SNS COLLEGE OF TECHNOLOGY
AN AUTONOMOUS INSTITUTION

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DEPARTMENT OF AGRICULTURAL ENGINEERING

COURSE CODE & NAME: 19AGT301 & HEAT POWER ENGINEERING

III YEAR / V SEMESTER

UNIT : V Boilers

TOPIC 8 :Boiler Maintenance

Boiler Safety

Developed by Western Iowa Tech Community College

This material was produced under a grant (SH-16634-07-60-F-19) from the Occupational Safety and Health Administration, U.S. Department of Labor. It does not necessarily reflect the views or policies of the U.S. Department of Labor, nor does the mention or trade names, commercial products, or organization imply endorsement by the U.S. government.

Boiler Room Hazards

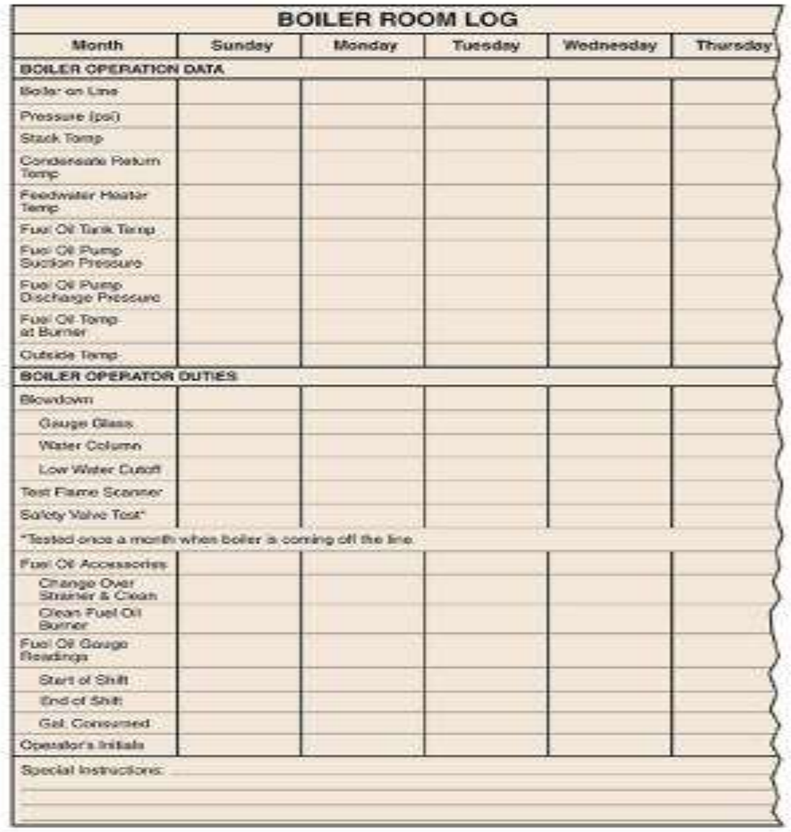
- A Risk Of Explosion Exists
- High Pressure steam
- Combustion Gases
- Chemicals
- Moving Machinery
- Hot Surfaces

Communication is Critical

Boiler operation information is communicated to the boiler operator starting the shift to specify any special procedures required.

Boiler Log

The boiler room log lists boiler operation data that can be used to increase boiler safety and efficiency as well as identifying a potential malfunction.



