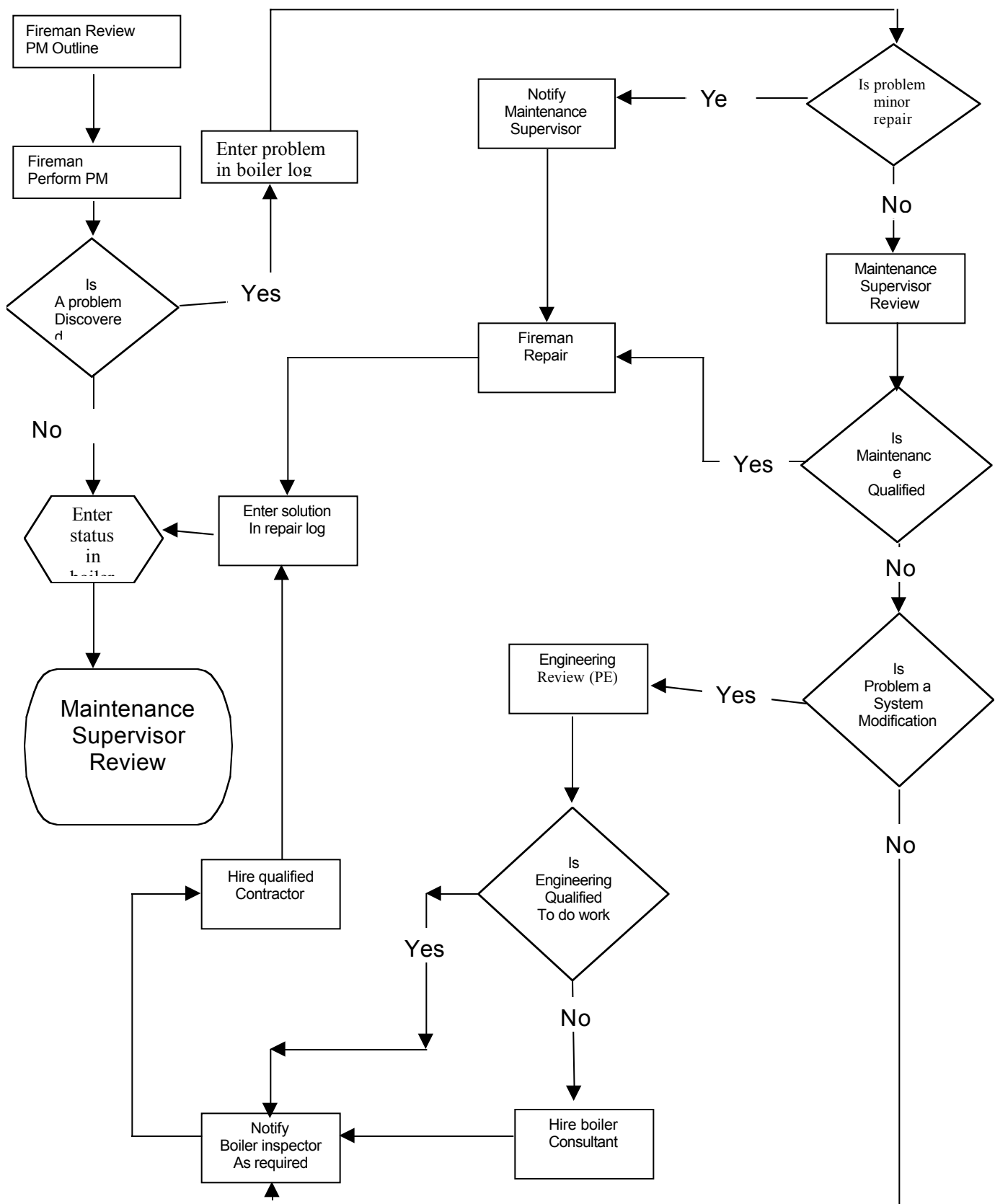
Boiler operator; is responsible for performing log readings and preventative maintenance checks. (List duties)

Approved by: (signature and title of a corporate officer)

Organizational Relationships

Chain of Responsibility for boilers at:





Boiler Room Repair Progression

Daily Checklist

	Blow down and test low water cut-offs
	Blow down gage glasses
	Blow down boiler
	Check boiler and system for leaks
	Check burner flame

Note: The above checklist should be referenced to specific written procedures. In all cases the equipment manufacturer's recommendations should be followed. This check off list uses ASME section VI and ASME CSD-1 for it's specific written instructions.

