PROPOSED REGULATION OF THE

DIVISION OF INDUSTRIAL RELATIONS OF THE DEPARTMENT OF

BUSINESS AND INDUSTRY

LCB FILE NO. R185-18I

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PROPOSED REGULATION OF THE DIVISION OF INDUSTRIAL RELATIONS,

MECHANICAL COMPLIANCE SECTION FOR THE

AMENDMENT OF CHAPTER 455C, NAC

LCB File No. Unassigned

June 29, 2018

EXPLANATION — Matter in ***italics*** is new; matter in brackets [~~omitted material~~] is material to be omitted.

NRS 455C.110; NRS 233B.100; NRS 233B.120.

A REGULATION

Section 1. Chapter 455C of NAC is hereby amended by adding thereto new sections as set forth in sections 2 through 4 as follows:

Section 2. ***If any publication adopted by reference in subsections 1, 2, 3, 4, 11, 12 or 13 of NAC 455C.108 is revised, the Administrator shall review the revision to determine its suitability for this State. If the Administrator determines that the revision is not suitable for this State, the Administrator shall hold a public hearing to review his or her determination and give notice of that hearing within 6 months after the date of the publication of the revision. If, after the hearing, the Administrator does not revise his or her determination, the Administrator shall give notice that the revision is not suitable for this State within 30 days after the hearing. If the Administrator does not give such notice, the revision becomes part of the publication adopted by reference in NAC 455C.108.***

Section 3. ***"Historic power boiler" means any steam traction engine, portable or stationary, standard or nonstandard power boiler, including free-lance and scale models and***

locomotive boilers, owned by publicly operated museums, nonprofit organizations and individuals who preserve, maintain, exhibit and only occasionally operate these boilers on a not-for-profit basis and for the primary purpose of perpetuating the agricultural and pioneer heritage of Nevada.

Section 4. *1. These provisions apply to historic power boilers as defined in Section 3 of this regulation.*

2. Historic power boilers shall receive prior authorization from the Mechanical Compliance Section before entry and operation of the boiler in the state of Nevada. Prior to entering the state with the boiler, the owner or user shall submit to the Mechanical Compliance Section (MCS) the proper documentation for approval for entry consideration of a historic power boiler.

3. Design and Testing.

(a) For all historic power boilers, both standard and nonstandard, the owner or user shall supply MCS with reports of the maximum allowable working pressure calculations and ultrasonic testing at the time of application. The calculations and ultrasonic testing shall be completed by a knowledgeable individual familiar with the practice. All report results are subject to the acceptance of the Mechanical Compliance Section.

(b) A copy of the Manufacturer's Data Report shall accompany all applications to operate standard historic power boilers in the state, as applicable.

(c) The Mechanical Compliance Section may at any time during the application process request additional information, such as, but not limited to, design, material, inspection or testing information.

4. Standard and Non-Standard Historic Power Boilers.

(a) The maximum allowable working pressure shall be calculated with a minimum safety factor of five (5) for standard not to exceed 125 psig, and five point five (5.5) for: nonstandard historic power boilers, using the formula for historic power boilers in NAC455C.242, not to exceed 15 psig.

(b) The minimum safety factor shall be six point five (6.5) for standard historic power boilers having lap-riveted longitudinal joints. The maximum allowable working pressure should not exceed 100 psig. Seal welding of a lap-riveted longitudinal joint is not permitted.

(c) Nonstandard historic power boilers, free-lance or scale models, constructed after the effective date of this provision shall not be allowed to operate in the State.

(d) The maximum allowable working pressure for standard historic power boilers shall be determined in accordance with the applicable provisions of the edition of the ASME Code under which they were constructed.

(e) Nonstandard historic power boilers having lap-riveted longitudinal joints shall not be allowed to operate in the State.

5. An annual inspection of all historic power boilers shall be conducted by an inspector or special inspector. DAS

6. Operational Log.

(a) The owner of a historic power boiler operating in this State shall possess a bound operational log. After successful completion of the initial inspection, the owner shall present the operational log book to the inspector to record the registration number of the State of Nevada, their name, commission number and the completed

initial inspection date. The operational log shall contain, but is not limited to, the following:

1. The operation date of the historic power boiler;

2. The length of time the historic power boiler was operated;

3. Location where operated (city and state);

4. Jurisdictional inspection dates with the signature and commission number of inspector or special inspector;

5. Description of repairs and alterations, including the dates, with signature and commission number of inspector or special inspector,

6. Testing performed and by whom (e.g., pressure test, ultrasonic test, radiographic test, etc.);

7. Change of ownership, including the date the historic power boiler changed ownership and to whom; and

8. The front page of the operational log shall include a page number index of all inspections, inspector instructions, and repairs or incidents involved with the historic power boiler.