BOILER ROOM LOG

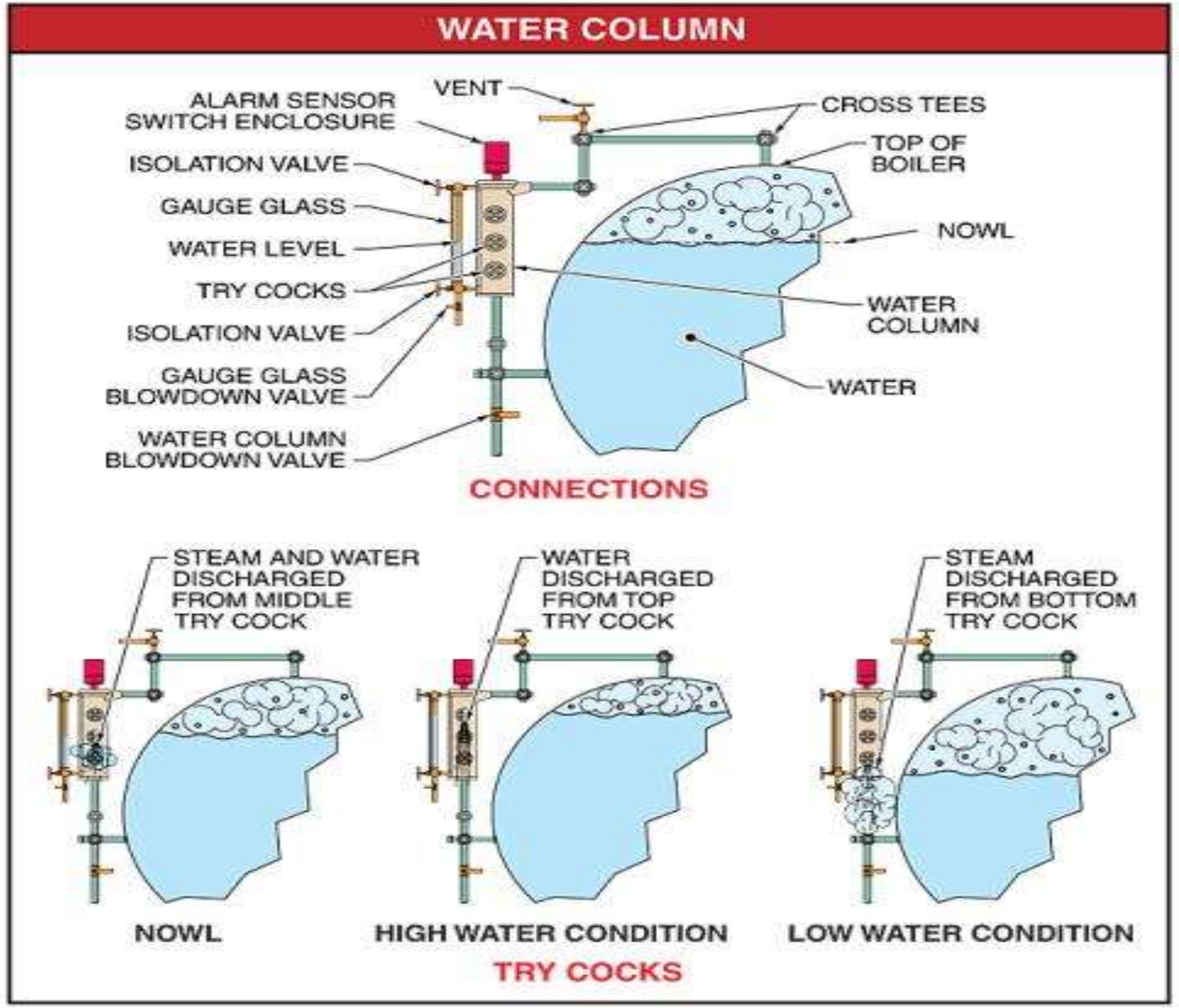
Month	Sunday	Monday	Tuesday	Wednesday	Thursday
BOILER OPERATION DATA					
Boiler on Line					
Pressure (psi)					
Stack Temp					
Condensate Return Temp					
Feedwater Heater Temp					
Fuel Oil Tank Temp					
Fuel Oil Pump Suction Pressure					
Fuel Oil Pump Discharge Pressure					
Fuel Oil Temp at Burner					
Outside Temp					
BOILER OPERATOR DUTIES					
Blowdown					
Gauge Glass					
Water Column					
Low Water Cutoff					
Test Flame Scanner					
Safety Valve Test*					
*Tested once a month when boiler is coming off the line.					
Fuel Oil Accessories					
Change Over Strainer & Clean					
Clean Fuel Oil Burner					
Fuel Oil Gauge Readings					
Start of Shift					
End of Shift					
Gal. Consumed					
Operator's Initials					
Special Instructions:					

Water Level

The Normal Operating Water Level (NOWL) should be approximately in the middle of the gauge glass.

Try Cocks

Try cocks are used to determine the boiler water level if the gauge glass is not functional.