Weekly Checklist

	Check flame signal strength for both pilot and main flame
	Check pilot and main fuel shutoff valves closing
	Check igniter and burner operation
	Check level in chemical treatment tank

Note: The above checklist should be referenced to specific written procedures. In all cases the equipment manufacturer's recommendations should be followed. This check off list uses ASME section VI and ASME CSD-1 for it's specific written instructions.

Monthly Checklist

	Check boiler water treatment test results and adjust as necessary
	Lubricate motors and equipment bearings
	Test fan and air pressure interlocks
	Check main burner fuel safety shutoff valves for leakage
	Check low fire start interlock
	Check high pressure / temperature interlocks
	Check high and low pressure interlocks on gas train
	Manually lift safety valve by hand

Note: The above checklist should be referenced to specific written procedures. In all cases the equipment manufacturer's recommendations should be followed. This check off list uses ASME section VI and ASME CSD-1 for it's specific written instructions.

Semiannually Checklist

	Inspect burner components
	Check flame failure system components
	Check piping and wiring of all interlocks and shutoff valves
	Recalibrate all instruments, indicating and recording gages
	Perform a slow drain test for low water cut-off
	Check combustion control system
	Check oil atomizers and strainers
	Test boiler safety valves according to ASME

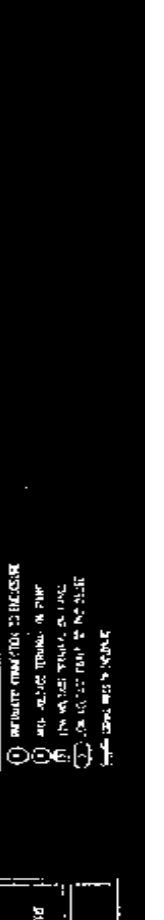
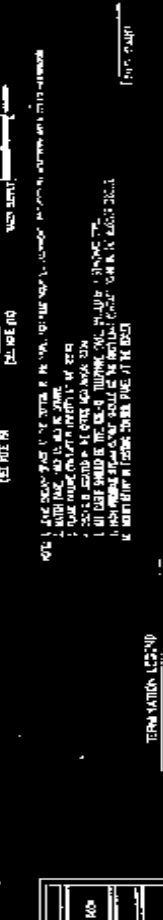
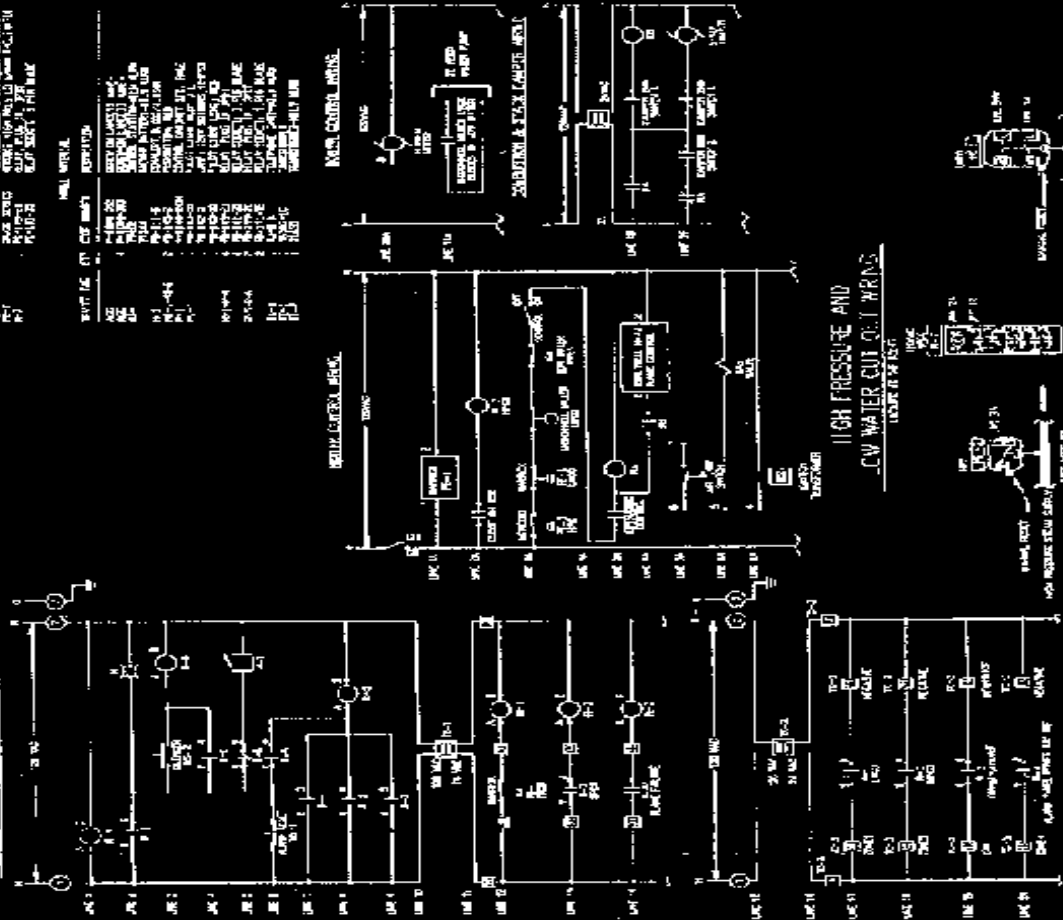
Note: The above checklist should be referenced to specific written procedures. In all cases the equipment manufacturer's recommendations should be followed. This check off list uses ASME section VI and ASME CSD-1 for it's specific written instructions.

