

ARTICLE 33.1-12
PETROLEUM TANK RELEASE COMPENSATION FUND
CHAPTER 33.1-12-01
GENERAL FUND PROVISIONS

Section

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33.1-12-01-01. Definitions

For the purposes of this chapter, the following definitions apply in addition to the definitions set forth in North Dakota Century Code chapter 23.1-12:

1. "Petroleum" as defined in North Dakota century Code section 23.1-12-02(10). Antifreeze is not included.
2. "Annual base registration fee" means the rate set by the department.
3. "Total annual registration fee" means the annual base registration fee plus additional classification system matrix fees.
4. "Classification system matrix fee" means the fees charged based on the department's matrix system with respect to the degree of hazard associated with the tank type and risk of each classification.
5. "Farm tank" means a tank located on a tract of land devoted to the production of crops or for raising animals and associated residences and improvements. A farm tank must be located on the farm property.
6. "Portable tank" means any storage tank, along with its piping and wiring, that is not stationary or affixed including, but not limited to, tanks which are on skids.
7. "Properly registered tanks" means tanks having the current registration fee paid with an up-to-date signed and dated tank data sheet on file with the department.
8. "PTRCF" means Petroleum Tank Release Compensation Fund program
9. "Residential tank" means a tank located on property used primarily for dwelling purposes.
10. "Surface impoundment" means a natural topographic depression, manmade excavation, or diked area formed primarily of earthen materials.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-12-05,

Law Implemented: NDCC 23.1-12-05

33.1-12-01-02. Tank registration

Tank owners and operators in North Dakota are required to register their tanks with the fund on an annual basis (fiscal year runs July first through June thirtieth). The department will notify electronically or by mail, all prior North Dakota fund registrants and known tank owners and operators, a registration letter and billing notice. The letter will explain the function of the fund and the requirement that the tank owner or operator must have all tanks owned or operated registered and all fees paid prior to a petroleum release in order to be eligible for reimbursement. In the event of a petroleum release, no payment will be made to an owner or operator of a registered tank unless the owner or operator has complied with all state and federal regulations applicable to the tanks. For example, underground storage tank regulations can be found in the North Dakota Century Code section 23.1-04-06 and chapter 33.1-24-08, and facilities with aboveground storage tanks may be subject to U.S. EPA's Spill Prevention, Control, and Countermeasure (SPCC) regulation (Title 40, Code of Federal Regulations, Part 112).

History: Effective July 1, 2020.

General Authority: NDCC 23.1-12-05, 28-32-02

Law Implemented: NDCC 23.1-12-17; 23.1-12-17.1

33.1-12-01-03. Registration fee

1. An annual registration fee is due and payable on July 1, 1991, and on July first of each successive year thereafter or from the date a new tank was installed if it was after April 1991, to be in compliance with this section. The period of registration must run from July first to June thirtieth to coincide with the fiscal year of North Dakota.
2. No reregistration or fee modification will be made during any registration year when an owner or operator removes a tank or replaces an underground tank with an aboveground tank within a registration year. The renewal billing will reflect the tank status change.
3. The department has established an annual base registration fee of seventy-five dollars for each aboveground or underground tank owned or operated by the tank owner or operator. If, after the fiscal year has been closed and all expenses relating to the fiscal year have been accounted for, the fund balance is less than six million dollars, the annual base registration fee of seventy-five dollars is increased to one hundred dollars. If, after the fiscal year has been closed and all expenses relating to the fiscal year have been accounted for, the fund balance is seven million dollars or more and the annual base registration fee has been increased to one hundred dollars, the annual base registration fee must be reduced to seventy-five dollars. If after the fiscal year has been closed and all expenses relating to the fiscal year have been accounted for, the fund balance exceeds nine million dollars the annual base fee must be reduced to a flat total annual fee of fifty dollars without regard to the additional classification system matrix outlined in subsections 4 – 9. The total annual fee must continue at fifty dollars until the fund balance does not exceed nine million dollars.
4. An additional classification system matrix fee is calculated in addition to the annual base registration fee to determine the total annual fee due from an owner or operator of an aboveground or underground tank. The classification system matrix is developed by the department with respect to the degree of hazard associated with the tank type and risk of each classification. The classification system matrix uses multipliers applied to the annual base registration fee for each tank based on the degree of hazards associated with tank's classification. Tank classifications are described in subsection 5.
5. Under the classification system matrix each tank is classified based on the following risks with respect to degree of hazard:
 - a. type of the tank system

- b. age of the tank system
- c. volume of the tank
- d. best management practices (BMPs) in place at the location of tank system may receive a discounted matrix multiplier to the annual base registration fee. For example, an impermeable berm around an aboveground storage tank system and leak detection in an underground storage tank system.
- e. if the registered site of the tank has an active claim for corrective action, the tank will have a higher matrix multiplier to the annual base registration fee

6. Under the classification system matrix, each tank risk classification is assigned a multiplier. The total annual fee charged for each tank is determined by multiplying the multiplier value of each tank risk classification to the annual base registration fee. The total annual fee is computed by the following equation:

$$X = (Y)(a)(b)(c)(d)(e)$$

Where:

X = total annual fee applied to each tank

Y = annual base registration fee for each tank

a = multiplier assigned to the type of the tank system (see table 1)

b = multiplier assigned to the age of the tank system (see table 2)

c = multiplier assigned to the volume of the tank (see table 3)

d = multiplier assigned to the BMPs in place at the tank location (see table 4a and 4b)

e = multiplier assigned to the registered site with a claim for corrective action (see table 5)

- 7. The department determines the multipliers assigned to each risk classification based on the fund's annual claim reimbursements, fund reserve requirements, and operating expenses.
- 8. The multiplier is based on the risk factors with respect to the degree of hazard listed in subsection 5 above. Each risk factor multiplier is listed below in a table format. See subsection 9.
- 9. The tables below are based on the following risk factors:

Table 1

Type of Tank System (underground = UST aboveground = AST)

Tank type designation	UST multiplier
UST post 2009 double wall with leak detection	0.80
UST double wall with interstitial monitoring or single wall with <u>corrosion protection</u>	0.90
AST	1.00

Table 2

Age of Tank System (Note: If the site has not provided a tank installation date, point value 7 is used as the default multiplier.)

Age in years since installation date	Multiplier
less than 5	1.00
5 - 10	1.25
11 - 15	1.50
16 - 20	1.75
21 - 25	2.00

26 - 30	2.13
greater than 30	2.25

Table 3
Volume of the Tank

Volume in gallons	Multiplier
0 - 1999	0.75
2000 - 5000	1.00
5001 - 10000	1.25
10001 - 15000	1.50
15001 - 20000	1.75
greater than 20000	2.00

Table 4a
BMPs for Tank System (underground = UST)

UST BMPs description	UST multiplier
Double walled with leak detection or interstitial monitoring	0.75
Single walled with corrosion prevention	0.85

Table 4b
BMPs for Tank System (aboveground = AST)

AST BMPs description	AST multiplier
SPCC plan with secondary containment	0.75
An SPCC plan only	0.90

Table 5
Active Claim for Corrective Action at Registered Site

Does the site have an active claim	Claim multiplier
1 = no	1.00
2 = yes	1.30

Example of maximum Total Annual Fee for a UST with an active claim:

$$X = (Y)(a)(b)(c)(d)(e)$$

$$X = (\$100)(0.90)(2.25)(2.00)(0.85)(1.30)$$

$$X = \$447.50$$

Example of minimum Total Annual Fee for a UST with no active claim:

$$X = (Y)(a)(b)(c)(d)(e)$$

$$X = (\$100)(0.80)(1.00)(0.75)(0.75)(1.00)$$

$$X = \$45.00$$

Example of maximum Total Annual Fee for an AST with an active claim:

$$\begin{aligned} X &= (Y)(a)(b)(c)(d)(e) \\ X &= (\$100)(1.00)(2.25)(2.00)(0.90)(1.30) \\ X &= \$526.50 \end{aligned}$$

Example of minimum Total Annual Fee for an AST with no active claim:

$$\begin{aligned} X &= (Y)(a)(b)(c)(d)(e) \\ X &= (\$100)(1.00)(1.00)(0.75)(0.75)(1.00) \\ X &= \$56.25 \end{aligned}$$

10. Additional fees may apply, as specified in North Dakota Century Code section 23.1-12-17.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-12-05, 28-32-02

Law Implemented: NDCC 23.1-12-17;

33.1-12-01-04. Notification of release procedures

Upon receiving notice of a release, the PTRCF shall:

1. Verify that the tank and all other tanks owned or operated by the operator are registered with the fund.
2. Record the release information in the registration file for the location.
3. Verify that the department has received notice of the release.
4. If the owner or operator has not registered all the tanks owned and operated by the operator at the location of the release, the PTRCF shall send a denial letter to the owner or operator. A copy will be sent to the department's Division of Waste Management, Underground Storage Tank (UST) program.
5. Obtain verification from the owner or operator that the affected tank, equipment, components, material, and dispenser are in compliance with state and federal regulations for the petroleum product stored and dispensed. If the previously mentioned tank, equipment, components, material, and dispenser are non-compliant with state and federal regulations, the PTRCF shall send a denial letter to the owner or operator. A copy of the denial letter will be sent to the department's Division of Waste Management, UST program.
6. If all tanks are registered and the affected tank, piping, fitting, and dispenser are in compliance with state and federal regulations for the petroleum product stored and dispensed, the PTRCF shall send the registered owner or operator of the site an application packet, tank removal and cleanup guidelines, and a letter outlining the procedure for filing a claim for reimbursement of corrective action.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-12-05, 28-32-02

Law Implemented: NDCC 23.1-12-10, 23.1-12-19

33.1-12-01-05. Procedures for investigation of claims

In each release investigation, the PTRCF shall:

1. Investigate the location and cause of the release.
2. Interview persons with knowledge of the release.
3. Examine records and documentation concerning the release, including documentation of the corrective action taken and expenses incurred.
4. Prepare a written report determining the validity of the claim and the eligible cleanup expenses.
5. Complete other claims related tasks as required.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-12-05, 28-32-02

Law Implemented: NDCC 23.1-12-18, 23.1-12-20, 23.1-12-23

33.1-12-01-06. Reimbursement

1. The fund will reimburse only reasonable and necessary eligible cleanup expenses. The PTRCF tank removal and cleanup guidelines will be used to determine reasonable environmental consultant, contractor, and excavation expenses. The PTRCF in consultation with the department's division assigned to the cleanup will evaluate each claim site prior to dispersing reimbursement for cleanup expenses. Reimbursement is made only if all tanks are properly registered prior to the discovery of the release.
2. No payments for reimbursement will be made from the fund unless a completed claim application form has been received and approved by the PTRCF.
3. Eligible expenses for corrective action include the following:
 - a. Labor
 - b. Testing
 - c. Use of machinery
 - d. Materials and supplies
 - e. Professional services
 - f. Remediation, monitoring, or cleanup expenses incurred with the oversight and direction of the department's division assigned to the cleanup.
 - g. Any other expenses the department and the board deem to be reasonable and necessary to remedy cleanup of the release and satisfy liability to any third party.
 - h. Consultant fees if authorized by the department's division assigned to the cleanup.
4. The following will not be considered eligible expenses:
 - a. The cost of replacement, repair, and maintenance of affected tanks, associated piping, and system.
 - b. Pumping out of any product, including water, from any tanks which need to be removed.
 - c. The cost of upgrading existing affected tanks, associated piping, and system.
 - d. The loss of income, profits, or petroleum product.

- e. Decreases in property value.
 - f. Bodily injuries or property damages except for injuries or damages suffered by third parties as stated in North Dakota Century Code section 23.1-12-26.(4).
 - g. Attorney's fees.
 - h. Costs associated with preparing, filing, and prosecuting an application for reimbursement or assistance under this regulation.
 - i. The costs of making improvements to the facility beyond those that are required for corrective action, including replacing concrete, asphalt, equipment, or buildings.
 - j. Any cleanup costs resulting from negligence or misconduct on the part of the owner or operator.
 - k. Consultant marked-up costs.
 - l. Costs in excess of those considered reasonable by the fund.
 - m. Fines or penalties imposed by order of federal, state, or local government.
 - n. Finance charges, interest charges, or late payment charges.
5. To determine what expenses are reasonable and necessary, the owner, operator, or landowner must bid the excavation and consultant work. The owner, operator, or landowner is required to obtain a minimum of three bids. The bid that meets the cost effectiveness, technical, and environmental requirements of the department will be deemed by the PTRCF to be the reasonable cost for that project. The bid must be submitted according to the fund's excavation and consultant worksheets. Additional work over and above the original bid will be reimbursed according to unit costs on the original bid.
 6. The PTRCF may provide partial payments prior to the final determination of the amount of the loss, if it is determined that the cleanup is proceeding according to the proposed workplan of the department's division assigned to the site assessment. The payment may be made to the owner, operator, or landowner or that person's assigned representative if the appropriate assignment form is submitted to the PTRCF with appropriate documentation verifying that the work has been completed by the assignee.
 7. All claims for payment are subject to the availability of funds in the petroleum tank release compensation fund and must be submitted no later than one year after the work has been completed to be eligible.
 8. Prior to payment for any loss, the owner, operator, or landowner shall subrogate to the PTRCF all rights, claims, and interest which the owner, operator, or landowner has or may have against any party, person, persons, property, corporation, or other entity liable for the subject loss, and shall authorize the fund to sue, compromise, or settle in the name of the owner, operator, or landowner or otherwise, all such claims. The subrogation agreement required by this section must be prescribed and produced by the PTRCF.
 9. Reimbursement will be considered when the owner, operator, or landowner has submitted complete excavation or consultant worksheets along with legible copies of all invoices and a description of the work performed.
 10. The owner, operator, or landowner must submit, prior to any payment, evidence that the amounts shown on the invoices for which the payment is requested were either paid in full by the owner, operator, or landowner or, if the owner, operator, or landowner has assigned the right to receive payment from the fund, that a contractor hired has expended time and materials for which payment must be made. This must include documentation that the work

has been completed by the assignee.

11. Prior to payment, the department must be satisfied that the corrective action taken has met all state and federal regulations and that the corrective action has satisfied public health, welfare, and environmental concerns.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-12-05, 28-32-02

Law Implemented: NDCC 23.1-12-18, 23.1-12-20, 23.1-12-23, 23.1-12-24

33.1-12-01-06.1. Reimbursement disputes

If a reimbursement is denied or payment is reduced to a tank owner, operator, or landowner, the tank owner, operator, or landowner may request a review by the board by filing a written request and supporting documentation with both the department and the board within thirty days of receiving a 'sworn statement in proof of loss' regarding a denial of reimbursement or a payment reduction notification.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-12-05, 28-32-02;

Law Implemented: NDCC 23.1-12-18

33.1-12-01-07. Third-party damages

No reimbursement may be made for damage to employees as defined by the North Dakota Workers' Compensation Act or agents of the owner or operator.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-12-05, 28-32-02

Law Implemented: NDCC 23.1-12-26, 23.1-12-27

ARTICLE 33.1-14
NORTH DAKOTA
BOILER RULES

Chapter

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33.1-14-02 Administration

33.1-14-03 General Requirements

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33.1-14-06 Miniature Boilers - New Installations

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33.1-14-10 Unfired Pressure Vessels

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CHAPTER 33.1-14-01
DEFINITIONS

Section 33.1-14-01 Definitions

33.1-14-01 Definitions.