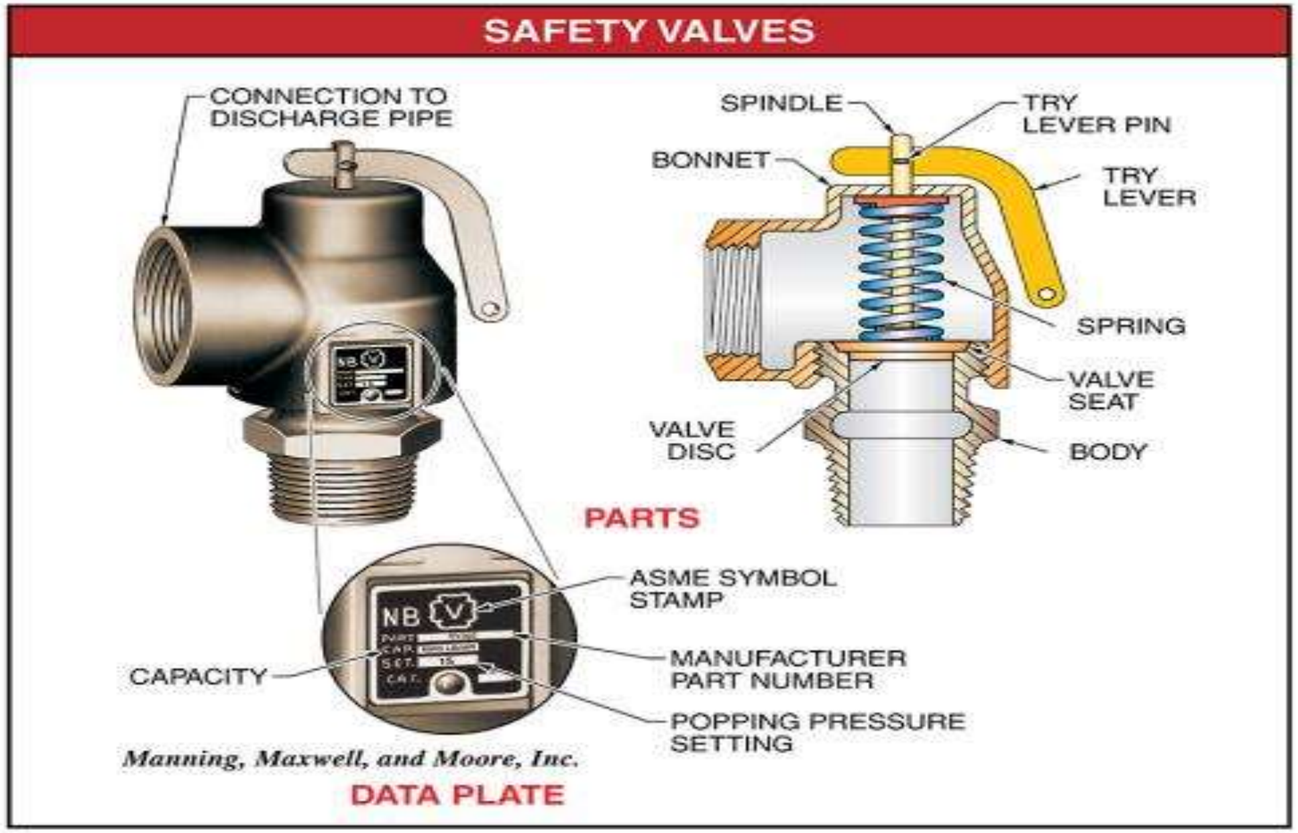


Water Column And Gauge Glass Blowdown

The water column is blown down first and then the gauge glass to remove any sediment. Water should enter the gauge glass quickly when the gauge glass blowdown valve is closed.

Safety Valve

The spring-loaded pop-off safety valve pops open when steam pressure exceeds the MAWP.



Safety Valve Test

Safety valves are routinely tested to ensure proper operation and must be serviced by an authorized manufacturer representative.