(b) Operational logs shall be available to the inspector or special inspector at all times the historic power boiler is to be operated in the State. Operational logs that are lost or misplaced shall be reported, by the owner or user, to the Mechanical Compliance Section immediately. Failure to possess or report a lost or misplaced operational log will prevent the historic power- boiler from operating in the State and the revoking of the operating permit.

(c) The owner is responsible for retaining all operational logs, initial and supplemental, for the life of the historic boiler. In the event that ownership of the historic power boiler changes, the new owner shall receive all original operational logs, initial and supplemental, from the previous owner. The previous owner may make a copy of the operational logs for his records.

7. A pressure test with water temperature between 70 to 120° F, and not to exceed ninety percent (90%) of the set pressure of the lowest setting pressure relief device on the boiler, held for a period of at least thirty (30) minutes may be conducted at the discretion of the inspector or special inspector.

8. All historic power boilers shall be equipped with an ASME stamped, National Board rated safety valve of adequate capacity, together with a water level indicator, calibrated pressure gauge and two (2) suitable means of introducing water into the boiler.

9. The historic power boiler, shall be equipped with a fusible plug. All fusible plugs shall be constructed to meet the requirements of the ASME code.

(a) Fusible plugs shall be located at the lowest permissible water level as determined by the boiler manufacturer or the Mechanical Compliance Section when this information is not available.

(b) Fireside fusible plugs shall protrude at a minimum of one (1) inch into the water.

(c) Waterside fusible plugs shall not protrude into the fire area more than one (1) inch.

(d) Fusible plugs shall not be refilled.

(e) All fusible plugs shall be removed for inspection annually.

(f) All fusible plugs shall be replaced after three hundred (300) hours of service with a new fusible plug constructed to meet the requirements of the ASME Code.

(g) The date when the fusible plug is removed for inspection or replaced shall be documented in the owner's operational log.

10. All historic power boilers shall be equipped with operational try-cocks, a gauge glass and pressure gauge. A siphon or equivalent device of sufficient capacity to keep the gauge tube filled with water shall be installed between the pressure gauge and boiler. All pressure gauges shall be proven accurate at the time of the annual inspection by testing or documentation of calibration. TWD

11. Repairs and Alterations.

(a) Any welded code repair or any alteration shall be performed by organizations holding a valid National Board •R• stamp. If the repair or alteration is performed in this State, the •R• stamp holder shall have a valid State of Nevada contractor license.

(b) Mechanical code repairs to historic power boilers such as, but not limited to, tube, rivet and stay replacement may be completed by the owner, or his designee, who is knowledgeable about the repair to be performed with prior approval of the Mechanical Compliance Section.

(c) All repairs and alterations, welded and mechanical, shall be inspected by an inspector or special inspector and documented on the applicable "R" form. The "R" form shall be submitted and kept on file in the appropriate MCS office.

1. For those repairs and alterations performed in the State, an inspector or special inspector shall perform the inspection.

2. For repairs and alterations performed outside of the State, the inspection shall be performed by a NB commissioned boiler inspector.

3. All repairs and alterations shall be documented in the owner's operational log and signed by the inspector or special inspector who performed the inspection.

12. All standard historic power boilers shall have legible stamping clear1y visible to the inspector or special inspector. DAS

13. Locomotive boilers operating on tracks gaged 24 inch or greater or non-insular shall comply with the Federal Railroad Administration (FRA) rules and the National Board Inspection Code, Part 2, Supplement 1. Less than 24 gage shall comply with the Engineering Standards Committee for Steam Locomotives, Inc. (ESC) Compendium Vol.1 and National Board Inspection Code, Part 2 Supplement 2.

Section 5. Chapter 455C of NAC is hereby amended as set forth as sections 6 to 13, inclusive, of this regulation.

Section 6. NAC 455C.064 is hereby amended to read as follows:

NAC455C.064 "[~~Lined potable~~] ***Potable*** water heater" means a fired heater for the storage of water which has a corrosion-resistant lining and is used to supply potable hot water.

Section 7. NAC 455C.156 is hereby amended to read as follows:

NAC 455C.156 1. A power boiler or a high-pressure, high-temperature water boiler must be inspected upon installation and must have an internal inspection, if the construction and design of the boiler so allows, at least once each year thereafter, and an external inspection approximately 6 months after the date of the internal inspection. If an internal inspection is not possible, such a boiler must have an external inspection at least once every 6 months.