As used in this article:

1. "Alteration" means a change in an item described on an original manufacturer's data report which affects the pressure retaining capability of the pressure retaining item. An alteration includes nonphysical changes such as an increase in the maximum allowable internal or external working pressure, an increase in design temperature, or a reduction in minimum temperature. For boilers used in the power generation industry exceeding one hundred thousand pounds of steam per hour output, increases in steaming capacity shall not be considered an alteration if a new baseline steaming capacity is established based on either an engineering evaluation or a review of the operating history and a conditional assessment of the boiler and its components. An engineering evaluation or conditional assessment must be made by the boiler owner with review and comment by the authorized inspection agency responsible for the in-service inspection of the boiler. Engineering evaluations and conditional assessments are subject to the review and approval of the chief boiler inspector.
2. "Apartments" means all multiple dwellings, including condominiums.
3. "Approved" means approved by the director.
4. "A.S.M.E. code" means the boiler and pressure vessel construction code of the American Society of Mechanical Engineers of which sections I, II, IV, V, VIII (divisions 1, 2 and 3), IX, and X, 2019 edition, are hereby adopted by the director and incorporated by reference as a part of this article. A copy of the American Society of Mechanical Engineers Code is on file at the office of the boiler inspection program. The American Society of Mechanical Engineers Code may be obtained from the American Society of Mechanical Engineers headquarters at 2 park avenue, New York, New York 10016-5990 or from www.asme.org.
5. "Boiler" means a closed vessel in which water is heated, steam is generated, steam is superheated, or any combination thereof, under pressure or vacuum for use externally to itself by the direct application of heat from the combustion of fuels or from electricity or nuclear energy. The term boiler includes fired units for vaporizing liquids other than water when these

units are separate from processing systems and are complete within themselves, as provided under North Dakota Century Code section 23.1-16-01.1.

6. "Certificate inspection" means an inspection, the report of which is used by the chief boiler inspector to decide whether a certificate may be issued under North Dakota Century Code section 23.1-16-10.
7. "Certificate of competency" means a certificate issued by a jurisdiction indicating that a person has passed an examination prescribed by the national board of boiler and pressure vessel inspectors.
8. "Chief inspector" means the chief boiler inspector appointed by the director to serve in the capacity as stated by law.
9. "Condemned boiler" means a boiler that has been inspected and declared unsafe or disqualified by legal requirements by an inspector qualified to take such action who has applied a stamping or marking designating its rejection.
10. "Deputy inspector" means a boiler inspector or inspectors employed by the director to assist the chief inspector in making inspections of boilers.
11. "Director" means the director of the department of environmental quality.
12. "Existing installations" includes any boiler constructed, installed, or placed in operation before July 1, 1973.
13. "External inspection" means an inspection made when a boiler is in operation.
14. "Fusion welding" means a process of welding metals in a molten or molten and vaporous state, without the application of mechanical pressure or blows. Such welding may be accomplished by the oxyacetylene or oxyhydrogen flame or by the electric arc. Thermic welding is also classed as fusion.
15. "High pressure, high temperature water boiler" means a water boiler operating at pressures exceeding one hundred sixty pounds per square inch gauge [1103.17 kilopascals] or temperatures exceeding two hundred fifty degrees Fahrenheit [121.16 degrees Celsius]. For practical purposes it must be deemed the same as a power boiler.
16. "Hot water supply boiler" means a fired boiler used exclusively to supply hot water for purposes other than space heating and includes all service-type and domestic-type water heaters not otherwise exempt by North Dakota Century Code section 23.1-16-06.
17. "Inspector" means the chief boiler inspector or any deputy inspector or special inspector.
18. "Internal inspection" means an inspection made when a boiler is shut down and handholes and manholes are opened for inspection of the interior.
19. "Low pressure and heating boiler" means a boiler operated at pressures not exceeding fifteen pounds per square inch gauge [103 kilopascals] for steam or at pressures not exceeding one hundred sixty pounds per square inch gauge [1103.17 kilopascals] and temperatures not exceeding two hundred fifty degrees Fahrenheit [121.1 degrees Celsius] for water.
20. "Major repair" means a repair upon which the strength of a boiler would depend. Major repairs are those that are not of a routine nature as described in the National Board Inspection Code.
21. "Miniature boiler" means any boiler that does not exceed any of the following limits:
 - a. Sixteen-inch [40.64-centimeter] inside diameter of shell.

- b. Twenty square feet [1.86 square meter] heating surface.
 - c. Five cubic feet [.142 cubic meter] gross volume, exclusive of casing and insulation.
 - d. One hundred pounds per square inch gauge [689.48 kilopascals] maximum allowable working pressure.
22. "National board" means the national board of boiler and pressure vessel inspectors, 1055 crupper avenue, Columbus, Ohio 43229, whose membership is composed of the chief inspectors of government jurisdictions who are charged with the enforcement of the provisions of the American Society of Mechanical Engineers Code.
23. "National Board Inspection Code" means the manual for boiler and pressure vessel inspectors supplied by the national board. The National Board Inspection Code, 2019 edition, is hereby adopted by the director and incorporated by reference as a part of this article. Copies of this code may be obtained from the national board at 1055 crupper avenue, Columbus, Ohio 43229.
24. "New boiler installations" includes all boilers constructed, installed, or placed in operation after July 1, 1973.
25. "Nonstandard boiler" means a boiler that does not bear the state stamp, the national board stamping, the American Society of Mechanical Engineers stamp, or the stamp of any state or political subdivision which has adopted a standard of construction equivalent to that required by this article.
26. "Owner or user" means any person, firm, corporation, state, or political subdivision owning or operating any boiler which is not specifically exempt under North Dakota Century Code section 23.1-16-06 within North Dakota.
27. "Power boiler" means a closed vessel in which steam or other vapor (to be used externally to itself) is generated at a pressure of more than fifteen pounds per square inch gauge [103 kilopascals] by the direct application of heat.
28. "Reciprocal commission" means a commission issued by the director to persons who have passed a written examination prescribed by the national board and who hold a national board commission issued by the national board, or to persons who have passed the written examination prescribed by the national board and are employed by an accredited national board owner/user inspection organization.
29. "Reinstalled boiler" means a boiler removed from its original setting and re-erected at the same location or erected at a new location without change of ownership.
30. "Reinstalled pressure vessel" means a pressure vessel removed from its original setting and re-erected at the same location or erected at a new location without change of ownership.
31. "Repair" is a restoration of any damaged or impaired part to an effective and safe condition.
32. "Secondhand boiler" means a boiler of which both the location and ownership have been changed after primary use.
33. "Secondhand pressure vessel" means a pressure vessel of which both the location and ownership have been changed after primary use.
34. "Service-type or domestic-type water heater" means a fired water heater of either instantaneous or storage type, used for heating or combined heating and storage of hot water to be used exclusively for domestic or sanitary purposes, with temperatures not exceeding two

hundred ten degrees Fahrenheit [98.68 degrees Celsius], and a heat input not in excess of two hundred thousand British thermal units [2.11 x 10 to the 8th power joules] per hour, and pressure not to exceed one hundred sixty pounds per square inch [1103.17 kilopascals].

35. "Special inspector" means an inspector regularly employed by an accredited national board authorized inspection agency or an inspector who has passed the national board examination and is employed by an accredited national board owner/user inspection organization.
36. "Standard boiler" means a boiler that bears the stamp of North Dakota or of another state that has adopted a standard of construction equivalent to that required by this article or a boiler that bears the national board stamping or American Society of Mechanical Engineers stamp.
37. "State of North Dakota boiler construction code" is used to designate the accepted reference for construction, installation, operation, and inspection of boilers and will be referred to as this article. Anything not amended or specifically covered in this article must be considered the same as the American Society of Mechanical Engineers Code.
38. "Steam traction engines" means boilers on wheels which are used solely for show at state fairs and other exhibitions in which the public is invited to attend.

History: Effective July 1, 2020

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

CHAPTER 33.1-14-02 **ADMINISTRATION**

Section

33.1-14-02-01 Inspection Reports to Be Submitted

33.1-14-02-02 Insurance Companies and Other Authorized Inspection Agencies to Notify the Chief Inspector of New, Canceled, or Suspended Risks

33.1-14-02-03 Insurance Companies and Other Authorized Inspection Agencies to Notify the Chief Inspector of Defective Boilers and Boiler Accidents

33.1-14-02-04 Owner/User Inspection Organizations Making Own Inspections

33.1-14-02-05 Defective Conditions Disclosed at Time of External Inspections

33.1-14-02-06 Owner or User to Notify the Chief Inspector in Case of Accident

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33.1-14-02-10 Condemned Boilers and Condemned Pressure Vessels

33.1-14-02-11 Owner and Installer to Notify Chief Boiler Inspector of Boilers to Be Installed in North Dakota or Brought Into North Dakota for Temporary Use

33.1-14-02-12 Owner to Notify the Chief Boiler Inspector of Businesses Closed or Reopened

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33.1-14-02-19 Stamping of Boilers

33.1-14-02-20 Welders' Requirements

33.1-14-02-21 Alterations to Boilers

33.1-14-02-22 Major Repairs to Boilers

33.1-14-02-01. Inspection reports to be submitted.

1. **Power boilers.** Each authorized inspection agency or owner/user inspection organization, to which a special inspector commission has been issued, shall submit to the chief boiler inspector complete data of each high-pressure boiler insured or inspected by it or covered by a written inspection agreement. A complete report of each boiler inspection must be filed electronically with the chief boiler inspector on form SFN 10706 within fifteen days of inspection.
2. **Low pressure, hot water heating, and hot water supply boilers.** Each authorized inspection agency or owner/user inspection organization shall submit to the chief boiler inspector complete data of each boiler insured or inspected by it or covered by a written inspection agreement. A complete report of each boiler inspection must be filed electronically with the chief boiler inspector on form SFN 10706 within fifteen days of inspection.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16-08

Law Implemented: NDCC 23.1-16-08

33.1-14-02-02. Insurance companies and other authorized inspection agencies to notify the chief inspector of new, canceled, or suspended risks.

Each insurance company or other authorized inspection agency shall notify the chief inspector within thirty days of each boiler insured, covered by a written inspection agreement, canceled, not renewed, or suspended because of unsafe conditions.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-02-03. Insurance companies and other authorized inspection agencies to notify the chief inspector of defective boilers and boiler accidents.

If a special inspector, upon the first inspection of a boiler, finds that the boiler or any of the appurtenances are in such condition that the inspector's company refuses insurance or the boiler does not comply with the provisions of this article, the company shall submit a report of the defects to the chief inspector. When an accident occurs to an insured boiler or to a boiler covered by a written inspection agreement which requires major repairs as defined in subsection 20 of section 33.1-14-01-01, or which results in the boiler being removed from service, that accident must be reported to the chief boiler inspector within thirty days of the insuring or inspecting company first becoming aware of the accident.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-02-04. Owner/user inspection organizations making own inspections.

The chief inspector will not be required to inspect boilers in any establishment owned and operated by an owner/user inspection organization provided an annual boiler inspection program is established and maintained by such organization and all boilers and appurtenances are constructed, installed, operated, and repaired in accordance with the provisions of this article. When boilers are inspected by an employee of an owner/user inspection organization, such inspector must hold a certificate of competency or a commission issued by North Dakota or a state that has adopted the American Society of Mechanical Engineers Code. A complete report of each boiler inspection must be filed electronically with the chief inspector on form SFN 10706 within fifteen days of inspection.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-02-05. Defective conditions disclosed at time of external inspections.

If upon an external inspection there is evidence of a leak or crack, enough of the covering of the boiler must be removed to satisfy the inspector, in order that the inspector may determine the safety of the boiler. If the covering cannot be removed at that time, the inspector may order the operation of the boiler stopped until the covering can be removed and proper examination can be made.

History: July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-02-06. Owner or user to notify the chief inspector in case of accident.

When an accident occurs which requires major repairs as defined in subsection 20 of section 33.1-14-01-01, the owner or user shall immediately notify the chief inspector and submit a detailed report of the accident. In case of an explosion, notice must be given immediately by telephone or electronically and the parts of the boiler may not be removed or disturbed before an inspection has been made by an inspector, unless for the purpose of saving human life or property.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-02-07. Operating without a certificate of inspection.

The owner or user who causes a boiler to be operated after inspections without possessing a valid certificate of inspection is subject to the penalty under North Dakota Century Code section 23.1-16-11.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-02-08. Validity of inspection certificate for boilers.

A certificate of inspection, issued in accordance with this article, is valid until expiration unless some defect or condition affecting the safety of the boiler is disclosed and if all inspection fees have been paid. A certificate of inspection is valid for the following time periods:

1. Thirty-six months for power boilers over one hundred thousand pounds [45359.24 kilograms] of steam per hour as allowed by North Dakota Century Code section 23.1-16-07.
2. Twelve months for steam traction engines.
3. Twelve months for all other power boilers.
4. Thirty-six months for hot water heating and hot water supply boilers.
5. Twenty-four months for low pressure steam boilers.

A certificate issued for a boiler inspected by a special inspector is valid only if the boiler for which it was issued continues to be insured by a duly authorized insurance company, covered by a written inspection agreement with an authorized inspection agency, or inspected by an accredited owner/user inspection organization. A two-month grace period must be extended for any certificate.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-02-09. Re-stamping boilers.

When the stamping on a boiler becomes indistinct, the inspector shall instruct the owner or user to have it re-stamped. Request for permission to re-stamp the boiler must be made to the chief inspector and proof of the original stamping must accompany the request before authorization by the chief inspector. Re-stamping authorized by the chief inspector may be done only by an inspector, and must be identical with the original stamping, except that it is not required to re-stamp the American Society of Mechanical Engineers Code symbol. Notice of completion of such re-stamping must be filed with the chief inspector by the inspector who stamped the boiler or pressure vessel, together with a facsimile of the stamping.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-02-10. Condemned boilers and condemned pressure vessels.

Any boiler having been inspected and declared unsafe by the chief inspector or the inspector's deputy must be stamped by the inspector with the letter X and the letters ND as shown on the following facsimile which will be designated a condemned boiler: XX ND XX.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-02-11. Owner and installer to notify chief boiler inspector of boilers to be installed in North Dakota or brought into North Dakota for temporary use.

1. The owner shall notify the chief boiler inspector before any new or secondhand boiler may be operated in North Dakota, giving its location and operating pressure.
2. The installer shall notify the chief boiler inspector before any new or secondhand boiler may be installed in North Dakota, giving its location and operating pressure.
3. The owner shall notify the chief boiler inspector of boilers removed from location, junked, or sold.
4. The owner shall notify the chief boiler inspector within fifteen days of removing a boiler from its location as to whether it has been junked or sold. If it has been sold, the name and address of the purchaser must be given.
5. When a boiler is brought into the state on a temporary basis and is to be removed from the state, a notice must be given as to the date it will be removed from North Dakota.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-02-12. Owner to notify the chief boiler inspector of businesses closed or reopened.

1. It is the responsibility of the owner of a building complex or owner of a boiler to notify the chief boiler inspector of plans to discontinue use of a boiler due to business being permanently closed.
2. If a business is destroyed by fire, flood, or windstorm, the owner shall notify the chief boiler inspector as to plans developed for the disposition of the boiler.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-02-13. Removal of used boilers from the state.

When a nonportable standard boiler located in this state is moved to another state for use or repair, the owner shall apply to the chief boiler inspector before the boiler may be reinstalled in North Dakota.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-02-14. Nonstandard boilers.

A nonstandard boiler used in this state, if moved outside of the state, cannot be reinstalled in this state without permission of the chief boiler inspector.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-02-15. Installing used or secondhand boilers.

