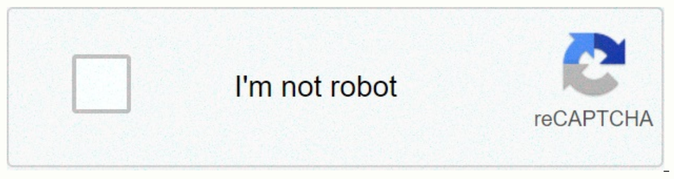


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# Boiler water column blowdown procedure

Boiler Operating Recommendations – Courtesy of Rentech Boilers Recommended Operations Manual The following is a proposed operating manual for the safe and reliable operation of the unit. It is mandatory for the operator to regularly monitor the control and security systems. Water level The water level must be checked continuously to check that the water system of feed is operating automatically or when the operator has visited. Always maintain a decent level of water in the dedication of steam. High water levels can cause damage to the internal separation unit, thereby reducing the separation efficiency. This will remove water transfer and mineral deposition inside the underlying components. If the water level reaches too low a point, the plant is threatened with overheating with possible catastrophic damage. If the level is automatically controlled by the water regulator of the supply, it must be adjusted in accordance with the manufacturer's recommendations so that the level remains stable near the centre line of the measuring instrument glass. The water column and the water measure must empty the glass once at the beginning of each change. This will ensure that the sludge or sediment will not be able to accumulate in the column or gauge glass and may result in an erroneous level indication. The boiler operator will ensure that one of the most important safety devices of the device is properly actuated, taking into account the return of drained liquids and liquids to the glass. It is also recommended to daily test level alarms and low water cutting. Boiler Water Blowdown Boiler water blown is done to remove some concentrated water from the pressure vessels while it is under pressure. Removed water containing suspended and dissolved solids shall be replaced by relatively clean ed feed water, even if this water is treated before use by external processes designed to eliminate undesirable substances that contribute to the formation of scale and sediments. Regardless of their high efficiency, none of these processes in themselves are able to eliminate all substances and a small amount of solids will be present in the boiler water. Solids become less soluble in high temperature boiler water and as the water boils off like relatively pure steam, the remaining water becomes thicker with either suspended or dissolved solids. Internal chemical treatments based on water analysis are mainly used to precipitate many solids and to preserve them as sludge in liquid form. These sludge, together with suspended solids that may be present, must be separated by a permeation process. If the concentration of particulates is not lowered through the blowdown, but accumulates, foam and priming will occur along with the scale and other harmful sediments. The scale, which forms as salts, is usually concentrated and crystallizes on the heating surfaces. The scale has a low heat transfer value. It acts as an isolation barrier and heat transfer. This not only leads to low operational efficiency and heaving higher fuel consumption, but also creates the possibility of overheating boiler metal. The result may be pipe failure or other metal damage to pressure vessels. There are two main types of blowdown, they are intermittent and continuous. Intermittent is done manually and is necessary for the works of the boiler regardless of whether continuous blowdown is used. Continuous infiltion is the continuous and automatic removal of concentrated boiler water. Intermittent blowdown Manual blowdown valve and exhaust lines are located at the bottom or low point of the fan. It also provides the means to de-gass the boiler if it is not under pressure. Intermittent blowdown should be opened completely for a short period (about 10 to 20 seconds) at least once per shift, thereby ensuring proper removal of accumulated solids that are solved in the mud cylinder. In cases where the feed water is extremely clean, the blown-up may be used less frequently because less sludge accumulates in the pressure tank. Often short blows are given rarely length blows. This is particularly the case if the content of suspended solids in water is high. The use of frequent short blows maintains a smoother water concentration of pressure vessels. Blowing down is most effective at a time when steam production is at its lowest rate because feed water input is then also low, providing minimal dilution of boiler water with low concentrations of feed water. It is recommended that the blowdown valve closest to the boiler should open first and close the last, with blowing down is accomplished with the valve furthest from the boiler. The sequence of operations when it is established must ensure that the valve last opened is first closed so that the second valve is retained from the drone work to ensure close. The downstream valve must crack slightly so that the exhaust line can warm up, after which the valve is