Burner Control System

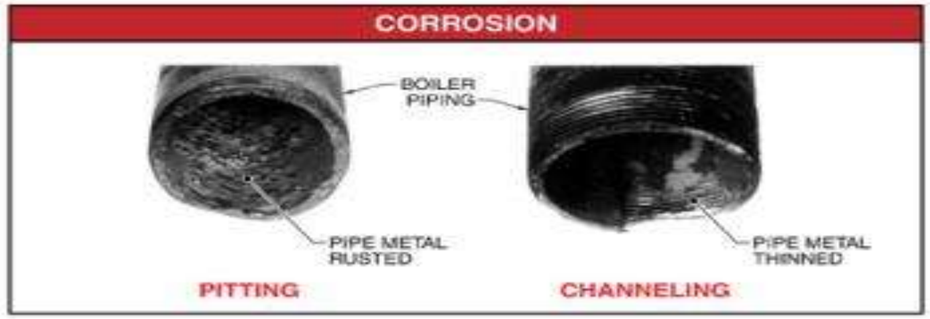
The safety devices are all wired through a burner controller. This will shutdown the fuel supply to the burner.

Flame Scanner Test

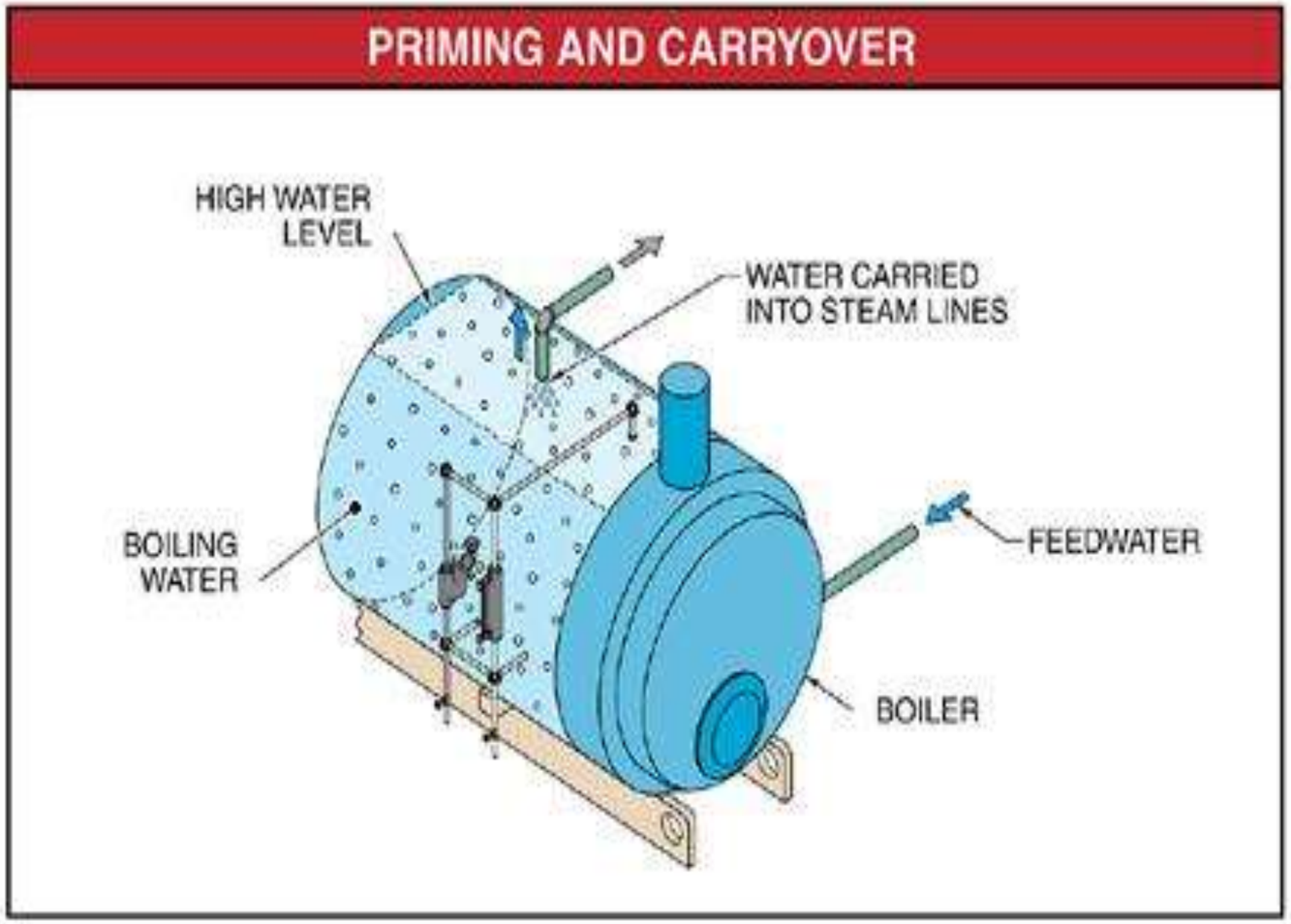
When testing the flame scanner, the flame scanner sensor is covered to simulate a flame failure.