Before a used or secondhand boiler may be installed in this state, an inspection must be made by an inspector. (Note: It is recommended that before a used or secondhand boiler is shipped for installation or operation in this state, that it be inspected by a North Dakota inspector, or by a national board

commissioned inspector, and data submitted by the inspector filed by the buyer or owner or user with the chief boiler inspector for the chief inspector's approval. Otherwise hardships may be encountered should the boiler be condemned after installation.)

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-02-16. Reinstalled boilers.

When a stationary boiler is moved and reinstalled, the fittings and appliances must comply with all requirements for new installations.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-02-17. Reporting repairs to be made.

1. The owner or person in charge of a boiler repair shop making major repairs to a boiler shall notify the chief boiler inspector of each major repair or alteration to be made to a boiler, and the anticipated repair must be approved before work is started; or
2. If the boiler is insured, covered by a written inspection agreement with an authorized inspection agency, or owned by an owner/user inspection organization, the special inspector may authorize the repair. After such repairs are made, they are subject to the approval of an inspector.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-02-18. Reports of welded repair or alterations.

1. All alterations and major repairs made to boilers in North Dakota must be reported on the appropriate national board form. The completed form must be sent to the chief boiler inspector by the repair concern effecting the repair or alteration within thirty days of the completion of the repair or alteration.
2. Subject to the administrative procedures of the boiler inspection program and the approval of the inspector, repairs of a routine nature may be given prior approval and the requirement for the repair stamping may be waived. The National Board Inspection Code must be used as a guideline in determining repairs of a routine nature.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-02-19. Stamping of boilers.

1. Every boiler built for use in North Dakota must conform in every detail to the boiler laws and rules of North Dakota. When correctly constructed in accordance with these laws and rules it must be stamped with a state stamp of North Dakota and assigned a state number.
2. A boiler may not be operated in North Dakota unless it is stamped with the American Society of Mechanical Engineers stamp and registered with the national board or can qualify for a North Dakota stamp. A request for a North Dakota stamp must be accompanied by a manufacturer's data report with supporting evidence that the boiler meets all requirements of the laws of North Dakota.

3. Upon completion of the installation, all boilers must be inspected by an inspector. Initial certificate inspections may only be made by the chief inspector or deputy inspectors. At the time of this inspection, each boiler must be stamped with a serial number of North Dakota preceded by the letters N.D. The letters and figures must not be less than five-sixteenths inch [7.94 millimeters] in height. If construction will not permit stamping, a numbered metal tag must be attached in a conspicuous place. The stamping may not be concealed by lagging or paint and must be exposed at all times.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-02-20. Welders' requirements.

1. Any person welding on new or existing boilers shall register with the chief boiler inspector sufficient data to show a satisfactory performance qualification test for American Society of Mechanical Engineers position "6G" or equivalent. This data must be documented on a current American Society of Mechanical Engineers section IX "QW-484" form. Tests of welded specimens must be made by a certified testing laboratory.
2. In lieu of the above requirements, a firm in possession of a valid American Society of Mechanical Engineers certificate of authorization for new boiler construction or a valid national board "R" certificate of authorization for repairing or altering existing boilers may allow welder's qualifications to be audited by the chief boiler inspector at the chief boiler inspector's discretion. The welders must be qualified according to the requirements of American Society of Mechanical Engineers Boiler and Pressure Vessel Code, section IX.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-02-21. Alterations of boilers.

Alterations, as defined in this article, must be made by a firm in possession of a valid national board "R" certificate of authorization, with alterations included within its scope of activity.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-02-22. Major repairs to boilers.

Major repairs, as defined in this article, must be made by:

1. A firm in possession of a valid national board "R" certificate of authorization for the type of vessel to be repaired; or
2. A firm authorized by the director to do repairs to boilers. Such authorization may only be issued upon a successful review of that firm's repair capabilities by the chief inspector. Such a review must be based on the National Board Inspection Code and must be made on a frequency determined by the chief inspector. Such authorization may be revoked or not renewed by the chief inspector for cause.

The requirements of this section are effective December 1, 1994.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

CHAPTER 33.1-14-03
GENERAL REQUIREMENTS

Section

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33.1-14-03-01. Inspection of boilers.

The owner or user shall prepare a boiler subject to regular inspections for such inspections or hydrostatic tests when notified by the inspector. The owner or user shall prepare each boiler for internal inspection and shall prepare for and apply the hydrostatic test whenever necessary, on the date specified by the inspector, which may not be less than seven days after the date of notification.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-03-01.1. Boiler inspection fees.

The following will be charged for boiler inspections:

1. High pressure boilers.

<u>a. Internal inspections.</u>	<u>Fee</u>
<u>- 50 square feet [4.65 square meters] or less of heating surface</u>	<u>\$980.00</u>

- <u>Over 50 square feet [4.65 square meters] and not over 500 square feet [46.45 square meters]</u>	<u>\$1100.0</u> <u>0</u>
- <u>Over 500 square feet [46.45 square meters] and not over 4,000 square feet [371.61 square meters]</u>	<u>\$1320.0</u> <u>0</u>
- <u>Over 4,000 square feet [371.61 square meters] of heating surface</u>	<u>\$1650.0</u> <u>0</u>
b. <u>External inspections.</u>	
- <u>50 square feet [4.65 square meters] of heating surface or less; 100 KW or less</u>	
- <u>Over 50 square feet [4.65 square meters] of heating surface; over 100 KW</u>	<u>\$760.0</u> <u>0</u>
c. <u>Portable oilfield boilers. Internal and external inspections of portable oilfield boilers must be charged inspection fees of seventy-five dollars per hour, including travel time, plus expenses for meals, mileage, and lodging at current state rates.</u>	<u>\$980.0</u> <u>0</u>
2. <u>Low pressure boilers.</u>	
a. <u>Internal inspections.</u>	
- <u>Without manway</u>	<u>\$875.00</u>
- <u>With manway</u>	<u>\$985.00</u>
b. <u>External inspections.</u>	
- <u>Hot water heat and low-pressure steam</u>	<u>\$650.00</u>
- <u>Hot water supply</u>	<u>\$435.00</u>
3. <u>Steam traction engines.</u>	
- <u>Internal</u>	<u>\$760.00</u>
- <u>External</u>	<u>\$655.00</u>
- <u>Hydrostatic test</u>	<u>\$870.00</u>
- <u>Ultrasonic survey, per hour</u>	<u>\$875.00</u>
4. <u>Certificate fee, per certificate as required by North Dakota Century Code section 23.1-16-10</u>	<u>\$320.00, per year of certificate issued</u>

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-03-02. Preparation for internal inspection.

The owner or user shall prepare a boiler for internal inspection in the following manner:

1. Water must be drawn off and the boiler thoroughly washed.

2. All manholes and handhole plates, washout plugs, and plugs in water column connections must be removed, the furnace and combustion chambers thoroughly cooled and cleaned, at the discretion of the inspector.
3. All grates of internally fired boilers must be removed, at the discretion of the inspector.
4. At each annual inspection, brickwork must be removed as required by the inspector in order to determine the condition of the boiler, headers, furnace, supports, or other parts.
5. The steam gauge must be removed for testing, at the discretion of the inspector.
6. Any leakage of steam or hot water into the boiler must be cut off by disconnecting the pipe or valve at the most convenient point.
7. Any low-water fuel cutoff float chamber must be opened and cleaned.
8. Safety concerns such as asbestos and confined space entry must be addressed by the owner to provide for the safety of the inspector. Applicable state or federal regulations must be used to decide if safety measures must be taken.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-03-03. Boiler improperly prepared for inspection.

If a boiler has not been properly prepared for an internal inspection or the owner or user fails to comply with the requirements for hydrostatic test as set forth in this article, the inspector may decline to make the inspection or test and withhold the certificate of inspection until the owner or user complies with the requirements.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-03-04. Removal of covering to permit inspection.

If the boiler is jacketed so that the longitudinal seams of shells, drums, or domes cannot be seen, enough of the jacketing, setting wall, or other form of casing or housing must be removed, at the discretion of the inspector, so that the size of the rivets, pitch of the rivets, and other data necessary to determine the safety of the boiler may be obtained, provided such information cannot be determined by other means.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-03-05. Lap seam crack.

The shell or drum of a boiler in which a lap seam crack is discovered along a longitudinal riveted joint must be immediately discontinued from use. If the boiler is not more than fifteen years of age, a complete new course of the original thickness may be installed at the discretion of the chief inspector. Patching is prohibited. "Lap seam crack" means the typical crack frequently found in lap seams, extending parallel to the longitudinal joint and located either between or adjacent to rivet holes.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-03-06. Hydrostatic pressure tests.

A hydrostatic pressure test, when applied to boilers of riveted or welded construction, except locomotive boilers, may not exceed one and one-half times the maximum allowable working pressure. Hydrostatic pressure applied to locomotive boilers may not exceed one and one-quarter times the maximum allowable working pressure. During the hydrostatic pressure test, the safety valve or valves must be removed, or each valve disk must be held down by means of a testing clamp and not by applying the additional load to the spring with the compression screw. The minimum temperature of the water used to apply a hydrostatic test must not be less than sixty degrees Fahrenheit [15.6 degrees Celsius], nor shall it exceed one hundred twenty degrees Fahrenheit [49.3 degrees Celsius]. (Note: For all cases involving the question of tightness, the pressure may be equal to the release pressure of the safety valve or valves having the lowest release setting.)

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-03-07. Automatic low-water fuel cutoff or water-feeding device.

1. Each automatically fired steam or vapor system boiler must be equipped with an automatic low-water cutoff located to automatically cut off the fuel supply when the surface of the water falls to the lowest safe waterline. For other than electric and miniature boilers, each automatically fired steam or vapor system boiler must be equipped with at least two low-water fuel cutoffs, one of which must be readily testable. One low-water fuel cutoff must be set to function ahead of the other. Functioning of the lower of the controls shall cause safety shutdown and lockout. The manual reset may be incorporated into the lower cutoff control. Where a reset device is separate from the low-water fuel cutoff, a means shall be provided to indicate actuation of the low-water fuel cutoff. The manual reset device may be of the instantaneous type or may include a time delay of not more than three minutes after the fuel has been cut off. A system may incorporate a time delay component with the low-water fuel cutoff device to prevent short cycling. A time delay must not exceed the manufacturer's recommended timing, or ninety seconds, whichever is less. A high-pressure boiler regularly attended by a full-time operator is not considered as automatically fired, and is not required to be equipped with low-water fuel cutoffs. For other than electric boilers, the primary low-water fuel cutoff for low pressure steam boilers must be a float type that can be readily tested.
2. If a water-feeding device is installed, it must be constructed so that the water inlet valve cannot feed water into the boiler through the float chamber and located to supply requisite feedwater. The lowest safe waterline should not be lower than the lowest visible part of the water glass.
3. Such fuel or feedwater control device may be attached directly to a boiler or to the tapped openings provided for attaching a water glass directly to a boiler, provided that for low pressure boilers such connections from the boiler are nonferrous tees or Ys not less than one-half-inch [12.7-millimeter] pipe size between the boiler and the water glass, so that the water glass is attached directly and as close as possible to the boiler; the straight tapping of the Y or tee to take the water glass fittings, and the side outlet of the Y or tee to take the fuel cutoff or water-feeding device. The ends of all nipples must be reamed to full-size diameter.
4. Designs embodying a float and float bowl must have a vertical straight drainpipe at the lowest point in the water equalizing pipe connections by which the bowl and the equalizing pipe can be flushed and the device tested. This drainpipe and connections must be not less than national pipe standard (NPS) three-quarters inch.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-03-08. Safety appliances.

1. A person may not remove, tamper with, or render inoperative any safety appliances prescribed by these rules except for the purpose of making repairs. The resetting of safety appliances may not exceed the accepted working pressure of the unit.
2. Repairs or adjustments made to safety or safety relief valves must be done by the manufacturer of the valve or an approved testing facility equipped to do such repairs or adjustments. The resetting of safety valves or safety relief valves may not exceed the accepted working pressure for the unit.
3. An approved testing facility must be one of the following:
 - a. A facility holding a valid certificate of authorization and "VR" symbol stamp issued by the national board of boiler and pressure vessel inspectors.
 - b. An owner or user program for doing adjustments to set pressure or blowdown, or both, to boiler pressure relief valves owned by them, provided the adjusted settings or capacities, or both, and the date of the adjustments are recorded on a metal tag secured to the seal wire. All external adjustments must be sealed showing the identification of the organization making the adjustments. The chief boiler inspector shall review the training, qualifications, and procedures used to implement this program.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-03-09. Blowoff tanks.

1. Blowoff piping from a boiler may not discharge directly into a sewer. A blowoff tank, constructed to the provisions of section VIII of the American Society of Mechanical Engineers Code, must be used where conditions do not provide an adequate and safe open discharge.
2. Blowoff tanks hereinafter installed, if of metal, must be designed for a minimum working pressure of fifty pounds per square inch [344.74 kilopascals].
3. The outlet from the blowoff tank must be twice the area of the inlet pipe and made to extend internally within eight inches [203.2 millimeters] from the bottom of the tank.
4. Vent pipe at least four times the area of the inlet pipe must lead to the outer atmosphere.
5. Vents must be as direct as possible to the outer air and discharge at a safe location. There may be no valve or other possible obstructions such as water pockets between the tank and the discharge end of the vent pipe.
6. All pipe connections between the tank and the boiler must be as direct as possible and must conform to the American Society of Mechanical Engineers Code.
7. For convenience in cleaning the tank, a manhole or an access opening must be provided.
8. If a blowoff tank is not vented as specified above, it must be constructed for a pressure equal to that allowed on the boiler to which it is attached or must be equipped with a safety valve or valves of sufficient capacity to prevent the pressure from exceeding the safe working pressure of the tank.
9. Boiler blowoff systems constructed in accordance with the national board rules and recommendations for the design and construction of boiler blowoff systems must be considered as complying with this section.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-03-10. Blowoff piping.

1. The construction of the setting must be done in such a manner that it does not restrict the movement of the blowoff piping.
2. All blowoff piping, when exposed to furnace heat, must be protected by firebrick or other heat-resisting material so constructed that the piping may be readily inspected.
3. Each boiler must have a blowoff pipe, fitted with a valve cock, in direct connection with the lowest water space. Cocks must be of the gland or guard type and suitable for the pressure allowed. The use of globe-type valves is not permitted unless complying with the American Society of Mechanical Engineers Code. When the maximum allowable working pressure exceeds one hundred pounds per square inch gauge [689.48 kilopascals] each blowoff pipe must be provided with two valves or a valve and a cock, such valves and cocks to be of the extra heavy type.
4. When the maximum allowable working pressure exceeds one hundred pounds per square inch gauge [689.48 kilopascals], blowoff piping must be extra heavy from the boiler to the valve or valves and must be run full size without use of reducers or bushings. The piping must be at least extra heavy duty wrought iron or steel and may not be galvanized.
5. All fittings between the boiler and blowoff valve must be steel or extra heavy fittings of malleable iron. In case of renewal of blowoff pipe or fittings, they must be installed in accordance with the rules and regulations for new installations.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-03-11. Location of blowoffs and vents.

The discharge of safety valves, blowoff pipes, and other outlets must be located so as to prevent injury to personnel. For high pressure boilers, vents from blowoff tanks, condensate tanks, and the discharge piping from safety valves must be as short and straight as possible and so arranged as to avoid undue stresses on the safety valve or valves. Safety valve discharge piping must be so designed and constructed as to prevent excessive back pressure, while not affecting safety valve capacity and performance.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-03-12. Underground installations.