Annual Checklist

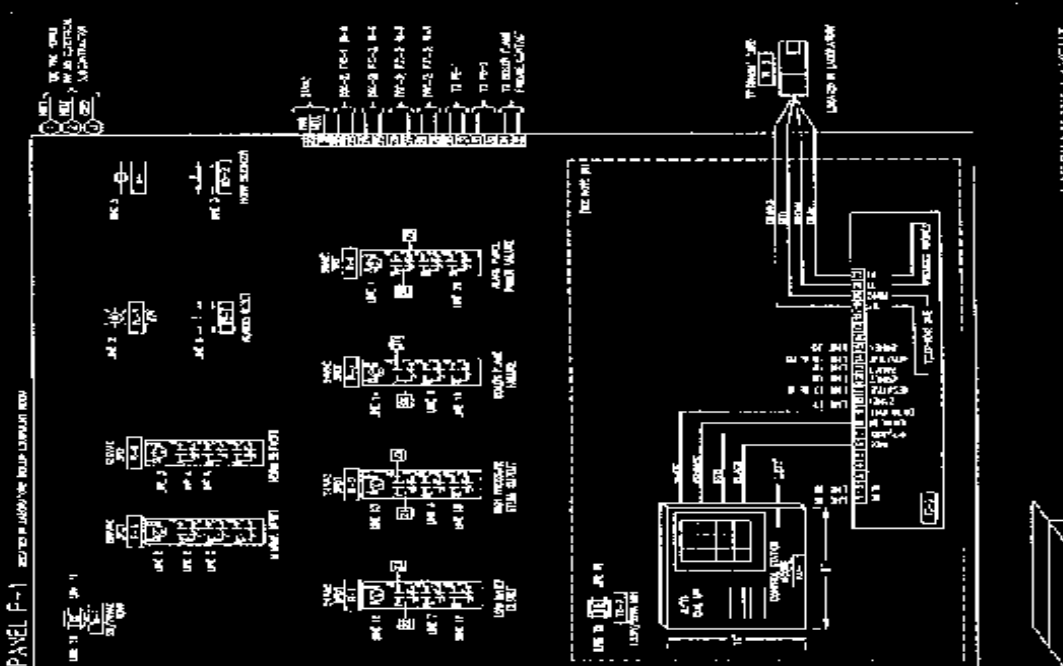
	Perform the semiannual
	Check all equipment coils and diaphragms
	Perform a pilot turndown test
	Recondition or replace low water cut-off
	Check gas drip leg and gas strainer
	Clean boiler firesides
	Drain boiler, open manholes, handholes, and clean water sides
	Have boiler inspected by a commissioned inspector
	Clean burner and fans
	Replace gaskets
	Leak test all fuel valves
	Test operation of all controls and safety devices
	Adjust combustion
	Test and re-certify boiler monitoring system

Note: The above checklist should be referenced to specific written procedures. In all cases the equipment manufacturer's recommendations should be followed. This check off list uses ASME section VI and ASME CSD-1 for it's specific written instructions.