2. A low-pressure steam heating boiler must be inspected upon installation and at least once each year thereafter. The inspection must be:

(a) An internal inspection, if the construction and design of the boiler so allows and the inspector or special inspector so requests; or

(b) An external inspection that includes operational testing of all controls and safety devices.

3. Except as otherwise provided in subsection 4, a low-pressure hot water heating boiler and a hot water supply boiler must be inspected upon installation and at least once every 2 years thereafter. The inspection must be:

(a) An internal inspection, if the construction and design of the boiler so allows and the inspector or special inspector so requests; or

(b) An external inspection that includes operational testing of all controls and safety devices.

4. A ~~[lined]~~ potable water heater must have an external inspection at least once every 2 years. The external inspection must include operational testing of all controls and safety devices if the installation and construction of the ~~[lined]~~ potable water heater so allows.

5. Any other fired pressure vessel for which a frequency of inspection is not specified in subsections 1 to 4, inclusive, must be inspected upon installation and at least once each year thereafter. The inspection must be:

(a) An internal inspection, if the construction and design of the pressure vessel so allows;

(b) An external inspection that includes operational testing of all controls and safety devices, if the installation and construction of the pressure vessel so allows; or

(c) An external inspection that includes operational testing of each control and safety device that it is possible to test given the installation and construction of the pressure vessel.

6. An unfired pressure vessel must be inspected upon installation and at least once every 4 years thereafter. The inspection must be:

(a) An internal inspection, if the construction and design of the pressure vessel so allows; or

(b) An external inspection that includes operational testing of all controls and safety devices.

7. A refrigeration pressure vessel must be inspected upon installation and at least once every 4 years thereafter. The inspection must be:

(a) An internal inspection, if the construction and design of the pressure vessel so allows; or

(b) An external inspection that includes operational testing of all controls and safety devices.

8. A boiler or pressure vessel installed or used in a single-family residence must be inspected by an inspector upon installation. The inspection must include a preliminary and a final inspection and must be an internal inspection, if the construction and design of the boiler or pressure vessel so allows, or an external inspection that includes operational testing of all controls and safety devices. If the owner of the boiler or pressure vessel wishes to have an inspector perform any subsequent inspections of the boiler or pressure vessel, he or she must submit a written request for such an inspection to the Enforcement Section.

9. An inspector or special inspector may require any boiler or pressure vessel to be prepared for inspection in the manner set forth in NAC 455C.158 if, in his or her opinion, an inspection is necessary to determine whether the boiler or pressure vessel is operating in a safe manner.

10. An inspection organization that has been authorized by the Enforcement Section to inspect its boilers and pressure vessels may request approval from the Enforcement Section to inspect its boilers and pressure vessels at a different interval.

11. Upon application from a petroleum company, chemical plant, public utility or other employer considered by the Enforcement Section as having a program acceptable to the

Enforcement Section for preventive maintenance and examination, an operating permit that allows an extension of time between required internal inspections may be granted if the power boiler is inspected by external inspections at intervals of approximately 6 months. The application for the operating permit that allows an extension of time must be submitted in writing at least 45 days before the required internal inspection. The application must include the history of the power boiler or, if the power boiler is newly installed, of a similar boiler, substantiating that there is no significant deterioration from scaling, corrosion, erosion or overheating. Points of reference established by the owner of the power boiler or an authorized inspection entity at the time of the first inspection must be used to determine the thickness of the walls of the power boiler. If the application is approved after the internal inspection of each power boiler, a record showing the total corrosion and any other conditions that need correction must be submitted to the Enforcement Section.

12. An operating permit issued pursuant to subsection 11 expires 1 year after the date of an internal inspection. Before the expiration of the permit, the boiler must be inspected by an external inspection conducted by an inspector or special inspector who will review the operation logs and records of water treatment. If the owner of the power boiler or his or her agent applies for an extension of an operating permit issued pursuant to subsection 11, the inspector or special inspector shall submit a report of inspection and recommendations to the Enforcement Section. If the Enforcement Section approves the application, it may extend the operating permit for a period not to exceed 6 months. Before the expiration date of the extension, the owner or his or her agent must apply again for an extension and the boiler must again be inspected by an external inspection conducted by an inspector or special inspector. A second extension may be issued for

an additional period of 6 months after which the boiler must be inspected by an internal inspection.

Section 8. NAC 455C.182 is hereby amended to read as follows:

NAC 455C.182 1. Each boiler and pressure vessel must be installed and trimmed as required by the stamping of the original manufacturer of the boiler or pressure vessel and in accordance with the applicable provisions of the code.

2. Except as otherwise provided in subsection 6, a contractor must obtain a permit for installation before installing or altering a boiler or pressure vessel, including, without limitation, a refrigeration pressure vessel, in this State. If installation is begun before the permit is issued, installation must be suspended until the permit is issued.