Where necessary to install a blowoff tank underground, it must be enclosed in a concrete or brick pit with a removable cover so that inspection of the entire shell and heads of the tank can be made.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-03-13. Supports.

Each boiler must be supported by masonry or structural supports of sufficient strength and rigidity to safely support the boiler and its contents. There must be a minimum of vibration in the boiler and its

connecting piping.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-03-14. Pressure reducing valves.

1. Where pressure reducing valves are used, one or more relief or safety valves must be provided on the low-pressure side of the reducing valve in case the piping or equipment on the low-pressure side does not meet the requirements for the full initial pressure. The relief or safety valves must be located adjoining or as close as possible to the reducing valve. Proper protection must be provided to prevent injury or damage caused by the escaping steam from the discharge. Capacity of the relief valves must be such that the pressure rating of the lower pressure piping or equipment shall not be exceeded in case the reducing valve sticks open.
2. The use of hand-controlled bypasses around reducing valves is permissible. The bypass if used around a reducing valve may not be greater in capacity than the reducing valve unless the piping or equipment is adequately protected by relief valves or meets the requirements of the high-pressure system.
3. A pressure gauge must be installed on the low-pressure side of a reducing valve.
4. All low-pressure headers and their outlets must be protected by a safety valve or valves whose combined capacity is equivalent to the total amount of steam that can pass from the high-pressure system to the lower pressure system.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-03-15. Ladders and runways.

To ensure safe access to batteries of boilers, a steel platform or runway at least eighteen inches [457.2 millimeters] in width must be provided, complete with standard railing and toe boards on either side, across the tops of adjacent boilers. Wherever arrangement and location permit, all runways must provide for two means of egress remotely located with respect to the other and connected to a permanent stairway or fixed ladder leading to the floor level. The inspector shall notify the chief inspector of the owners or users who must provide for these requirements and the chief inspector shall give written notice to the owner or user that the installation be made.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-03-16. Boiler logs.

A log must be kept as to all repairs made, unusual incidents, accidents, water tests, amounts, types, and dates of water treatment. Logs for hobby boilers must also include operating hours, operators, fusible plug installation dates, safety valve tests, and apprentice operator training data.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-03-17. Major repairs and alterations.

If a major repair or alteration is necessary, an inspector must be called for consultation and advice as to the best method of making such repair or alteration. After such repair or alteration is made, it is

subject to the approval of the inspector.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-03-18. Same material to be used.

1. No repair to any boiler or steam pipe nor any of the connections thereto may be approved which is made in whole or in part of unsuitable material or is unsafe from any cause. Nothing herein may be construed to prevent the use of any boiler constructed of riveted iron or steel plates when the inspector has satisfactory evidence that such boiler or steam generator is equal in strength to and as safe from explosion as boilers constructed of the best quality of materials.
2. Quality of the material used in boiler construction and repair demands critical attention because in performing its function a steam boiler is continually subjected to disruptive stresses. These are due to high internal pressures and to changes in temperature. Disastrous consequences will inevitably follow if the material fails under these stresses.
3. The quality of the material used in the different parts of a boiler should be selected with special reference to the stresses and disruptive influences which each part encounters in service.
4. Galvanized pipe may not be used on any boiler or boiler system subject to this article, as this may cause deterioration of the boiler.
5. Sweated or soldered copper joints may not be used in steam piping and connections.
6. Repair material having a lesser tensile strength than that used in the original construction may not be used.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-03-19. Repairs to boilers.

1. **Rejection of repair.** Any riveted or welded repair made to a boiler in North Dakota which does not meet this article's requirements will be cause for rejection of the repair by an inspector.
2. **Rejection of welds.** Any weld found to contain heavy slag inclusions or to be porous or found to be cracked will be reason for rejection of the weld and either part or all the weld must be removed by grinding or chipping and the weld must be replaced.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-03-20. Removal of safety appliances.

1. A person may not attempt to remove or do any work upon a safety appliance, prescribed by these rules, while a boiler is in operation. Should any of these safety appliances be repaired during an outage of a boiler, they must be reinstalled and in proper working order before the object is again placed in service. This provision does not apply to the removal and replacement of a gauge glass.
2. A person may not in any manner load the safety valve or valves to maintain a working

pressure in excess of that stated on the certificate of inspection.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-03-21. Repairs and renewals of boiler fittings and appliances.

Whenever repairs are made to fittings or appliances or it becomes necessary to replace them, the work must comply with all requirements for new installations.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-03-22. Return pump.

Each condensate return pump where practicable must be provided with an automatic water level control set to maintain the water level within the limits of two gauge cocks.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-03-23. Shop inspection - Manufacturing - Repairs - Alterations.

Any boiler or pressure vessel being constructed, repaired, or altered in North Dakota must be inspected by an inspector holding a North Dakota reciprocal commission and a national board commission. The boiler inspection program may function as an authorized inspection agency. The boiler inspection program may cooperate with the national board and American Society of Mechanical Engineers in making shop reviews and audits.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-03-24. Director to arrange for examinations.

The director shall cause examinations to be conducted at such times as is necessary for the qualification of inspectors.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-03-25. Conditions not covered by this article.

1. In any conditions not covered by this article, the American Society of Mechanical Engineers Code for new installations applies.
2. If any section, subsection, sentence, clause, phrase, provision, or exemption of this article is declared unconstitutional or invalid for any reason, such invalidity does not affect the remaining portion of this article.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-03-26. Inspection of boilers.

1. Each boiler used or proposed to be used within this state, except boilers exempt in North Dakota Century Code section 23.1-16-06, must be thoroughly inspected as to their construction, installation, condition, and operation as follows:
 - a. Power boilers must be inspected annually both internally while not under pressure and externally while under pressure. However, any power boiler or steam generator, the operation of which is an integral part of or a necessary adjunct to other continuous processing operations, must be inspected internally at such intervals as are permitted by the shutting down of the processing operation. The chief boiler inspector may provide for extension of time between internal inspections, but an external inspection must be made, and report submitted, for purposes of issuing a certificate. In all other instances the certificate inspection must be an internal inspection when construction permits.
 - b. Power boilers of one hundred thousand pounds [45359.24 kilograms] per hour or more capacity, which comply with subsection 2 of North Dakota Century Code section 23.1-16-07, must be inspected at least once every thirty-six months internally while not under pressure and at least once every twelve months externally while under pressure.
 - c. Steam traction engines must be inspected at least once every twelve months. Inspections must alternate between internal inspections, external inspections, and hydrostatic tests.
 - d. Low pressure steam boilers must be inspected annually. Low pressure steam boilers of steel construction must be inspected alternately internally and externally. The issuance of a certificate must normally be based on the internal inspection.
 - e. Hot water heating and hot water supply boilers must be inspected triennially unless they are located in a nursing home, school, hospital, nursery school, or kindergarten, in which case they must be inspected annually. Internal inspections will be required when deemed necessary by the inspector.
 - f. A grace period of two months beyond the period specified in the above subdivisions may elapse between inspections.
2. Certificate inspections must be made during the period of thirty days prior to and thirty days after the expiration date of the certificate. Non-certificate inspections, when required by the provisions of this section, must be made between certificate inspections. The chief boiler inspector encourages reports to be made at any time adverse conditions are found, or when difficulty is encountered getting cooperation from the owner or user.
3. The inspections required under this section must be made by the chief boiler inspector, or by a deputy inspector, or by a special inspector provided for in this article.
4. If at any time a hydrostatic test is deemed necessary by the inspector, it must be made by the owner or user in the presence of, and under the supervision of the inspector, and must be approved by the inspector.
5. Cast iron boilers must be considered as boilers that do not lend themselves to internal inspections. Internal inspections of electric boilers must be made when deemed necessary by the inspector.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-03-27. Steam traction engines.

All steam traction engines must conform to at least one of the following: chapter 33.1-14-04, 33.1-14-05, 33.1-14-06, or 33.1-14-07.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-03-28. Safety valves.

1. Boiler safety valves and safety relief valves must be placed on, or as close as physically possible, to the boiler proper.
2. Safety valves or safety relief valves may not be placed on the feedline except when installed to provide control for feedwater pressure or to protect a feed pump against overpressure.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

CHAPTER 33.1-14-04 **POWER BOILERS - NEW INSTALLATIONS**

Section

- 33.1-14-04-01 Requirements
- 33.1-14-04-02 Appurtenances - Piping and Tests
- 33.1-14-04-03 Exits from Boiler Rooms
- 33.1-14-04-04 Boiler Clearances
- 33.1-14-04-05 Carbon Monoxide (CO) Detector/Alarm
- 33.1-14-04-06 Safety Valve Capacity

33.1-14-04-01. Requirements.

1. All new boilers, except those exempt by law, to be installed in North Dakota must be reported to the chief boiler inspector by the owner or user and by the installer.
2. After July 1, 1973, power boilers that are not exempt by law may not be installed in this state unless they have been constructed, inspected, and stamped in conformity with the applicable edition of the American Society of Mechanical Engineers Code for power boilers and are approved, registered, and inspected in accordance with the requirements of this article.
3. A boiler having the standard stamping of another state or province of Canada that has adopted a standard of construction equivalent to the standard of North Dakota may be accepted by the chief boiler inspector if the person desiring to install the boiler makes application for the installation and files with the application the manufacturer's data report covering the construction of the boiler.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-04-02. Appurtenances - Piping and tests.

1. The inspector shall inspect all boilers and connected appurtenances for their safe operation and all pressure piping connecting them to the appurtenances and all piping up to and including the first stop valve, or the second stop valve when two are required.
2. Any pressure piping to the boiler, such as water column, blowoff valve, feedwater regulator, superheater, economizer, stop valves, etc., which are shipped connected to the boiler as a unit, must be hydrostatically tested with the boiler and witnessed by an inspector.
3. All economizers, whether separately fired or not, and when located within the scope of boiler external piping, must be constructed to section I of the American Society of Mechanical Engineers Code. All superheaters must be constructed to section I of the American Society of Mechanical Engineers Code.
4. The chief boiler inspector may waive American Society of Mechanical Engineers section I boiler external piping requirements for new and secondhand boilers of less than forty horsepower output if the boiler external piping is mechanically installed (i.e., no welding), the piping does not exceed two-inch [5.08 centimeters] national pipe standard in size, the piping is schedule eighty minimum, and the boiler maximum allowable working pressure does not exceed one hundred fifty pounds per square inch [1034.22 kilopascals] gauge.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-04-03. Exits from boiler rooms.

1. To lessen the hazard of being trapped within the boiler room, ash pit aisles, or other locations, there must be at least two means of exit as may be considered necessary by the inspector. Each elevation must be provided with at least two means of egress, each to be remotely located from the other.
2. All inspectors shall notify the chief inspector of the owners or users who must provide for these requirements. The chief inspector shall then give written notice to the owner or user that the necessary work must be completed within six months from the date of notification.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-04-04. Boiler clearances.

1. All new boiler installations must be designed to allow for normal operation, cleaning, and inspections, and must have at least three feet [.91 meters] of clearance on each side of the boiler with no obstructions and boilers operated in battery may not be installed closer than four feet [1.22 meters] from each other.
2. All boilers must be installed to allow for removal of tubes without removing walls or other structures. The front or rear of any boiler may not be located any nearer than three feet [.91 meters] from any wall or structure.
3. On all boilers equipped with a manhole, at least seven feet [2.1336 meters] of clearance must be maintained from the top of the boiler manhole to the ceiling of the boiler room.
4. Boilers without manholes must have a minimum of at least three feet [.91 meters] from the top of the boiler to the lowest point of the boiler room ceiling.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-04-05. Carbon Monoxide (CO) Detector/Alarm.

The owner or user shall install a carbon monoxide (CO) detector/alarm in equipment rooms where fuel fired boilers and/or fuel fired pressure vessels are located in accordance with the authority having Jurisdiction.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-04-06. Safety valve capacity.

The minimum required relieving capacity of safety valves or safety relief valves for all types of boilers may not be less than the maximum designed steaming capacity as determined by the manufacturer and must be based on the capacity of all the fuel burning equipment as limited by other boiler functions.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

CHAPTER 33.1-14-05
POWER BOILERS - EXISTING INSTALLATIONS

Section

<u>33.1-14-05-01</u>	<u>Maximum Allowable Working Pressure for Standard Boilers</u>
<u>33.1-14-05-02</u>	<u>Maximum Allowable Working Pressure for Nonstandard Boilers</u>
<u>33.1-14-05-03</u>	<u>Age Limit of Existing Boilers</u>
<u>33.1-14-05-04</u>	<u>Welded Boilers</u>
<u>33.1-14-05-05</u>	<u>Pressure on Old Boilers</u>
<u>33.1-14-05-06</u>	<u>Cast Iron Headers and Mud Drums</u>
<u>33.1-14-05-07</u>	<u>Pressure on Cast Iron Boilers</u>
<u>33.1-14-05-08</u>	<u>Safety Valves and Safety Relief Valves</u>
<u>33.1-14-05-09</u>	<u>Superheater Safety Valve Requirements</u>
<u>33.1-14-05-10</u>	<u>Capacity</u>
<u>33.1-14-05-11</u>	<u>Mounting</u>
<u>33.1-14-05-12</u>	<u>Operation</u>
<u>33.1-14-05-13</u>	<u>Steam Stop Valves</u>
<u>33.1-14-05-14</u>	<u>Feedwater Valves and Piping</u>
<u>33.1-14-05-15</u>	<u>Blowoff Valves and Piping</u>
<u>33.1-14-05-16</u>	<u>Factors of Safety</u>
<u>33.1-14-05-17</u>	<u>Inspection of Inaccessible Parts</u>
<u>33.1-14-05-18</u>	<u>Repairs and Renewals of Fittings and Appliances</u>
<u>33.1-14-05-19</u>	<u>Fusible Plugs</u>
<u>33.1-14-05-20</u>	<u>Water Columns, Gauge Glasses, and Gauge Cocks</u>
<u>33.1-14-05-21</u>	<u>Steam Pressure Gauge</u>
<u>33.1-14-05-22</u>	<u>Pressure on Nonstandard Steam Traction Engines</u>
<u>33.1-14-05-23</u>	<u>Duties of Owners</u>
<u>33.1-14-05-24</u>	<u>Inspection and Repair of Standard and Nonstandard Steam Traction Engines.</u>

33.1-14-05-01. Maximum allowable working pressure for standard boilers.

The maximum allowable working pressure for standard boilers must be determined in accordance with the applicable provisions of the edition of the American Society of Mechanical Engineers Code under which they were constructed and stamped.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-05-02. Maximum allowable working pressure for nonstandard boilers.

1. The maximum allowable working pressure on the shell of a nonstandard boiler must be determined by the strength of the weakest section of the structure, computed from the thickness of the plate, the tensile strength of the plate, the efficiency of the longitudinal joint or tube ligaments, the inside diameter of the weakest course and the factor of safety allowed by this article.

$$\frac{TStE}{RFS} = \text{Maximum allowable working pressure, per square inch gauge where:}$$

TS = Ultimate tensile strength of shell plates per square inch

t = Minimum thickness of shell plate, in weakest course, inches

E = Efficiency of longitudinal joint:

For tube ligaments and riveted construction, E shall be determined by the rules given in section I, part PR, of the American Society of Mechanical Engineers Code for power boilers. For seamless construction, E shall be considered one hundred percent.