opened slowly. Close the downstream valve quickly, then close the valve next to the boiler. The frequency and amount of each impact must be determined by actual water analysis. The water level should be observed during periods of intermittent blowdown. If the glass cannot be viewed by the person driving the valve, another operator must look at the glass and look at the valve operator. The blowing valves must never be left open and the operator should never leave until the blowdown operation is complete and the valves are closed. Make sure the valves are closed tightly. Repair all leak valves as soon as possible. Continuous blowdown The boiler is equipped with an internal continuous blowdown tube. The manifold pipe is located several inches below normal water level, where the water has been found. A manual controlled measuring valve is commonly used to control the flow of concentrated water. The valve setting is adjusted periodically to increase or decrease the amount of blowdown and water testing. Proper monitoring and maintenance of appropriate water conditions in the boiler is mandatory to ensure the long-term integrity of the boiler. The amount of water lost as a result of continuous surface inflate is generally significantly less than the water lost through the bottom blow-off to prevent a certain amount of suspended solids. The amount of blowdown depends on the rate of evaporation and the amount of sludge formation material in the feed water. Foaming or priming can occur in the steam roller, which causes large amounts of water to enter the steam lines. This can be determined by violent fluctuations or sudden drop-off of water levels on the measuring can. This problem can be caused by dirt or oil in the boiler water, an overdose of treatment chemicals that are too high water level in the steam cylinder, or excessive rates of evaporation. In case of serious problems, reduce the load on the boiler, then alternately inflate several times and feed fresh water. If foaming does not stop, cool, empty, and wash off the boiler and refill with fresh, treated water. Any problem with extreme foaming or priming, scale boiler, corrosion or welling should be immediately defended by a company specialising in boiler water chemistry consultancy. Do not sneer with home-made processing chemicals. Saturated steam sampling When a new sample line is put into service, the flow vapor and condensate thought it 24 hours before sampling. Before the sampling period, blow out steam using the sample line to remove any material that may have been precipitated. The measuring speed shall be adjusted to what is required during sampling and the sample shall flow at this rate for one hour or more before the sample for other methods of analysis is recorded. If condensate samples are collected for evaporative analysis, flasks or other containers must be thoroughly cleaned before use. Borsilyaate glass is a satisfactory material for such containers, but must be endured, allowing them to stand for several days, allowing them to stand with distilled water. This aging borsilylate glass can be reinforced with pre-treatment with diluted corrolic soda (ten grams / litre). Containers made of suitable metals or plastics may also be used. The samples must be analysed as soon as possible after collection. After use, the flasks should be rinsed with hydrochloric acid. These flasks must be reserved and used only for the protection of steam samples. When the condensed sample must be analysed by the electrical conductivity method, cool to 25 °C. If dissolved gas cool to 20°C or lower. back to the Banking Engineering Boiler page DUCK NOTES #01 Easy access answers given to you by www.dieselduck.net These notes answer to guaranteed no questions oral examination of Transportation Canada Ship Safety engineering licenses. The applicant shall be deemed not to have carried out a test of engineering knowledge if the applicant incorrectly answers the question in one of the following questions: approval of the 1st water level in the boiler using the test method of the measuring instrument and column of the water, precautions to be taken when blowing the boiler, hazard 3 associated with a fire repgance in oil furnace oil where unburned gases may have been accumulated; 4. precautions to be taken to prevent the contents of the boiler from being dismantled in another boiler through blown-up or no-sham valves; 5. precautions to be taken when adding one boiler to another; the definition, causes, prevention and impact of the hammer of water hammer 1 and 6.  Then blow the water gauge glass open A and E. (1) Close steam (B) and taps (C), then open the drainage system (D).  Nothing should blow from the gauge if the steam and water cocks do not leak. (2) Open and close the tap (C) to check that the water member's connection to the boiler is clear. (3) Open and close the steam tap (B) to check that the steam member's connection to the boiler is clear. (4) Close the drain (D). (5) Open the tap (C).  