5 Why’s of Maintenance - Boilers

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Why Maintenance #1

300 HP Firetube Boiler
* Did not perform hourly boiler checks
* Did not test LWCO before each shift much less daily
* 6 months prior was notified LWCO did not work but continued to operate boiler
* ALWCO failed in closed position

**ADDITIONAL LIMITS:** Additional limits tested

1st LWCO does not shut down
Burner not working
Does sound alarm horn
2nd works ok
Why Maintenance #2

200 HP Firetube Boiler

ALWCO jumperred
Why Maintenance #2

* ALWCO relay was jumpered removing it from safety circuit
* LWCO float switch was worn out, intermittent operation
* Site performs their own annuals
* Operators did not perform LWCO test at start of each shift much less daily
Why Maintenance #3

600 HP Firetube Boiler
Why Maintenance #3

* Boiler water chemistry not maintained nor monitored
* Boiler not blown down daily
* Less than 8 months after annual completed
Why Maintenance #4

30,000 PPH Watertube Boiler
* Poor water chemistry
* During annual inspection inspector had notified end user to have tubes cleaned or the boiler would be red tagged
* Customer did not clean tubes and upon inspector follow up was red tagged and shut down
* Rental boiler and additional costs
Why Maintenance #5

9.5 HP Cal Special Vertical Boiler
**Why Maintenance #5**

* Small boiler didn’t require attendant per Title 8 Section 781 of California Code
* Water level switches weren’t being tested
* Time delay relay provided by vendor to minimize nuisance trips was changed by end user
* Installed incorrect relay bypassing water level safety circuit
* Boiler dry fired and melted down due to feed tank running empty due to bad float switch
Why Maintenance?

* Each of these incidents would have been avoided if proper operation and maintenance had been performed.

* California Code Title 8 Section 781 establishes guidelines for boiler attendants on High Pressure Steam Boilers and includes annual inspection requirements.

* California Code Title 8 Section 770 requires annual inspections of boiler and controls by an inspector.

* Inspection of safety limits should be completed by a competent and qualified person who has the knowledge and experience to determine the integrity of the devices.