R = Inside radius of the weakest course of the shell, in inches

FS = Factor of safety permitted

2. When the tensile strength of steel or wrought iron shell plate is not known, it must be taken as fifty-five thousand pounds per square inch [386.11 megapascals] for steel and forty-five thousand pounds per square inch [310.26 megapascals] for wrought iron.
3. The resistance to crushing of mild steel must be taken at ninety-five thousand pounds per square inch [655 megapascals] of the cross-sectional area.
4. When computing the ultimate strength of rivets in shear, the following values, in pounds per square inch [megapascals] of the cross-sectional area of the rivet shank must be used:

	<u>POUNDS PER SQUARE INCH</u>	<u>MEGAPASCALS</u>
<u>Iron rivets in single shear</u>	<u>38,000</u>	<u>262.00</u>
<u>Iron rivets in double shear</u>	<u>76,000</u>	<u>524.00</u>
<u>Steel rivets in single shear</u>	<u>44,000</u>	<u>303.37</u>
<u>Steel rivets in double shear</u>	<u>88,000</u>	<u>606.69</u>

When the diameter of the rivet holes in the longitudinal joints of a boiler is not known, the diameter and cross-sectional area of rivets, after driving, may be selected from the following table, or as ascertained by cutting out one rivet in the body of the joint.

SIZES OF RIVETS BASED ON PLATE THICKNESS

<u>Thickness of plate, inches</u>	<u>1/4</u>	<u>9/32</u>	<u>5/16</u>	<u>11/32</u>	<u>3/8</u>	<u>13/32</u>
<u>Diameter of rivet after driving, inches</u>	<u>11/16</u>	<u>11/16</u>	<u>3/4</u>	<u>3/4</u>	<u>13/16</u>	<u>13/16</u>
<u>Thickness of plate, inches</u>	<u>7/16</u>	<u>15/32</u>	<u>1/2</u>	<u>9/16</u>	<u>5/8</u>	
<u>Diameter of rivet after driving, inches</u>	<u>15/16</u>	<u>15/16</u>	<u>15/16</u>	<u>1-1/16</u>	<u>1-1/16</u>	

5. The following factors of safety must be increased by the inspector if the condition and safety of the boiler demand it:
 - a. The lowest factor of safety permissible on existing installations is four, except for horizontal-return-tubular boilers having continuous longitudinal lap seams more than twelve feet [3.66 meters] in length, when the factor of safety is eight; when this latter type boiler is removed from its existing setting, it may not be reinstalled for pressures in excess of fifteen pounds per square inch gauge [103 kilopascals].
 - b. Reinstalled or secondhand boilers must have a minimum factor of safety of six when the longitudinal seams are of lap-riveted construction, and a minimum factor of safety of five

when the longitudinal seams are of butt-and-double-strap construction. Steam traction engines must be considered as secondhand boilers for purposes of determining their factors of safety.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-05-03. Age limit of existing boilers.

1. The age limit of any boiler of nonstandard construction is thirty years except that after a thorough internal and external inspection and a hydrostatic pressure test of one and one-half times the allowable working pressure held for a period of at least thirty minutes during which no distress or leakage develops, any boiler having other than a lap-riveted longitudinal joint may be continued in operation without reduction in working pressure. The age limit of any boiler having lap-riveted longitudinal joints and operating at a pressure in excess of fifty pounds per square inch [344.74 kilopascals] is twenty years; this type of boiler, when removed from an existing setting, may not be reinstalled for a pressure in excess of fifteen pounds per square inch [103 kilopascals]. A reasonable time for replacement, not to exceed one year, may be given at the discretion of the chief boiler inspector.
2. The shell or drum of a boiler in which a typical lap seam crack is discovered along a longitudinal riveted joint for either butt seam or lap joints must be permanently discontinued for use under steam pressure. "Lap seam crack" means the typical crack frequently found in lap seams extending parallel to the longitudinal joint and located either between or adjacent to rivet holes.
3. The age limit of boilers of standard construction installed prior to the date this law becomes effective is dependent on thorough internal and external inspection and hydrostatic pressure test of one and one-half times the allowable working pressure for a period of thirty minutes. If the boiler under these test conditions exhibits no distress or leakage, it may be continued in operation at the same working pressure.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-05-04. Welded boilers.

Boilers that have either longitudinal or circumferential seams of fusion welded construction must have been constructed and stamped in accordance with the rules and regulations of the American Society of Mechanical Engineers Code or must have the standard stamping of another state that has adopted a standard of construction equivalent to the standards of the American Society of Mechanical Engineers Code.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-05-05. Pressure on old boilers.

The maximum working pressure of an old boiler may not be increased to a greater pressure than would be allowed for a new boiler of the same construction.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-05-06. Cast iron headers and mud drums.

The maximum allowable working pressure on a watertube boiler, the tubes of which are secured to a cast iron or malleable iron header, or which have cast iron mud drums, may not exceed one hundred sixty pounds per square inch gauge [1103.17 kilopascals].

History: Effective July 1, 2020

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-05-07. Pressure on cast iron boilers.

The maximum allowable working pressure for any cast iron boiler, except hot water boilers, is fifteen pounds per square inch gauge [103 kilopascals].

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-05-08. Safety valves and safety relief valves.

Safety valves and safety relief valves must meet the requirements of the edition of the American Society of Mechanical Engineers Code, section 1, referenced in this article or the requirements of the edition of the American Society of Mechanical Engineers Code, section 1, to which the boiler they are installed was constructed.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-05-09. Superheater safety valve requirements.

Superheater safety valves must meet the requirements of the edition of the American Society of Mechanical Engineers Code section referenced in this article or the requirements of the edition of the American Society of Mechanical Engineers Code section to which the superheater they are installed was constructed.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-05-10. Capacity.

1. The minimum safety valve or safety relief valve relieving capacity for all high-pressure boilers other than steam traction engines must be determined by the edition of the American Society of Mechanical Engineers Code, section 1, referenced in this article or by the requirements of the American Society of Mechanical Engineers Code, section 1, to which the boiler they are installed was constructed.
2. The minimum safety valve relieving capacity for steam traction engines must be determined using the edition of the National Board Inspection Code referenced in this article.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-05-11. Mounting.

The mounting of safety valves and safety relief valves must meet the requirements of the edition of the American Society of Mechanical Engineers Code, section 1, referenced in this article or by the requirements of the edition of the American Society of Mechanical Engineers Code, section 1, to which the boiler they are installed was constructed.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-05-12. Operation.

1. The operation of safety valves and safety relief valves must meet the requirements of the edition of the American Society of Mechanical Engineers Code, section 1, referenced in this article or by the requirements of the edition of the American Society of Mechanical Engineers Code, section 1, to which the boiler they are installed was constructed.
2. If the operating conditions of a valve are changed so as to require a new spring for a different pressure, the valve must be adjusted by the manufacturer, the manufacturer's authorized representative, or by a holder of a valid national board "VR" certificate who shall furnish and install a new nameplate.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-05-13. Steam stop valves.

1. Each discharge outlet, except safety valve, safety relief valves, reheater inlet and outlet, or superheater inlet connections, must be fitted with a stop valve located at an accessible point in the steam-delivery line and as near the boiler nozzle as is convenient and practicable. When such outlets are over two-inch [50.8-millimeter] pipe size, the valve or valves used on the connection must be of the outside-screw-and-yoke-rising-spindle type so as to indicate from a distance by the position of its spindle whether it is closed or open, and the wheel may be carried either on the yoke or attached to the spindle. A plug-cock-type valve may be used provided the plug is held in place by a guard or a gland, the valve is equipped to indicate from a distance whether it is closed or open, and the valve is equipped with a slow-opening mechanism. In the case of a single boiler and prime mover installation, the stop valve required herein may be omitted provided the prime mover throttle valve is equipped with an indicator to show whether the valve is open or closed and is designed to withstand the required hydrostatic pressure test of the boiler.
2. When the boilers are connected to a common header, the connection from each boiler having a manhole opening must be fitted with two stop valves having an ample free-blow drain between them. The discharge of this drain must be visible to the operator while manipulating the valve. The stop valves must consist preferably of one automatic non-return valve (set next to the boiler) and a second valve of the outside-screw-and-yoke type must be used. Where intercommunicating systems of different pressures are installed, every boiler on each system must be equipped with an automatic non-return valve set next to the boiler.
3. When more than one stop valve is required, it shall have a pressure rating at least equal to that required for the expected steam temperature and pressure at the valve, or the pressure rating at least equal to eighty-five percent of the lowest set pressure of any safety valve on the boiler drum and for the expected temperature of the steam at the valve, whichever is greater.

4. All valves and fittings on steam lines shall have a pressure rating of at least one hundred pounds per square inch [689.48 kilopascals] in accordance with the applicable American National Standards Institute Standard.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-05-14. Feedwater valves and piping.

1. Except for high temperature water boilers, the feed piping must be provided with a check valve near the boiler and a valve or cock between the check valve and the boiler. When two or more boilers are fed from a common source, there must also be a globe or regulating valve on the branch to each boiler located between the check valve and the source of supply. Whenever globe valves are used on feed piping, the inlet must be under the disk of the valve. On single boiler-turbine unit installations, the boiler feed shutoff valve may be located upstream from the boiler feed check valve.
2. When the supply line to a boiler is divided into branch feed connections and all such connections are equipped with stop-and-check valves, the stop-and-check valves in the common source may be omitted.
3. If a boiler is equipped with duplicate feed arrangements, each such arrangement must be equipped as required by these rules.
4. A combination stop-and-check valve in which there is only one seat and disk and a valve stem is provided to close the valve when the stem is screwed down must be considered only as a stop valve, and a check valve must be installed as otherwise provided.
5. Where an economizer or other feedwater-heating device is connected directly to the boiler without intervening valves, the feed valves and check valves required must be placed on the inlet of the economizer or feedwater-heating device.
6. The recirculating return line for a high temperature water boiler must be provided with the same stop valve, or valves, required by subsection 1 of section 33.1-14-05-13 for the main boiler and the required stop valve or valves is optional. A check valve may not be a substitute for a stop valve.
7. Except as provided for in subsections 8 and 10, boilers having more than five hundred square feet [46.45 square meters] of water-heating surface must have at least two means of feeding water. Each source of feeding must be capable of supplying water to the boiler at a pressure of six percent higher than the highest setting of any safety valve on the boiler. For boilers that are fired with solid fuel not in suspension, and for boilers whose setting or heat source can continue to supply sufficient heat to cause damage to the boiler if the feed supply is interrupted, one such means of feeding must not be subject to the same interruption as the first method.
8. Except as provided for in subsection 7, boilers fired by gaseous, liquid, or solid fuel in suspension may be equipped with a single means of feeding water provided means are furnished for the immediate shut off of heat input if the water feed is interrupted.
9. For boilers having a water-heating surface of not more than one hundred square feet [9.29 square meters], the feed piping and connection to the boiler may not be smaller than one-half inch [12.7-millimeter] pipe size. For boilers having a water-heating surface more than one hundred square feet [9.29 square meters], the feed piping and connection to the boiler may not be less than three-quarter inch [19.05-millimeter] pipe size.
10. High temperature water boilers must be provided with means of adding water to the boiler or system while under pressure.

11. The feedwater must be introduced into a boiler in such a manner that the water will not be discharged directly against surfaces exposed to gases of high temperature or to direct radiation from the fire or close to any riveted joints of the furnace sheets or of the shell. For pressures of four hundred pounds [2757.92 kilopascals] or over, the feedwater inlet through the drum must be fitted with shields, sleeves, or other suitable means to reduce the effects of temperature differentials in the shell or head. If necessary, the discharge end of the feed piping must be fitted with a baffle to divert the flow from riveted joints. Feedwater may not be introduced through the blowoff.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-05-15. Blowoff valves and piping.

1. A "blowoff" means a pipe connection provided with valves through which the water in the boiler may be blown out under pressure, excepting drains such as are used on water columns, gauge glasses, or piping of feedwater regulators, etc., used for the purpose of determining the operating condition of such equipment. Piping connections used primarily for continuous operation, such as deconcentrators on continuous blowdown systems, are not classed as blowoffs but the pipe connections and all fittings up to and including the first shutoff valve must be equal at least to the pressure requirements for the lowest set pressure of any safety valve on the boiler drum and with the corresponding saturated-steam temperature.
2. A surface blowoff may not exceed two and one-half inch [63.5-millimeter] pipe size, and the internal and external pipes, when used, must form a continuous passage, but with clearance between their ends and arranged so that the removal of either will not disturb the other.
3. Each boiler, except high temperature water boilers, must have a bottom blowoff pipe fitted with a valve or cock in direct connection with the lowest water space practicable.
4. All waterwalls and water screens which do not drain back into the boiler, and all integral economizers must be equipped with blowoff valves.
5. Except as permitted for miniature boilers, the minimum size of pipe and fittings is one inch [25.4 millimeters], and the maximum size is two and one-half inches [63.5 millimeters], except that for boilers with one hundred square feet [9.29 square meters] of heating surface or less, the minimum size of pipe and fittings is three-fourths inch [19.05 millimeters].
6. Condensate return connections of the same size or larger than the size herein specified may be used, and the blowoff may be connected to them. In such case the blowoff must be so located that the connection may be completely drained.
7. A bottom blowoff pipe when exposed to direct furnace heat must be protected by firebrick or other heat-resisting material which is so arranged that the pipe may be inspected.
8. An opening in the boiler setting for a blowoff pipe must be arranged to provide free expansion and contraction.
9. On a boiler having multiple blowoff pipes, a single master valve may be placed on the common blowoff pipe from the boiler, in which case only one valve on each individual blowoff is required. In such a case either the master valve or the individual valves or cocks must be of the slow-opening type.
10. Two independent slow-opening valves, or a slow-opening valve and a quick-opening valve or cock, may be combined in one body and may be used provided the combined fitting is the equivalent of two independent slow-opening valves, or a slow-opening valve and a quick-opening valve or cock and provided further that the failure of one to operate cannot

affect the operation of the other.

11. The bottom blowoff pipes of every traction or portable boiler must have at least one slow-opening or quick-opening blowoff valve or cock conforming to the requirements of section 33.1-14-05-15.
12. Only one blowoff valve, which must be of a slow-opening type, is required on forced circulation and electric boilers having a normal water content not exceeding one hundred gallons [378.54 liters].

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-05-16. Factors of safety.

The minimum factor of safety may not be less than four for existing installations. The director authorizes an inspector to increase the factor of safety if the condition of the boiler or pressure vessel warrants it. If the owner or user does not concur with the inspector's decision, the owner or user may appeal to the director who may request a joint inspection by the chief boiler inspector and the deputy inspector or special inspector. Each inspector shall render the inspector's report to the director, and the director shall render the final decision, based upon the data contained in all the inspector's reports.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-05-17. Inspection of inaccessible parts.

If in the opinion of the inspector, as the result of conditions disclosed at the time of inspection, it is advisable to remove the interior or exterior lining, covering, or brickwork to expose certain parts of the vessel not normally visible, the owner or user shall remove such material to permit proper inspection and the drilling of any part of the vessel to ascertain thickness.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-05-18. Repairs and renewals of fittings and appliances.

Whenever repairs are made to fittings and appliances or it becomes necessary to replace them, the work must comply with the requirements for new installations.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-05-19. Fusible plugs.

1. Fire-actuated fusible plugs, if used, must conform to the requirements of the American Society of Mechanical Engineers Code for power boilers.
2. They may be replaced by steel plugs if the boiler is gas-fired or oil-fired and is equipped with a low water fuel cutoff.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-05-20. Water columns, gauge glasses, and gauge cocks.

