



PROCEDURE FOR LAYING UP BOILERS

When boilers are taken out of service for any length of time, corrosion may occur on the internal surfaces of the boiler unless certain precautions are observed. During periods of idleness, boilers may be laid up by one of two methods described below. The choice of method is dependent on how long the boiler is to be out of service, and how quickly the boiler may be required back in service for regular steaming purposes in an emergency, etc.

THE DRY METHOD

The dry method is preferable when a boiler is to be out of service for a month or more and will not be required for emergency purposes. The boiler should be drained, thoroughly cleaned and carefully inspected to ensure all is in good order. The boiler should then be thoroughly dried internally by means of hot air stoves or a light wood fire. Close attention should be given to complete drying of non-drainable superheater tubes.

Use of Quick Lime:

An amount of quick lime, approximately 30 pounds for each 100 boiler horsepower, should be spread on water tight wood trays placed in the boiler immediately after the drying out process. If the boiler is an HRT or Locomotive type, a single tray resting on top of the flues or in the bottom of the shell will be adequate. In a multi-drum water tube boiler, a tray should be placed in each drum. The man heads, handholes and all connections on the boiler should be tightly blanked or closed after the lime has been placed in position. If the boiler is idle for a considerable period, it should be opened every 3-4 months for examination and renewal of the quick lime if necessary.

Use of Silica Gel:

Absorbents such as silica gel can be used in dry storage. Before use of the absorbent, the boiler should be prepared as outlined above. Silica gel may be obtained in convenient packages to permit good distribution. The packages of silica gel should be placed on wood or metal trays and distributed throughout the boiler. Approximately 4 pounds of silica gel should be used for each 100 cubic feet of air space.

If the boiler is idle for a considerable period it should be opened every 3-4 months and the silica gel examined. If necessary, the silica gel can be reactivated by placing it in an oven for several hours or by blowing hot air through it until moisture is no longer given off.

THE WET METHOD

The wet method should be employed if the boilers must be left idle with water in them, prepared for emergency service if required. The boiler should be thoroughly cleaned and carefully inspected to insure all is in good working order. Do not use Wet method if boiler will be exposed to freezing temperatures.



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Use of Caustic Soda and Sodium Sulfite:

After the boiler is filled to the normal water level, the water should be boiled, with the boiler properly vented to the atmosphere for a short time. This procedure is necessary to expel dissolved gasses such as oxygen from the water. The water should then be made alkaline in excess of 400 ppm by the use of Caustic Soda (approximately 3 lbs. of Caustic Soda per 1000 gallons of water in the boiler). In addition, enough Sodium Sulfite should be added to the boiler water to produce a minimum sulfite residual of 100 ppm (approximately 1.5 lbs. of Sodium Sulfite per 1000 gallons of water in the boiler). After the boiler has cooled somewhat, but before a vacuum is created, the boiler should be filled with deaerated water. Filling should be sufficient to completely fill the superheater elements and headers with treated water. This can be determined by testing the overflow water from the superheater outlet for sulfite and alkalinity. After filling all connections should be tightly closed. It is desirable to leave a small positive pressure in the boiler to prevent a vacuum from developing as the unit cools to room temperature.

The boiler water should be tested at weekly intervals. Additional Caustic Soda and Sodium Sulfite should be added as necessary to maintain the recommended concentrations. When additional chemicals are added the boiler water should be circulated by means of an external pump or by reducing the water level to the normal operating level and steaming the boiler for a short time. The boiler should then be completely flooded as outlined above.

When the boiler is returned to service the manufacturer's operating instructions should be followed concerning firing rate and boiler water out of non-drainable superheater tubes.

However, boiler out flooded superheater elements leave a residue of soluble salts. After several such boil-outs the superheater tubes should be individually washed with water to remove the salt deposit. Sufficient blowdown should be provided during start-up to reduce boiler water alkalinity to the normal operating range.