

BOILERS AND UNFIRED PRESSURE VESSELS

Boiler room emergencies

So many boiler accidents have been investigated thoroughly that necessary preventive action is known exactly. Plant safety men should know enough about boiler room procedures that they can be sure their units have all necessary protection.

Rules for both routine and emergency boiler operation should be posted permanently and legibly in the boiler room. Manufacturers can supply those applicable to the particular setup. In addition, all operators and substitute operators should be furnished copies for their guidance. Supervisory personnel should make sure that boiler operators know the rules and are capable of performing the necessary operations under emergency conditions.

Many plants have only one boiler room operator. Should he become sick or be injured, the boilers may be left unattended and an accident may happen. In plants where the boiler room is isolated and is operated by one man, it may be advisable to have him call a central location at half-hour intervals to assure that everything is operating on schedule in the boiler room. Plants having a plant protection patrol may have patrolmen check the boiler room. An intercom system could also be of value.

For this reason, the safety engineer should have someone else in the plant, a foreman, a night shift man, or some other substitute, trained to take over in case of emergency. If the safety engineer and the substitute have any doubts about what to do, the boiler operator should train both him and the substitute.

A substitute operator should be taught how the safety valve, water column, water feeding apparatus, and fuel supply and firing apparatus operate. He should know how to check the water level in the boiler and how to start or stop the water feeding apparatus. In coal hand-fired plants he should know the location of the dampers in the boiler. In plants with mechanically fired boilers he should know the location of the control apparatus and how to shut the equipment off in case of emergency.

The safety engineer and the substitute, after learning how to operate these fundamental parts of the boiler, might be able to keep a plant in service for a short while until a relief operator can take over.

CHECK POINTS TO OBSERVE IN ASSUMING EMERGENCY CONTROL OF BOILER PLANT:

- 1 Check the water level in the water glass
- 2 Check the steam pressure on the steam pressure gauge
- 3 Hand test the safety valve
- 4 Start the water feeding apparatus to see that it is working properly. Add water as necessary.
- 5 In case of doubt, shut off the fuel supply. Otherwise, continue operating the boiler, checking the water glass and adding water.

WHAT TO DO IF NO WATER IS VISIBLE IN THE WATER GLASS

1. Do not feed cold water into the boiler
- 2 Shut down the fuel supply at once
- 3 Let the boiler cool down naturally
- 4 Call the relief operator and the boiler inspector

WHAT TO DO IF A FLAREBACK HAS INCAPACITATED THE OPERATOR

- 1 Pull the main control switch for the fuel burner
- 2 Close the main supply valve so that fuel cannot continue to run into the furnace (The flareback may have been caused by a faulty control switch.)
- 3 Remove the injured man
- 4 Call the fire department and the relief operator.
- 5 Secure medical attention for the injured man, according to plant procedure

Safety of High Temperature Water (HTW)

Because of certain economic advantages, high temperature water (HTW) is sometimes used instead of steam for transferring heat in both manufacturing and district heating uses. The water is kept in a closed system under high pressures so that it will remain in the liquid form instead of turning into steam.* Conditions such as

*The discussion here is taken from "Safety in High Temperature Hot Water," by E. G. Hansen. *Actual Specifying Engineer*. 2 72-79 (July 1959).