1. Outlet connections (except for damper regulator, feedwater regulator, low water fuel cutoff, drains, steam gauges, or such apparatus that does not permit the escape of an appreciable amount of steam or water therefrom) may not be placed on the piping that connects the water column to the boiler. The water column must be placed on the piping that connects the water column to the boiler. The water column must be provided with a valved drain of at least three-quarter inch [19.05-millimeter] pipe size, the drain to be piped to a safe location.
2. Each boiler constructed prior to 1999 must have three or more gauge cocks located within the visible length of the water glass, except when the boiler has two water glasses located on the same horizontal lines. Boilers not over thirty-six inches [.914 meters] in diameter, in which the heating surface does not exceed one hundred square feet [9.29 square meters] need have but two gauge cocks.
3. For all installations where the water gauge glass or glasses are more than thirty feet [9.14 meters] from the boiler operating floor, it is recommended that water level indicating or recording gauges be installed at eye height from the operating floor.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-05-21. Steam pressure gauge.

1. Each steam boiler must have a steam gauge, with dial range not less than one and one-half times the pressure at which the safety valve is set, connected to the steam space or to the steam connection to the water column. The steam gauge must be connected to a siphon or equivalent device of sufficient capacity to keep the gauge tube filled with water and so arranged that the gauge cannot be shut off from the boiler except by a cock placed near the gauge and provided with a tee or lever handle arranged to be parallel to the pipe in which it is located when the cock is open.
2. When a steam pressure gauge connection longer than eight feet [2.44 meters] becomes necessary, a shutoff valve may be used near the boiler provided the valve is of the outside-screw-and-yoke type and is locked open. The line must be ample size with provision for free blowing. Each boiler must be provided with a one-quarter inch [6.35-millimeter] nipple and globe valve connected to the steam space for the exclusive purpose of attaching a test gauge when the boiler is in service so that the accuracy of the boiler steam gauge may be ascertained.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-05-22. Pressure on nonstandard steam traction engines.

All steam traction engines that are of nonstandard boiler construction are limited to a maximum allowable working pressure of one hundred pounds per square inch [690 kilopascals], unless a thorough ultrasonic thickness survey, engineering analysis, and other inspections, approved by the chief boiler inspector, determine that a different pressure is appropriate. The maximum allowable working pressure may not be greater than that permitted by the original manufacturer. Boilers herein described are not subject to the age limits of section 33.1-14-05-03.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-05-23. Duties of owners.

1. It is the duty of the owner or user of any steam traction engine on wheels to notify the chief boiler inspector of sale or other disposition of steam traction engines.
2. Within ten days of purchase, any person purchasing any steam traction engine shall notify the chief boiler inspector where it will be located and operated.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-05-24. Inspection and repair of standard and nonstandard steam traction engines.

The National Board Inspection Code referenced in this article must be used for the inspection and repair of all steam traction engines unless otherwise noted in this article.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

CHAPTER 33.1-14-06
MINIATURE BOILERS - NEW INSTALLATIONS

Section

33.1-14-06-01 Requirements

33.1-14-06-01. Requirements.

1. All new boilers, except those exempt by law, to be installed in North Dakota must be reported to the chief boiler inspector by the owner or user and by the installer.
2. A miniature boiler, except one exempt by law, may not be installed in North Dakota unless it has been constructed, inspected, and stamped in conformity with section I of the American Society of Mechanical Engineers Code and is approved, registered, and inspected in accordance with this article.
3. A miniature boiler having the standard stamping of another state that has adopted a standard of construction equivalent to the standard of North Dakota may be accepted by the inspector. However, the person desiring to install the same shall make application for the installation and shall file with this application the manufacturer's data report covering the construction of the boiler in question.
4. All new installation boilers, including reinstalled boilers, must be installed in accordance with the requirements of the American Society of Mechanical Engineers Code and these regulations.
5. The owner or user shall install a carbon monoxide (CO) detector/alarm in equipment rooms where fuel fired boilers and/or fuel fired pressure vessels are located in accordance with the authority having Jurisdiction.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

CHAPTER 33.1-14-07
MINIATURE BOILERS - EXISTING INSTALLATIONS

Section

<u>33.1-14-07-01</u>	<u>General Rules</u>
<u>33.1-14-07-02</u>	<u>Maximum Allowable Working Pressure</u>
<u>33.1-14-07-03</u>	<u>Maximum Allowable Working Pressure for Nonstandard Boilers</u>
<u>33.1-14-07-04</u>	<u>Safety Valves</u>
<u>33.1-14-07-05</u>	<u>Gauge Glass and Water Level Indicator</u>
<u>33.1-14-07-06</u>	<u>Feeding and Feedwater Piping</u>
<u>33.1-14-07-07</u>	<u>Blowoff Piping</u>
<u>33.1-14-07-08</u>	<u>Steam Gauges</u>
<u>33.1-14-07-09</u>	<u>Stop Valves</u>
<u>33.1-14-07-10</u>	<u>Flue Connection</u>
<u>33.1-14-07-11</u>	<u>Duties of Owners</u>
<u>33.1-14-07-12</u>	<u>Steam Gauge</u>

33.1-14-07-01. General rules.

The rules adopted for power boilers applying to strength of materials and calculations to determine maximum allowable working pressure must be used for miniature boilers unless a special rule is stated in those rules.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-07-02. Maximum allowable working pressure.

The maximum allowable working pressure for standard boilers on the shell of a boiler or drum must be determined by section 33.1-14-05-01.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-07-03. Maximum allowable working pressure for nonstandard boilers.

Nonstandard miniature boilers:

1. Must conform to all requirements of this chapter.
2. Must have a factor of safety as given in subsection 5 of section 33.1-14-05-02.
3. Must be given an initial inspection that must include a hydrostatic pressure test.
4. May not have solder or silver solder as a method of attachment of any pressure part of the entire assembled unit.
5. May have a plate for the North Dakota stamp and registration number to be welded to boiler proper. The plate must be placed in a conspicuous and accessible location with a minimum size thickness one-sixteenth inch [1.59 millimeters], length two inches [50.8 millimeters], and width one inch [25.4 millimeters].
6. May not exceed the design criteria limits as defined in subsection 20 of section 33.1-14-01-01.

7. Of the watertube, fired-coil and fired-radiator design must be considered as not meeting the requirements of this section.
8. Exceeding twelve inches [304.80 millimeters] internal diameter must have at least one 1-inch [25.4-millimeter] opening in the bottom of the shell and one 1-inch [25.4-millimeter] opening in each water leg. Boilers not exceeding twelve inches [304.80 millimeters] internal diameter must have one 1/2-inch [12.7-millimeter] opening in the shell and one 1/2-inch [12.7-millimeter] opening in each water leg.
9. Construction material used for fabrication of the shell must be steel of at least fifty-five thousand pounds per square inch [386.11 megapascals] tensile strength. Material of tubes may be steel, brass, or copper with a rating equal to materials from section II of the American Society of Mechanical Engineers Code.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-07-04. Safety valves.

1. Each miniature boiler must be equipped with an American Society of Mechanical Engineers approved safety valve set at or below the maximum allowable working pressure.
2. The safety valve must be plainly marked by the manufacturer showing name or identifying trademark, nominal diameter, and pressure at which it is set to release.
3. The safety valve relieving capacity of each boiler must be such that it will discharge all the steam that can be generated by the boiler without allowing the pressure to rise more than six percent above the maximum allowable working pressure.
4. In those cases where the boiler is supplied with feedwater directly from a pressure main or system without the use of a mechanical feeding device, the safety valve must be set to release at a pressure not in excess of ninety-four percent of the lowest pressure obtained in the supply main or system feeding the boiler. Return traps may not be considered mechanical feeding devices.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-07-05. Gauge glass and water level indicator.

1. Each miniature boiler must be equipped with a water gauge glass for determination of water level.
2. The lowest permissible water level must be at a point one-third of the height of the shell, except where the boiler is equipped with internal furnace in which case it may not be less than one-third of the tube length above the top of the furnace. For small boilers where there is insufficient space for the usual type of gauge glass, water level indicators of the glass bull's-eye type may be used.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-07-06. Feeding and feedwater piping.

1. Every miniature boiler must be provided with at least one feed pump or other mechanical feeding device except if the following conditions exist:
 - a. If the boiler is connected to a water main or system having sufficient pressure to feed the boiler at any time while under pressure.
 - b. If the fuel burned is such that all heat input can be discontinued instantaneously by the operation of a valve, cock, or switch, thereby permitting the boiler pressure to be quickly lowered to a point where water can be introduced from the connection of the water main.
 - c. If the boiler is operated without extraction of steam (closed system) in which case the boiler is filled, when cold, through the connection or opening provided in accordance with the following rule.
2. Each miniature boiler must be fitted with a feedwater connection that may not be less than one-half-inch [12.7-millimeter] iron pipe size. The feed piping must be provided with a check valve near the boiler and a valve or check between the check valve and the boiler.
3. Feedwater may be introduced through the blowoff connection if the boiler is operated without extraction of steam (closed system).
4. Feedwater may not be introduced through the water column or gauge glass connections while the boiler is under pressure.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-07-07. Blowoff piping.

1. Each miniature boiler must be provided with a blowoff connection not less than one-half-inch [12.7-millimeter] iron pipe size, directly connected with the lowest water space.
2. Blowoff piping may not be galvanized and must be provided with a valve or cock.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-07-08. Steam gauges.

Each miniature boiler must be equipped with a steam gauge having a dial range not less than one and one-half times the safety valve setting. The gauge must be connected to the steam space or to the steam connection to the gauge glass by a brass or bronze composition siphon tube, or equivalent device that will keep the gauge tube filled with water.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-07-09. Stop valves.

The steam piping from a miniature boiler must be provided with a stop valve located as close to the boiler shell or drum as is practicable, except in those cases where the boiler and steam receiver are operated as a closed system.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-07-10. Flue connection.

Each gas-fired boiler must be equipped with a four inch [10.16-centimeter] vent pipe or flue extended to an approved location outside the building or connected to a chimney flue. If the horizontal run is more than ten feet [3.05 meters], the vent must be increased to six inches [152.4 millimeters]. A draft hood of approved design must be provided on each boiler.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-07-11. Duties of owners.

1. The owner and user of any steam traction engine or boiler on wheels shall notify the chief boiler inspector of sale or other disposition of steam traction engines.
2. Within ten days of purchase, any person purchasing any steam traction engine shall notify the chief boiler inspector where it will be located and operated.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-07-12. Steam gauge.

The steam pressure gauge must show the pressure at which the boiler is actually being operated. Adjustments to the gauge to show a lesser pressure are prohibited, and if any gauge has been so adjusted, such act will be considered a willful violation of this section.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

CHAPTER 33.1-14-08
HEATING, LOW PRESSURE, AND HOT WATER SUPPLY BOILERS - NEW
INSTALLATIONS

Section

33.1-14-08-01 Requirements

33.1-14-08-01. Requirements.

1. Unless exempt by this article, a heating or low pressure boiler may not be installed in this state unless it has been constructed, inspected, and stamped to conform with section IV of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code and is approved, registered, and inspected in accordance with the requirements of this article.
2. All new installation boilers, including reinstalled boilers, must be installed in accordance with the requirements of the National Board Inspection Code and this article.
3. Heating boilers shall have a minimum of at least 36 inches (914 mm) between the top of the heating boiler and any overhead structure and at least 36 inches (914 mm) between all sides of the heating boiler and adjacent walls, structures, or other equipment. Heating boilers having manholes shall have at least 84 inches (2,135 mm) of clearance between the manhole opening and any wall, ceiling, piping, or other equipment that may prevent a person from entering the heating boiler. Alternative clearances in accordance with the manufacturer's recommendations are subject to acceptance by the chief boiler inspector.
4. A manually operated emergency shutoff switch or circuit breaker must be located just outside the boiler room door and marked for easy identification. Consideration should be given to the type and location of the switch to safeguard against tampering. If the boiler room door is on the building exterior, the switch must be located just inside the door. If there is more than one door to the boiler room, there must be a switch located at each door. The emergency switch or circuit breaker must disconnect all power to the burner controls. This requirement is limited to single and modular boilers exceeding 400,000 Btu/hr input installed after January 1, 2006.
5. The owner or user shall install a carbon monoxide (CO) detector/alarm in equipment rooms where fuel fired boilers and/or fuel fired pressure vessels are located in accordance with the authority having Jurisdiction.
6. Hot water supply boilers may not be installed unless constructed and approved in accordance with the American Gas Association, the American National Standards Institute, or the American Society of Mechanical Engineers Code.
7. All new boilers, except those exempt by law, to be installed in North Dakota must be reported to the chief boiler inspector by the owner or user, and by the installer.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

CHAPTER 33.1-14-09
HEATING, LOW PRESSURE, AND HOT WATER SUPPLY BOILERS - EXISTING
INSTALLATIONS

Section

<u>33.1-14-09-01</u>	<u>American Society of Mechanical Engineers Code Boilers</u>
<u>33.1-14-09-02</u>	<u>Nonstandard Riveted Boilers</u>
<u>33.1-14-09-03</u>	<u>Nonstandard Welded Boilers</u>
<u>33.1-14-09-04</u>	<u>Nonstandard Cast Iron Boilers</u>
<u>33.1-14-09-05</u>	<u>Fired Radiators</u>
<u>33.1-14-09-06</u>	<u>General</u>
<u>33.1-14-09-07</u>	<u>Pressure-Relieving Devices</u>
<u>33.1-14-09-08</u>	<u>Steam Pressure Gauge</u>
<u>33.1-14-09-09</u>	<u>Water Gauge Glasses</u>
<u>33.1-14-09-10</u>	<u>Stop Valves and Check Valves</u>
<u>33.1-14-09-11</u>	<u>Feedwater Connections</u>
<u>33.1-14-09-12</u>	<u>Pressure or Altitude Gauges</u>
<u>33.1-14-09-13</u>	<u>Thermometers</u>
<u>33.1-14-09-14</u>	<u>Temperature Control</u>
<u>33.1-14-09-14.1</u>	<u>Pressure Control</u>
<u>33.1-14-09-15</u>	<u>Provisions for Thermal Expansion in Hot Water Systems</u>
<u>33.1-14-09-16</u>	<u>Return Pump</u>
<u>33.1-14-09-17</u>	<u>Repairs and Renewals of Fittings and Appliances</u>
<u>33.1-14-09-18</u>	<u>Low-Water Fuel Cutoff</u>
<u>33.1-14-09-19</u>	<u>Modular Hot Water Heating Boilers</u>
<u>33.1-14-09-20</u>	<u>Bottom Blowoff and Drain Valves</u>
<u>33.1-14-09-21</u>	<u>Emergency Shutoff Switches</u>

33.1-14-09-01. American Society of Mechanical Engineers Code boilers.

The maximum allowable working pressure of a boiler built in accordance with the American Society of Mechanical Engineers Code may not exceed the pressure indicated by the manufacturer's identification stamped or cast upon the boiler or upon a plate secured to it.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-09-02. Nonstandard riveted boilers.

The maximum allowable working pressure on the shell of a non-code riveted heating boiler must be determined in accordance with section 33.1-14-05-01 except that the maximum allowable working pressure of a steam heating boiler may not exceed fifteen pounds [103 kilopascals] and a hot water boiler may not exceed thirty pounds [206.85 kilopascals] at a temperature not exceeding two hundred fifty degrees Fahrenheit [120 degrees Celsius].

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-09-03. Nonstandard welded boilers.

The maximum allowable working pressure of a non-code steel or wrought iron heating boiler of welding construction may not exceed fifteen pounds [103 kilopascals]. For other than steam service, the maximum allowable working pressure must be calculated in accordance with section IV of the American Society of Mechanical Engineers Code.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-09-04. Nonstandard cast iron boilers.