Water Treatment

Water must be treated for safety. Minerals can cause a build up of deposits and cause overheating of boiler parts.



Carryover occurs when a high boiler water level causes water particles to be carried into steam lines.



Bottom Blowdown

During a bottom blowdown, the boiler should be under light load and the water level should be at the NOWL.

Steam Valves

Steam valves are opened slowly and gloves are worn to prevent burns.

Handhole Covers

Manhole and handhole covers are removed to provide access to boiler parts during a boiler inspection.

Boiler Inspection

All internal surfaces are exposed and cleaned prior to the boiler inspection.

Pumps and Other Equipment

Pumps should be checked periodically to ensure proper bearing temperatures and checked for any unusual vibration. Do not wear loose clothing around moving parts.

Steam Traps

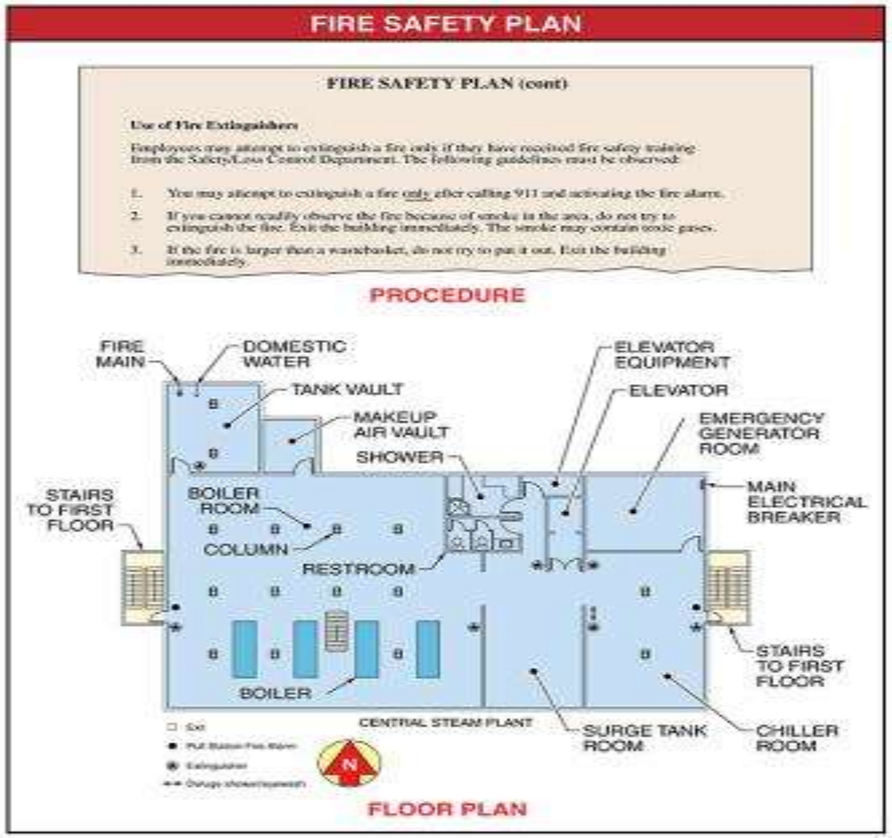
Steam traps are checked for proper operation when determining the cause of a steambound feedwater pump.

Protective Clothing

A face shield along with safety glasses provides eye protection when working with feedwater chemicals.

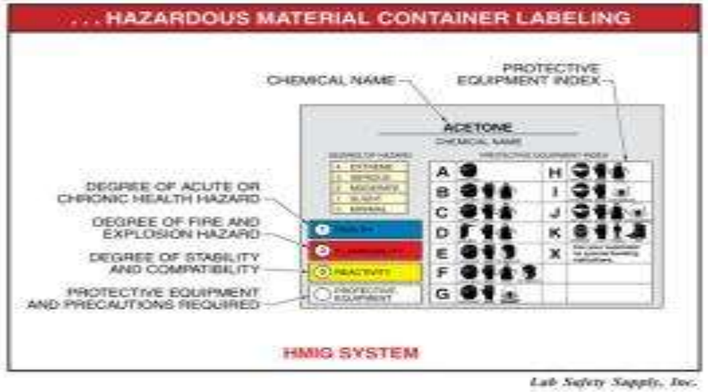
Fire Safety Plan

A fire safety plan includes the locations of fire alarms, fire extinguishers, the main electrical breaker, fire main, and exits for each area of the facility.