3. A request for a permit for installation must be submitted by the contractor to the Enforcement Section in writing not less than 10 days before the installation will begin and include:

(a) A data report from the manufacturer of the boiler or pressure vessel and, if the boiler or pressure vessel that is being installed was moved from another location, a copy of the original permit for installation and report of inspection;

(b) The plans and specifications of the boiler room in which the boiler or pressure vessel is being installed which designate the location of the boiler or pressure vessel and which comply with the requirements of NAC 455C.250 and 455C.254; and

(c) A copy of his or her contractor's license issued pursuant to chapter 624 of NRS which authorizes the contractor to install boilers or pressure vessels.

4. Except for an existing installation or a reinstalled boiler or pressure vessel, a boiler or pressure vessel may not be installed in this State unless it has been registered with the National Board.

5. Before a secondhand boiler or pressure vessel, reinstalled boiler or pressure vessel, or portable boiler or pressure vessel may be installed or shipped for installation into this State, the owner of the boiler or pressure vessel or his or her agent or the contractor must apply to the Enforcement Section for approval to install it. The request for a permit for installation must include, without limitation, a report of inspection. The report of inspection must be prepared by a person who holds a commission and who inspected the boiler or pressure vessel. The fittings and appurtenances of the boiler or pressure vessel must comply with the requirements for the installation of a new boiler or pressure vessel.

6. In the case of an emergency, a contractor may install or alter a boiler or pressure vessel, including a refrigeration pressure vessel, in this State without first obtaining a permit from the Enforcement Section if the contractor:

(a) Notifies the Enforcement Section ~~[as soon as practicable]~~ ***not more than 10 calendar days*** after the alteration or installation; and

(b) Obtains the permit required by subsection 2 at that time.

Section 9. NAC 455C.184 is hereby amended to read as follows:

NAC 455C.184 1. If a boiler or pressure vessel is removed from its original site and is to be reinstalled at the same location or reinstalled at a new location with or without a change of ownership, the contractor must apply to the Enforcement Section for a permit for installation before reinstalling the boiler or pressure vessel. The fittings and appurtenances must comply with the requirements for the installation of a new boiler or pressure vessel.

2. If a standard boiler or pressure vessel is to be moved to another state for temporary use or repair, the owner of the boiler or pressure vessel or his or her agent must apply to the Enforcement Section for approval to reinstall the boiler or pressure vessel within this State.

3. Each time a portable boiler or pressure vessel is to be moved for temporary use within this State, the contractor must apply to the Enforcement Section for a permit for installation before installing the portable boiler or pressure vessel.

Section 10. NAC 455C.232 is hereby amended to read as follows:

NAC 455C.232 1. Each hot water heating boiler must have at least one safety relief valve, certified by the American Society of Mechanical Engineers or the National Board, set to relieve pressure at or below the maximum allowable working pressure of the boiler. Each hot water supply boiler must have at least one safety relief valve of the automatic reseating type, certified by the American Society of Mechanical Engineers or the National Board, set to relieve at or below the maximum allowable working pressure of the boiler. Safety relief valves must have a capacity certified by the American Society of Mechanical Engineers or the National Board and must have a spring-pop type action if tested by steam. If more than one safety relief valve is used on hot water heating or hot water supply boilers, the additional valve must be rated by the American Society of Mechanical Engineers or the National Board and set within a range not to exceed 6 PSIG above the maximum allowable working pressure of the boiler up to and including 60 PSIG and 10 percent if the maximum allowable working pressure exceeds 60 PSIG. Safety relief valves must be spring loaded. Safety relief valves must be arranged so that they cannot be reset at a higher pressure than the maximum permitted by this subsection.

2. Material that is likely to fail because of deterioration or vulcanization if it is subjected to a saturated steam temperature which corresponds to test pressure for capacity must not be used for any part of the safety relief valve.

3. A safety relief valve must not be smaller than three-quarters of an inch or larger than 4 1/2 inches in a standard pipe size, except that boilers having a input of heat of not more than 15,000 British thermal units per hour may be equipped with a safety relief valve of one-half of an inch in diameter or its equivalent area. The opening for the inlet must have an inside diameter approximately equal to, or greater than, the diameter of the seat. The minimum opening through any part of the valve must not be less than one-fourth of an inch in diameter or an equivalent area.

4. The capacity of the safety relief valve for each boiler must be such that, with the fuel-burning equipment installed and operated at maximum capacity, the pressure cannot exceed ~~[6 PSIG above the maximum allowable working pressure of the boiler up to and including 60 PSIG and]~~ 10 percent [if] ***above*** the maximum allowable working pressure ~~[exceeds 60 PSIG]~~.