1. The maximum allowable working pressure of a non-code boiler composed principally of cast iron may not exceed fifteen pounds [103 kilopascals] for steam service or thirty pounds [206.85 kilopascals] for hot water service.
2. The maximum allowable working pressure of a nonstandard boiler having cast iron shell or heads and steel or wrought iron tubes may not exceed fifteen pounds [103 kilopascals] for steam service or thirty pounds [206.85 kilopascals] for water service.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-09-05 . Fired radiators.

A radiator in which steam pressure is generated at a pressure of fifteen pounds [103 kilopascals] or less is considered a low pressure boiler.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-09-06. General.

If in the judgment of the inspector, a boiler is unsafe for operation at the pressure previously approved, the pressure must be reduced, proper repair made, or the boiler retired from service.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16 ~~26.1-22.1-14~~

Law Implemented: NDCC 23.1-16 ~~26.1-22.1-14~~

33.1-14-09-07. Pressure-relieving devices.

1. Safety valve requirements for steam boilers are:
 - a. Each steam boiler must have one or more American Society of Mechanical Engineers approved safety valves of the spring-pop type adjusted and sealed to discharge at a pressure not to exceed fifteen pounds per square inch [103 kilopascals]. Seals must be attached in a manner to prevent the valve from being taken apart without breaking the seal. The safety valves must be arranged so that they cannot be reset to relieve at a higher pressure than the maximum allowable working pressure of the boiler. For iron-and-steel-bodied valves exceeding two inch [50.8-millimeter] pipe size, the drain hole or holes must be tapped not less than three-eighths inch [9.53-millimeter] pipe size.
 - b. Each safety valve three-quarter inch [10.05 millimeters] diameter or over, used on a steam boiler, must have a substantial device that will positively lift the disk from its seat at least one-sixteenth inch [1.59 millimeters] when there is no pressure in the boiler. The seats and disks must be of suitable material to resist corrosion.
 - c. A safety valve for a steam boiler may not be smaller than three-quarter inch [19.05 millimeters] unless the boiler and radiating surfaces consist of a self-contained unit. A

safety valve may not be larger than four and one-half inches [114.3 millimeters]. The inlet opening must have an inside diameter equal to, or greater than, the seat diameter.

- d. The minimum relieving capacity of valve or valves is governed by the capacity marking on the boiler.
- e. The minimum valve capacity in pounds per hour is the greater of that determined by dividing the maximum British thermal units output at the boiler nozzle obtained by the firing of any fuel for which the unit is installed by one thousand, or is determined on the basis of the pounds of steam generated per hour per square foot of boiler heating surface. (One British thermal unit equals 1.055×10^3 joules.)

MINIMUM POUNDS OF STEAM PER HOUR
PER SQUARE FOOT OF HEATING SURFACE

<u>Boiler Heating Surface</u>	<u>Firetube Boilers</u>	<u>Watertube Boilers</u>
<u>Hand-fired</u>	<u>5</u>	<u>6</u>
<u>Stoker-fired</u>	<u>7</u>	<u>8</u>
<u>Oil, gas, or pulverized fuel-fired</u>	<u>8</u>	<u>10</u>

- f. Safety valves must be installed with the valve spindle in the vertical position. Discharge piping, to a safe location, may be required by the inspector.
2. When a boiler is fired only by a gas having a heat value not in excess of two hundred British thermal units per cubic feet [745.58×10^3 joules per cubic meter], the minimum safety valve or safety relief valve relieving capacity may be based on the values given for hand-fired boilers above.
 3. The safety valve or safety relief valve relieving capacity for electric boilers is three and one-half pounds [3692.5 joules] per hour per kilowatt input.
 - a. The safety valve capacity for each steam boiler must be such that with the fuel-burning equipment installed and operated at maximum capacity the pressure cannot rise more than five pounds per square inch [34.47 kilopascals] above the maximum allowable working pressure.
 - b. When operating conditions are changed, or additional boiler heating surface is installed, the valve capacity must be increased, if necessary, to meet the new conditions, the additional valves required, on account of changed conditions, may be installed on the outlet piping provided there is no intervening valve.
 4. Safety relief valve requirements for hot water boilers are:
 - a. Each hot water heating boiler must have at least one American Society of Mechanical Engineers approved pressure relief valve set to relieve at or below the maximum allowable working pressure of the boiler. Each hot water supply boiler must have at least one officially rated safety relief valve or at least one American Society of Mechanical Engineers approved pressure-temperature relief valve of the automatic-reseating type set to relieve at or below the maximum allowable working pressure of the boiler. Pressure relief valves officially rated as to capacity must have pop action when tested by steam. When more than one safety relief valve is used on either hot water heating or hot water supply boilers, the additional valve or valves must be officially rated and may be set within a range not to exceed six pounds per square inch [41.47 kilopascals] above the

maximum allowable working pressure of the boiler up to and including sixty pounds per square inch [413.69 kilopascals] and ten percent for those having a maximum allowable working pressure exceeding sixty pounds per square inch [413.69 kilopascals]. Safety relief valves must be spring loaded without disk guides on the pressure side of the valve. Safety relief valves must be arranged so that they cannot be reset to relieve at a higher pressure than the maximum permitted by this subdivision.

- b. Each safety relief valve must have a substantial device that will positively lift the disk from its seat at least one-sixteenth inch [1.59 millimeters] when there is no pressure on the boiler.
- c. Materials subject to deterioration or vulcanization when subject to saturated steam temperature corresponding to capacity test pressure may not be used for any part.
- d. A safety relief valve may not be smaller than three-quarter inch [19.05 millimeters] nor larger than four and one-half-inch [114.3-millimeter] standard pipe size, except that boilers having a heat input not greater than fifteen thousand British thermal units per hour [15.38 x 10 to the 7th power joules] may be equipped with a rated safety relief valve of one-half inch [12.7-millimeter] standard pipe size. The inlet opening must have an inside diameter approximately equal to, or greater than, the seat diameter. The minimum opening through any part of the valve may not be less than one-quarter inch [6.35 millimeters] diameter or its equivalent area.
- e. The required steam-relieving capacity, in pounds per hour, of the pressure-relieving device or devices on a boiler must be determined by dividing the maximum output in British thermal units at the boiler nozzle obtained by the firing of any fuel for which the unit is designed by one thousand or by multiplying the square feet of heating surface by five. In every case, the requirements of subdivision g must be met. (One British thermal unit equals 1.055 x 10 to the 3rd power joules.)
- f. When operating conditions are changed, or additional boiler heating surface is installed, the valve capacity must be increased, if necessary, to meet the new conditions and be in accordance with subdivision g. The additional valves required, on account of changed conditions, may be installed on the outlet piping provided there is no intervening valve.
- g. Safety relief valve capacity for each boiler must be such that with maximum heat input the pressure cannot rise more than six pounds per square inch [41.37 kilopascals] above the maximum allowable working pressure for pressures up to and including sixty pounds per square inch [413.69 kilopascals] and ten percent for maximum allowable working pressures over sixty pounds per square inch [413.69 kilopascals].
- h. Safety relief valves must be installed with the spindle in the vertical position. Discharge piping, to a safe location, must be installed.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-09-08. Steam pressure gauge.

1. Each steam boiler must have a steam gauge or a compound steam gauge connected to its steam space or to its water column or to its steam connections. The gauge or connection must contain a siphon or equivalent device that will develop and maintain a water seal that will prevent steam from entering the gauge tube. The connection must be arranged so that the gauge cannot be shut off from the boiler except by a cock placed in the pipe at the gauge and provided with a tee or a lever handle arranged to be parallel to the millimeter] standard pipe size, but where steel or wrought iron pipe or tubing is used, they must be not less than one-half-inch [12.7-millimeter] standard pipe size. The minimum size of a siphon, if used, must be one-quarter inch [6.35

millimeters] inside diameter. Ferrous and nonferrous tubing having inside diameters at least equal to that of standard pipe sizes listed above may be substituted for pipe in which it is located when the cock is open. The connections to the boiler must be not less than one-quarter inch [6.35-

2. The scale on the dial of a steam boiler gauge must be graduated to not less than thirty pounds per square inch [206.84 kilopascals] nor more than sixty pounds per square inch [413.69 kilopascals]. The gauge must be provided with effective stops for the indicating pointer at the zero point and at the maximum pressure point. The travel of the pointer from zero to thirty pounds per square inch [206.84 kilopascals] pressure must be at least three inches [76.2 millimeters]. On a compound gauge, effective stops must be set at the limits of the gauge readings on both the pressure and vacuum sides of the gauge.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-09-09. Water gauge glasses.

1. Each steam boiler must have one or more water gauge glasses attached to the water column or boiler by means of valved fittings not less than one-half-inch [12.70-millimeter] pipe size, with the lower fitting provided with a drain valve of the straight type with opening not less than one-quarter inch [6.35 millimeters] diameter to facilitate cleaning. Gauge glass replacement must be possible under pressure. Water glass fittings may be attached directly to a boiler.
2. The lowest visible part of the water gauge glass must be at least one inch [25.4 millimeters] above the lowest permissible water level recommended by the boiler manufacturer. With the boiler operating at this lowest permissible water level, there must be no danger of overheating any part of the boiler. Transparent material other than glass may be used for the water gauge provided that the material will remain transparent and has proved suitable for the pressure, temperature, and corrosive conditions expected in service.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-09-10. Stop valves and check valves.

1. If a steam boiler may be closed off from the heating system by closing a steam stop valve, there must be a check valve in the condensate return line between the boiler and the system.
2. If any part of a steam heating system may be closed off from the remainder of the system by closing a steam stop valve, there must be a check valve in the condensate return pipe from that part of the system.
3. If more than one boiler is connected to a system, they must each be equipped with main stops on the discharge and return side, in such a manner not affecting operation of any other boiler.
4. When single boilers are located above the system and can be drained without draining the system, stop valves are optional.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-09-11. Feedwater connections.

1. Feedwater connections must be independent of any water gauge connections and be made to the condensate return pipe or reservoir of the condensate return tank.

2. Alternatively, makeup water or water treatment may be introduced through an independent connection. The water flow from the independent connection may not discharge directly against parts of the boiler exposed to direct radiant heat from the fire. Makeup water or water treatment may not be introduced through openings or connections provided for inspection or cleaning, safety valve, safety relief valve, blowoff, water column, water gauge glass, pressure gauge, or temperature gauge.
3. When there is more than one boiler connected to a system, each boiler must have an independent feedwater line.
4. There must be a stop valve and a check valve in the feedwater line at the boiler. For hot water heating boilers, the check valve must be a backflow preventer approved by the state plumbing board.
5. Hot water heating boilers, not equipped with an approved low-water fuel cutoff, must be equipped with an automatic feeding device or pressure reducing valve method of feeding, in addition to a manual bypass capable of feeding the boiler at a pressure of six percent above safety relief valve setting.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-09-12. Pressure or altitude gauges.

1. Each hot water boiler must have a pressure or altitude gauge connected to it or to its flow connection in such a manner that it cannot be shut off from the boiler except by a cock with tee or lever handle placed on the pipe near the gauge. The handle of the cock must be parallel to the pipe in which it is located when the cock is open.
2. The scale on the dial of the pressure or altitude gauge must be graduated to not less than one and one-half nor more than three and one-half times the pressure at which the safety relief valve is set. The gauge must be provided with effective stops for the indicating pointer at the zero point and at the maximum pressure point.
3. Piping or tubing for pressure or altitude gauge connections must be of nonferrous metal when smaller than one-inch [25.4-millimeter] pipe size.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-09-13. Thermometers.

Each hot water boiler must have a thermometer located and connected so that it is easily readable when observing the water pressure or altitude. The thermometer must be located so that it will at all times indicate the temperature in degrees Fahrenheit [Celsius] of the water in the boiler at or near the outlet.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-09-14. Temperature control.

Each automatically fired hot water boiler must be protected from over temperature by two temperature-operated controls.

1. Each individual automatically fired water boiler must have a safety limit control that will cut off the fuel supply to prevent water temperature from exceeding the maximum allowable temperature at the boiler outlet. The water temperature safety control must be constructed to prevent a temperature setting above the maximum allowable temperature and be of the manual reset type.
2. Each individual hot water boiler or each system of commonly connected boilers without intervening valves must have a control that will cut off the fuel supply when the water temperature reaches an operating limit, which must be less than the maximum allowable temperature.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-09-14.1. Pressure control.

Each automatically fired steam boiler must be protected from overpressure by two pressure-operated controls.

1. Each automatically fired steam boiler must have a safety limit control that will cut off the fuel supply to prevent steam pressure from exceeding the fifteen pounds per square inch [103 kilopascals] maximum allowable working pressure of the boiler. Each control must be constructed to prevent a pressure setting above fifteen pounds per square inch [103 kilopascals] and be of the manual reset type.
2. Each individual steam boiler or each system of commonly connected steam boilers must have a control that will cut off the fuel supply when the pressure reaches an operating limit, which must be less than the maximum allowable pressure.
3. Shutoff valves of any type may not be placed in the steam pressure connection between the boiler and the controls described in subsections 1 and 2. These controls must be protected with a siphon or equivalent means of maintaining a water seal that will prevent steam from entering the control.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-09-15. Provisions for thermal expansion in hot water systems.

1. All hot water heating systems incorporating hot water tanks or fluid relief columns must be so installed as to prevent freezing under normal operating conditions.
2. Systems with open expansion tank. If the system is equipped with an open expansion tank, an indoor overflow from the upper portion of the expansion tank must be provided in addition to an open vent, the indoor overflow to be carried within the building to a suitable plumbing fixture or to the basement.
3. Closed-type systems. If the system is of the closed type, an airtight tank or other suitable air cushion must be installed that will be consistent with the volume and capacity of the system, and must be suitably designed for a hydrostatic test pressure of two and one-half times the allowable working pressure of the system. Expansion tanks for systems designed to operate above thirty pounds per square inch [206.85 kilopascals] must be constructed in accordance with the American Society of Mechanical Engineers Code, section VIII, division 1. Except for pre-pressurized tanks, provisions must be made for draining the tank without emptying the system. Provisions must also be made for changing of all tanks without emptying the system.
4. Expansion tank capacities for gravity hot water systems. Based on two-pipe system with average operating water temperature one hundred seventy degrees Fahrenheit [76.7 degrees

Celsius], using cast iron column radiation with heat emission rate one hundred fifty British thermal units per hour per square foot [158.25 x 10 to the 3rd power joules per .0929 square meter] equivalent direct radiation.

<u>Square Feet of Installed Equivalent Direct Radiation</u>		<u>Tank Capacity, Gallons</u>
<u>Up</u>	<u>to</u> <u>350</u>	<u>18</u>
<u>Up</u>	<u>to</u> <u>450</u>	<u>21</u>
<u>Up</u>	<u>to</u> <u>650</u>	<u>24</u>
<u>Up</u>	<u>to</u> <u>900</u>	<u>30</u>
<u>Up</u>	<u>to</u> <u>1,100</u>	<u>35</u>
<u>Up</u>	<u>to</u> <u>1,400</u>	<u>40</u>
<u>Up</u>	<u>to</u> <u>1,600</u>	<u>2-30</u>
<u>Up</u>	<u>to</u> <u>1,800</u>	<u>2-30</u>
<u>Up</u>	<u>to</u> <u>2,000</u>	<u>2-35</u>
<u>Up</u>	<u>to</u> <u>2,400</u>	<u>2-40</u>

5. Expansion tank capacities for forced hot water systems. Based on average operating water temperature one hundred ninety-five degrees Fahrenheit [90 degrees Celsius], a fill pressure twelve pounds per square inch gauge [82.74 kilopascals] and a maximum operating pressure thirty pounds per square inch gauge [206.84 kilopascals].