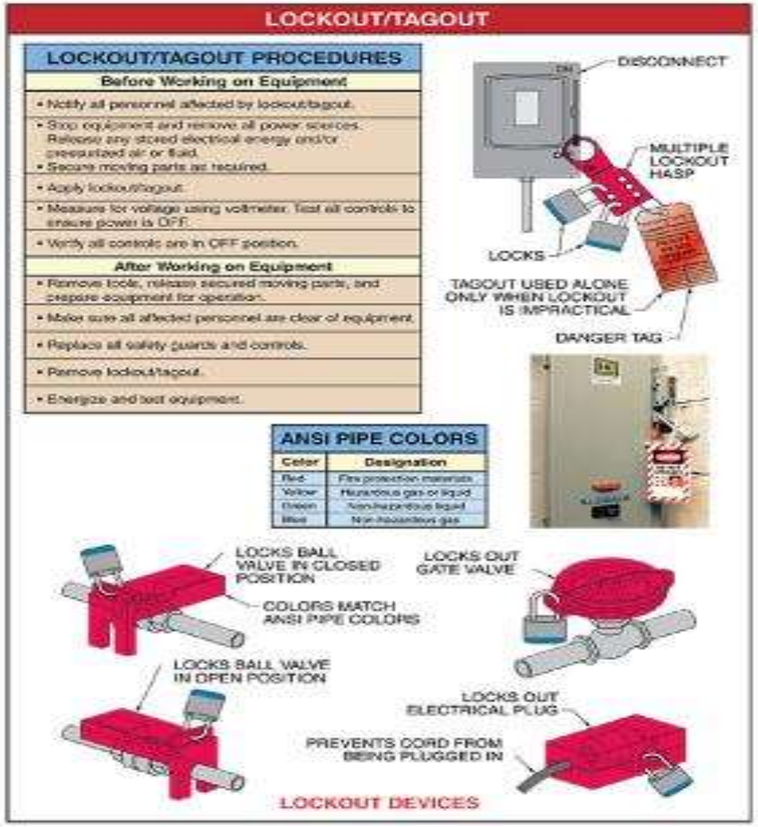
Chemical Safety

Containers that contain hazardous materials must be labeled, tagged, or marked.



Lockout/Tagout

Lockouts and tagouts are applied to equipment to prevent injury from energized circuits and equipment operation during maintenance and repair.



Accident Reports

An accident report details facts about an accident in the facility and is required for insurance claims.

ACCIDENT REPORT

Employee Status
☒ Full Time
☐ Part Time
☐ Other

Accident Classification
☐ First Aid Only
☒ Medical Treatment

PLEASE COMPLETE ALL INFORMATION

1. Name of Employee: Chris Jackson — Social Security #: 000-00-0000
2. Address: 7609 Gurley Court — Home Phone #: 555-5729
3. Age: 41 — Sex: M — Occupation/Title: Boiler Operator
4. Was Employee engaged in regular course of his duties at time of accident: ☒ Yes ☐ No
5. If No, explain:
6. Experience in this work activity: 5 years 6 months ____ weeks
7. Total job experience for County: 12 years 9 months ____ weeks
8. Department/Division: Facilities — Date Reported to Supervisor: 10/4
9. Date of Accident: 10/3 — Time: 11:25 am (pm) — Last Day Worked: 10/3
10. Location of Accident: Heating Plant Boiler Room
11. How many (days) hrs per week is employee employed: 5 — If seasonal employment give total weekly hours: ____ — Regular Days Of: Mon, Tue
12. Shift Hours: 7 am (pm) to 12 am (pm) — Rotating Shift: ____
13. Enter Employee Rate of Pay (Not Overtime): $ 16.75 per ☒ Hr ☐ Day ☐ Week ☐ Month — (check appropriate box)
14. Do you agree with the employee's description of the Accident or information? If not, explain why: Yes

Thank You