PANEL P-1 ADDITIONAL WIRING DIAGRAM



PANEL P-1 ADDITIONAL WIRING DIAGRAM





City of
Milwaukee
Building Inspection
Boiler Section 286-2514

BOILER LOG

MAINTENANCE, TESTING, AND INSPECTION LOG		Building:	Month:	Year:																											
STEAM HEATING BOILERS		Address:	Fuel Type:																												
Person(s) to be notified in Emergency (Name and Telephone No.)		Boiler No.:																													
DAILY CHECKS																															
Observe Water Level	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Record Pressure																															
Record Flue Gas Temperature																															
Daily Preventative Maintenance Checks																															
WEEKLY CHECKS (Enter Date)																															
	WEEK 1				WEEK 2				WEEK 3				WEEK 4																		
Test Low Water Cutoff																															
Test Gage Glass																															
Observe Flame Condition																															
Weekly Preventative Maintenance Checks																															
MONTHLY CHECKS (Enter Date)																															
Manual Lift Safety Valve	Linkages				Semi-Annual Checks (Enter Date)				Floor Drains																						
Review Condition of or Test Each Item	Damper Controls								Flame Detection Device																						
	Stop Valves								Limit Controls																						
	Refractory								Operating Controls																						
	Flue-Chimney Breaching																														
Inspect Fuel Piping																															
Combustion Air																															
Adequate/Unobstructed																															
Semi-Annual Prev. Main. CHECKS (Enter Date)					Annual Prev. Main. CHECKS (Enter Date)																										
GENERAL COMMENTS																															

Mechanical repair log

[illegible]

BOILER MONITORING SYSTEMS

Location of Installation

Name

Address

City

State

Zip Code

Area Code

Telephone Number

Person to Contact

TYPE OF MONITORING SYSTEM

___ Low Pressure

___ High Pressure

ITEMS TO BE MONITORED ON BOILER

___ Low Water	___ With Alarm	___ Manual Reset	___ Visually Verified
___ High Pressure	___ With Alarm	___ Manual Reset	___ Visually Verified
___ Flame Failure	___ With Alarm	___ Manual Reset	___ Visually Verified
___ Power Failure	___ With Alarm	___ Manual Reset	___ Visually Verified
___ Low Pressure or Temperature			___ Visually Verified
___ Dual Shut-Off Fuel Valves			___ Visually Verified
___ Remote Shut-Off Capabilities			___ Visually Verified

LOCATION OF WIRING DIAGRAMS OF SYSTEM AND FAULT-FREE ANALYSIS OF SYSTEM:

Do not write below this line

DATE OF INSPECTION: _____ PERMIT NUMBER: _____

NUMBER OF BOILERS MONITORED BY SYSTEM: _____

COMMENTS: _____

INSPECTION AGENCY SIGNATURE

INS CODE

CERT NUMBER

BOILER MONITORING SYSTEMS

NAMES OF BOILER OPERATORS OR NAME OF RESPONDING COMPANY

(1) _____

(2) _____

(3) _____

(4) _____

NAMES OF COMPANIES INSTALLING OR HOOKING UP MONITORING SYSTEM

(1) _____

(2) _____

(3) _____

LOCATION OF WIRING DIAGRAMS OF SYSTEM AND FAULT-FREE ANALYSIS OF SYSTEM:

HOW WILL EMERGENCY CALLS BE HANDLED?

ELECTRONIC MONITORING SYSTEM OF BOILERS CERTIFICATION--RECERTIFICATION FORM

TO: Commissioner of Building Inspection
Boiler Division, Room 1016
841 N Broadway
Milwaukee, WI 53202

Inspection Date

Expiration Date of Certification

SUBJECT: CERTIFICATION--RECERTIFICATION **(CIRCLE ONE)**

OF INSTALLATION AT: _____
Address

Wisconsin Boiler Registration Number(s)

(If Installing)

I HEREBY CERTIFY THAT THE ELECTRONIC MONITORING SYSTEM(S) AT THE SUBJECT PREMISES IS INSTALLED AND OPERATING IN ACCORDANCE WITH THE CITY OF MILWAUKEE BUILDING CODE REQUIREMENTS FOR BOILERS AND ELECTRONIC MONITORING AS PER CHAPTER 223.

Installing Company Name

Certifying Company Name

Address

Address

City State Zip

City State Zip

Area Code Telephone Number

Area Code Telephone Number

Person to Contact

Person to Contact

Installer Signature

Professional Engineer's Signature and Seal

(If Re-certifying)

I HEREBY CERTIFY THAT I PERFORMED THE REQUIRED ANNUAL TESTING OF THE BOILER ELECTRONIC MONITORING SYSTEM IN ACCORDANCE WITH SECTION 223 AND FOUND THE SYSTEM OPERATING PROPERLY.

Certifying Company Name

Address

City State Zip

Area Code Telephone Number Person to Contact

Certifying Company Signature

Professional Engineer's Signature and Seal

Record of Revisions

Revision Number	Section number(s) revised and description	Date Issued

A current copy of this document will be kept with: engineering manager, maintenance supervisor, boiler room, and city of Milwaukee.