5. If operating conditions are changed or additional boiler heating surface is installed, the capacity of the valve must be increased, if necessary, to meet the new conditions as set forth in the code and must be in accordance with subsection 4. The additional valves required because of changed conditions may be installed on the outlet piping if there is no intervening valve.

6. If there is any doubt as to the capacity of the safety relief valve, an accumulation test must be run as provided in section IV of the *ASME Boiler and Pressure Vessel Code*, as adopted by reference in NAC 455C.108.

7. A valve of any description must not be placed between the safety relief valve and the boiler, or on the discharge pipe between the safety relief valve and the atmosphere. The

discharge pipe must be at least full size and fitted with an open drain to prevent water from lodging in the upper part of the safety relief valve or in the discharge pipe. If an elbow is placed on the discharge pipe, it must be located close to the safety relief valve outlet or the discharge pipe must be securely anchored and supported. All discharges from the safety relief valve must be so located or piped as not to endanger any person in the area.

8. A pressure and temperature relief valve must be installed on all water heaters and hot water supply boilers to which the provisions of NAC 455C.020 to 455C.300, inclusive, apply.

Section 11. NAC 455C.234 is hereby amended to read as follows:

NAC 455C.234 1. A ~~[lined]~~ potable water heater must have at least one pressure and temperature relief valve that is:

(a) Not smaller than three-fourths of an inch standard pipe size; and

(b) Marked with the symbol V or HV to ensure compliance with the construction and rating requirements of the code.

2. The pressure setting of the relief valve must be less than or equal to the maximum allowable working pressure of the ~~[lined]~~ potable water heater. The temperature setting of the relief valve must not exceed 210 degrees Fahrenheit. If any other components of the hot water supply system, such as a valve, pump, expansion or storage tank or piping, have a working pressure rating that is less than the ~~[lined]~~ potable water heater, the pressure setting for the relief valve must be based upon the component with the lowest maximum allowable working pressure rating. If there is more than one safety relief valve on a ~~[lined]~~ potable water heater, the pressure of the additional valve must not exceed the pressure of the first valve by more than 10 percent.

3. The relieving capacity for the safety relief valve of an electrically powered ~~[lined]~~ potable water heater must be greater than 3,500 British thermal units per hour per kilowatt of

input. The required relieving capacity for the safety relief valve on any other ~~[~~lined~~]~~ potable water heater must be in British thermal units per hour and must not be less than the maximum allowable input.

4. A ~~[~~lined~~]~~ potable water heater must have a safety relief valve capacity such that when the fuel-burning equipment is installed and operated at maximum capacity, the pressure cannot rise more than 10 percent of maximum allowable working pressures.

5. If operating conditions change or additional heating surface is installed, the capacity of the safety relief valve on a ~~[~~lined~~]~~ potable water heater must be increased to meet the requirements of this section. If any additional valves are required because of a change in operating conditions, the valves may be installed on the outlet piping if there is not an intervening valve.

Section 12. NAC 455C.270 is hereby amended to read as follows:

NAC 455C.270 1. A permanent source of outside air must be provided for the room in which the boiler is located to allow satisfactory combustion of the fuel as well as proper ventilation of the room under normal operating conditions. Air used for combustion must not be taken from a room that contains equipment for refrigeration.

2. The total input of British thermal units of the burners for all fired pressure vessels in the room for the boiler must be used to determine the size of the louver, whether the boilers are fired by coal, oil or gas in compliance with the applicable provisions of ~~[~~*~~Controls and Safety Devices for Automatically Fired Boilers~~*~~]~~ ***National Fuel Gas Code, ANSI Z223.1/NFPA 54***, as adopted by reference in NAC 455C.108 ***(5)***.

Section 13. NAC 455C.278 is hereby amended to read as follows:

NAC 455C.278 1. Each hot water boiler must have a thermometer so located and connected that it is easily readable when observing the burner of the boiler. The thermometer must be so located and connected that it will at all times indicate, in degrees Fahrenheit, the temperature of the water in the boiler at or near the outlet.

2. In addition to satisfying the requirements set forth in subsection 1, each hot water boiler must be equipped with:

(a) An operating control and a secondary high limit control that automatically interrupts the fuel supply to the boiler if the boiler reaches its designed maximum operating temperature; and

(b) A stop valve ***and drain valve*** that has been installed in accordance with:

(1) The applicable construction code, if any; or

(2) *Controls and Safety Devices for Automatically Fired Boilers*, as adopted by reference in NAC 455C.108.