The water should then be gradually increased to the top of the glass of the measuring device. (6) Open the steam tap (B) and the water in the glass should fall to the water level in the pot. - If, when (5) is reached, the tap is open and the water does not flow to the glass of the measuring instrument, the water level in the boiler is underwater and the boiler is not safe to place the feed water in the boiler. - If, when the tap is opened, the water flows to the top of the measuring board and, after the steam tap is opened, the water flows down and out of the glass, the water level shall be between the water member's connection to the boiler and the bottom of the measuring device's glass.  In this case, it is safe to put feed water in the pot. - If after (5) when the glass is full of water, the steam tap is open and the glass does not descend into the glass, the water level is above the steam tap connection to the boiler and there is a risk that the boiler will be lit if additional feed is inserted into it. Q. Precautions to be taken when blowing the boiler. A. The modern boiler should never be blown down while the boiler is steaming at high rates. Blow... Cut fires and close steam and fed stops. Let the boiler cool down. At 25psi, blow down to sea, the vessel's valve should be open first, then exhaust the valve. This will retain control of the operator in the event of a pipe explosion. Care should be taken to ensure that that no cold sea water enters the pot due to the cooling of the remaining steam to create a vacuum. The return valve prevented it from happening, but caution could dictate the lock to blow off the valve when getting close without pressure. Open boiler ventilation opening to ensure natural cooling under atmospheric pressure as much as possible. Remove the plug to drain the pumping residue. One door can then be opened, top or bottom, but not both and carefully. Releasing the dogs, but not withdrawing then to determine the condition of the other side ... steam, hot water. When to fix the door can open carefully the remaining hot water. Q. What is the danger of relighting the boiler. A. Obvious precautions must be taken before lighting. These include making sure that all doors are closed and the gas aisles are open and are in the water boiler. The boiler contains un-burnt fuel and steam, they can cause an explosive atmosphere. To prevent this, perform a visual inspection of the oven, followed by a forced draught with all air registers open for several minutes. Q. Caution to remove the support of one boiler to another. A. Non-profit/check valves, manual monitoring, flow meters/alarms. Isolate the boiler and blow the moustage. Q. Precautions to be taken when adding one boiler to another. A. The aim is to reduce the risk of dangerous thermal shocks. And highlights. The connecting steam pipe must be open to drainage and gradually heated with a slight cracking of the steam valve. When the pressure is about 90% apart, the steam stop valve can then be opened. Q. Water hammer. What it is, how it can be prevented.  A life-threatening water hammer in the steam system is usually a water hammer caused by condensation.  This occurs when the steam becomes completely sheathed in sub-chilled condensate that is not emptied from the system.  Steam, when surrounded, can implosively condensate leaving a vacuum in the condensate, pushing the system pressure, rushes to fill.  As a result, a collision of condensate with itself or a component of the system can cause excessive pressure because it affects well over 1,000 psi - the volume depends on how quickly the condensate moves when it accelerates the void.  Against the water hammer in the steam system it is safe that the condensate is unable to collect and cool the steam system.  Use these tips from these helpful www.kirsner.org understand this important safety phenomenon 1. High pressure steam in contact with subcooised condensate is an unstable and potentially explosive mixture. 2. No steam shall be recognized in a line filled with sub-cooled condensate. In fact, always be wary to pick up steam on any cold steam line, if you can not be absolutely sure that the line is completely touched. 3. Allow sub cooled condensate inflow of steam filled line is more dangerous than the intake of steam with a condensed condensate. 4. If you suspect the compressed steam line is filled with sub cooled condensate, do not try to drain the condensate. Switch off steam first, then drain the condensate. If you open the drain, and line the hammers, close it and get the steam off. The line can continue to hammer until you get the steam off. The steam mixture above the sub cooled condensate can sit dormant in an insulated steam line like a loaded gun waiting for triggering an event. Opening the valve to absorb steam or opening the blood transmitting may cause condensation to drain. Don't let yourself or those you monitor inadvertently pull that trigger, first making sure that the gun is unloaded.  DuckNotes #1 © Martin's Marine Engineering Page, www.dieselduck.net, September 23, 2002 - comments comments