<u>System Volume, Gallons</u>	<u>Non-pressurized Tank Capacity Gallons</u>	<u>Pre-pressurized Tank Capacity Gallons</u>
<u>100</u>	<u>15</u>	<u>9</u>
<u>200</u>	<u>30</u>	<u>17</u>
<u>300</u>	<u>45</u>	<u>25</u>
<u>400</u>	<u>60</u>	<u>33</u>
<u>500</u>	<u>75</u>	<u>42</u>
<u>1,000</u>	<u>150</u>	<u>83</u>
<u>2,000</u>	<u>300</u>	<u>165</u>

Note: System volume includes volume of water in boiler, radiation, and piping, not including the expansion tank.

6. Expansion tanks for hot water supply systems must be constructed in accordance with the American Society of Mechanical Engineers Code, section VIII, division 1 if over five gallons in size of water and air.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-09-16. Return pump.

Each condensate return pump where practicable must be provided with an automatic water level

control set to maintain the water level within the limits of two gauge cocks.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-09-17. Repairs and renewals of fittings and appliances.

Whenever repairs are made to fittings or appliances or it becomes necessary to replace them, all work must comply with all requirements for new installations.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-09-18. Low-water fuel cutoff.

1. Each automatically fired hot water heating boiler must have an automatic low-water fuel cutoff that has been designed for hot water service and which can be tested without draining the system or the boiler. It must be so located as to automatically cut off the fuel supply prior to the surface of the water falling below the lowest safe water level as established by the boiler manufacturer.
2. A coil-type or watertube boiler requiring forced circulation to prevent overheating of the coils or tubes must have a flow-sensing device installed in the boiler or piping in lieu of the required low-water fuel cutoff that will cut off the fuel supply when the circulation flow is interrupted. Functioning of the low-water fuel cutoff due to a low water condition must cause safety shutdown and lockout. Where a reset device is separate from the low-water fuel cutoff, a means shall be provided to indicate actuation of the low-water fuel cutoff. The manual reset may be the instantaneous type or may include a time delay of not more than three minutes after the fuel has been cut off.
3. Low-water fuel cutoff requirements for steam boilers are addressed by section 33.1-14-03-07.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-09-19. Modular hot water heating boilers.

1. Individual modules must be limited to a maximum input of four hundred thousand British thermal units [4.22 x 10 to the 8th power joules] per hour (gas), three gallons [11.36 liters] per hour (oil), or one hundred fifteen kilowatt-hours (electricity).
2. Each module of a modular hot water heating boiler must be equipped with the following:
 - a. Pressure/altitude gauge (see section 33.1-14-09-12).
 - b. Thermometer (see section 33.1-14-09-13).
 - c. Operating temperature control (see subsection 2 of section 33.1-14-09-14).
 - d. Safety relief valve (see section 33.1-14-09-07).
 - e. Drain valve (see section 33.1-14-09-20).
3. The assembled modular hot water heating boiler must be equipped with the following:
 - a. High-limit temperature control (see subsection 1 of section 33.1-14-09-14).
 - b. Low-water fuel cutoff (see section 33.1-14-09-18).

c. Makeup feedwater connection (see section 33.1-14-09-11).

d. Expansion tank provisions (see section 33.1-14-09-15).

e. Stop valves (see section 33.1-14-09-10).

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-09-20. Bottom blowoff and drain valves.

1. Each steam boiler having a capacity over twenty-five gallons [94.6 liters] must have a bottom blowoff connection fitted with a valve or cock connected to the lowest water space practicable with a minimum size as shown below:

<u>Minimum Required Safety Valve</u>				<u>Steam Boiler Blowoff Piping Valve Size,</u>
<u>Capacity in Pounds of Steam/Hour</u>				<u>Inches (Min.)</u>
<u>Up</u>	<u>to</u>	<u>500</u>	<u>3/4</u>	
<u>501</u>	<u>to</u>	<u>1,250</u>	<u>1</u>	
<u>1,251</u>	<u>to</u>	<u>2,500</u>	<u>1 1/4</u>	
<u>2,501</u>	<u>to</u>	<u>6,000</u>	<u>1 1/2</u>	
<u>6,001</u>	<u>and</u>	<u>larger</u>	<u>2</u>	

2. Each hot water boiler and each steam boiler having a capacity not exceeding twenty-five gallons [94.6 liters] must have a drain valve connected to the lowest water space practicable. The minimum size of this drain valve is three-quarter inch [1.9 centimeters].

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-09-21. Emergency shutoff switches.

1. A manually operated emergency shutoff switch or circuit breaker must be located just outside the boiler room door and marked for easy identification. Consideration should be given to the type and location of the switch to safeguard against tampering. If the boiler room door is on the building exterior, the switch must be located just inside the door. If there is more than one door to the boiler room, there must be a switch located at each door.
2. The emergency switch or circuit breaker must disconnect all power to the burner controls.
3. This requirement is limited to single and modular boilers exceeding 400,000 Btu/hr input installed after January 1, 2006.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

CHAPTER 33.1-14-10 **UNFIRED PRESSURE VESSELS**

Section

33.1-14-10-01 Construction and Installation Standards - Exceptions

33.1-14-10-02 Application of Standards - Repairs

33.1-14-10-03 Allowance for State Specials

33.1-14-10-04 Change of Service from Anhydrous Ammonia to Propane

33.1-14-10-01. Construction and installation standards - Exceptions.

1. Unfired pressure vessels may not be installed in North Dakota unless such vessels have been constructed in accordance with the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, section VIII, division 1, 2, or 3, and bear the American Society of Mechanical Engineers stamping as proof of such construction.
2. Manufacturers shall register unfired pressure vessels with the national board of boiler and pressure vessel inspectors. Unfired pressure vessels must bear the required stamping of the national board.
3. The requirements of this section apply to all pressure vessels within the scope of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, section VIII, division 1, 2, or 3, with these exceptions:
 - a. Pressure vessels under federal control.
 - b. Pressure vessels that do not exceed four cubic feet [30 United States gallons] in volume and two hundred fifty pounds per square inch gauge [1723.70 kilopascals] in pressure.
 - c. Pressure vessels that do not exceed one and one-half cubic feet [11.22 United States gallons] in volume and six hundred pounds per square inch gauge [4136.88 kilopascals] in pressure.
 - d. Unfired pressure vessels installed or ordered prior to November 1, 1987. However, these unfired pressure vessels must be maintained in a safe operating condition using ANSI/NB-23 and ANSI/API-510 as guidelines. Unfired pressure vessels referenced by this section must be protected with the American Society of Mechanical Engineers stamped pressure relief devices as defined in section VIII of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code. Existing pressure relief devices installed on unfired pressure vessels referenced by this section will be considered acceptable if the pressure relief device is set for the correct pressure, if the usage is correct, and if the device is in a satisfactory operating condition.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-10-02. Application of standards - Repairs.

These rules apply only to new construction, except as noted below:

1. Reinstalled pressure vessels must meet the rules for new construction. Exception: national board registration is required only for those vessels ordered and constructed after November 1, 1987.
2. Repairs to unfired pressure vessels and to safety and safety relief valves for those vessels:

- a. Repairs to safety valves and safety relief valves must be such that valve function is not impaired and the repaired valve will perform to the standards for which it was originally constructed. It is recommended that these repairs be made by a firm in possession of a valid "VR" certificate of authorization from the national board of boiler and pressure vessel inspectors.
- b. Repairs to unfired pressure vessels must be such that vessels repaired will be returned to a safe and satisfactory operating condition, provided there is not deviation from the original design. It is recommended that these repairs be made by a firm in possession of a valid "R" certificate of authorization from the national board of boiler and pressure vessel inspectors.
- c. The National Board Inspection Code and the American Petroleum Institute Code (ANSI/API-510, 2006 edition) cover repair and alteration procedures. ANSI/API-510 may be used to cover the maintenance inspection, repair, alteration, and rerating procedure for pressure vessels used by the petroleum and chemical process industries. It is intended that ANSI/NB-23 cover installations other than those covered by ANSI/API-510.

3. Alterations to unfired pressure vessels:

- a. Alterations, as defined in ANSI/NB-23, must be made by a national board "R" certificate holder.
- b. Alterations may also be made by an organization operating under the provisions of ANSI/API-510, provided the alteration is within the scope of ANSI/API-510.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-10-03. Allowance for state specials.

If, due to a valid impediment to compliance with the American Society of Mechanical Engineers Code in its entirety, an unfired pressure vessel cannot bear the American Society of Mechanical Engineers and national board stamping, details in the English language, and specifications and calculations, approved by a registered professional engineer experienced in pressure vessel design, must be submitted to the chief inspector by the owner or user. Approval as "state special" must be obtained from the chief inspector before construction is started.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-10-04. Change of service from anhydrous ammonia to propane.

Unfired pressure vessels that have been previously used in anhydrous ammonia service may be converted to liquid petroleum service only with all of the following conditions being met:

1. The pressure vessel is American Society of Mechanical Engineers Code constructed and national board registered.
2. The pressure vessel has a manhole opening for access or a manhole opening is provided as an alteration.
3. The pressure vessel is in satisfactory condition internally and externally using the National Board Inspection Code to determine acceptable condition.

4. The pressure vessel has passed a wet fluorescent magnetic particle test made by an individual possessing a valid American society for nondestructive testing level II or III certificate issued in accordance with the requirements of the American society for nondestructive testing.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

CHAPTER 33.1-14-11
HOBBY BOILER OPERATOR LICENSING

Section

- 33.1-14-11-01 Definitions
- 33.1-14-11-02 License Required
- 33.1-14-11-03 Existing Operator Licenses
- 33.1-14-11-04 Application
- 33.1-14-11-05 Term of the License
- 33.1-14-11-06 License Renewal
- 33.1-14-11-07 Hobby Boiler Operation
- 33.1-14-11-08 License Denial or Revocation

33.1-14-11-01. Definitions.

1. "Director" means the director of the department of environmental quality.
2. "Hobby boiler" means a hand-fired steam boiler that operates above fifteen pounds per square inch [103.42 kilopascals] gauge pressure operated during a parade, an exhibition, or a threshing show where the public is invited and not otherwise exempt from North Dakota Century Code section 23.1-16-06.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-11-02. License required.

1. Except as provided in subsection 3, no individual may operate a hobby boiler in this state unless licensed under this chapter.
2. The director may not issue a hobby boiler license to an individual unless the individual:
 - a. Files a written application with the director on a form prescribed by the director
 - b. Passes an examination developed by the director and pays an examination fee of twenty-five dollars
 - c. Provides evidence of the successful completion of one hundred twenty hours of apprenticeship training with a licensed hobby boiler operator. Training must include all of the following:
 - (1) Basic boiler, steam engine, and piping fundamentals
 - (2) Initial firing of the boiler with wood or coal or both and warmup of the steam engine
 - (3) Basic operation of the boiler and steam engine to include operation of:
 - (a) Blower valve
 - (b) Main steam valve
 - (c) Throttle valve and governor
 - (d) Injector and pump operation to include feedline stop and check valves
 - (e) Gauge glass, gauge cocks, and water column

- (f) Safety valve and fusible plug basics
 - (g) Blowdown valve use
 - (h) Steam engine operation and drain valves
 - (4) Normal shutdown procedures
 - (5) Emergency shutdown procedures
 - (6) Driving and steering to include the use of the reversing lever and stopping procedures
 - (7) Lining up for belt operation
- d. Is at least sixteen years of age
- e. Pays a twenty five-dollar license fee
3. A license is not required under this chapter if the hobby boiler operator is not a resident of this state and is qualified by reason of possessing a valid license from another state or Canadian province and this license has been approved by the director.
4. Attendance at one hobby boiler training seminar approved by the director may substitute for up to forty hours of apprenticeship training.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-11-03. Existing operator licenses.

An individual who has operated a hobby boiler within this state as of July 1, 2007, may receive a license without complying with subdivisions b and c of subsection 2 of section 33.1-14-12-02. "Operated a hobby boiler" means demonstrated operating experience in boiler operations and maintenance that include sufficient training, observation, and personal participation to enable the individual to safely operate a hobby boiler.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-11-04. Application.

An individual applying for a hobby boiler operator license must complete an application in the form provided by the director, pay any required fee, and provide a notarized affidavit signed by a licensed North Dakota hobby boiler operator attesting to the applicant's completion of one hundred twenty hours of training regarding the operation of a hobby boiler. The notarized affidavit need not be provided if it has already been provided by the applicant in connection with a previous application or if the applicant is applying for an existing operator license under section 33.1-14-11-03.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-11-05. Term of the license.

A hobby boiler operator license is valid for six years except that an initial license expires on January first of the year after the license has been in effect for five years.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-11-06. License renewal.

An individual may apply to renew a hobby boiler operator license for six years by submitting to the director a renewal request along with a twenty-five-dollar renewal fee in advance of the license expiration date.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-11-07. Hobby boiler operation.

1. Notwithstanding any other provision of this section and with the exception of the operation of miniature boilers, two licensed operators or a licensed operator and an apprentice operator must be in attendance on a hobby boiler during a parade or plowing demonstration or during belt operation. At least one licensed operator must be in attendance on a hobby boiler at all other times except when it is considered safe for a hobby boiler operator to leave the hobby boiler as described in subsection 2.
2. A hobby boiler operator is required to be in attendance on a hobby boiler any time the steam pressure is above fifteen pounds per square inch [103.42 kilopascals] gauge and rising unless all of the following conditions are met:
 - a. The water is above the one-third level in the gauge glass
 - b. The fire is extinguished or banked
 - c. All draft doors are closed
 - d. The main steam outlet valve or dome valve is closed
 - e. The boiler pressure is at least twenty pounds per square inch [137.90 kilopascals] gauge below the safety valve set pressure and the boiler pressure is decreasing

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

33.1-14-11-08. License denial or revocation.

1. The director may deny an application for a hobby boiler operator's license if the applicable requirements of North Dakota Century Code chapter 23.1-16 and this chapter are not met or if an applicant is not capable of operating a hobby boiler in a safe manner.
2. The director may revoke a hobby boiler operator's license if the applicable requirements of North Dakota Century Code chapter 23.1-16 and this chapter are not met, if an operator operates a hobby boiler carelessly or negligently or otherwise endangers the health and safety of others.

3. An applicant or license holder may appeal the denial or revocation of a license by filing a written appeal with the director within ten days of receipt of written notice of such a decision. Upon receipt of a timely appeal, an administrative hearing may be conducted in the manner provided in North Dakota Century Code chapter 28-32.

History: Effective July 1, 2020.

General Authority: NDCC 23.1-16

Law Implemented: NDCC 23.1-16

NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY

The following chapters are created:

ARTICLE 33.1-23

DIVISION OF CHEMISTRY LABORATORIES

Chapter

- 33.1-23-01 Fees for Chemistry Laboratories Analysis
- 33.1-23-02 Environmental Laboratory Certification Program
- 33.1-23-03 Environmental Laboratory Certification Proficiency Testing
- 33.1-23-04 Environmental Laboratory Certification Fee Determination

CHAPTER 33.1-23-02

ENVIRONMENTAL LABORATORY CERTIFICATION PROGRAM

Section

- 33.1-23-02-01 Applicability and Scope
- 33.1-23-02-02 Definitions
- 33.1-23-02-03 General Requirements for Required Methods
- 33.1-23-02-04 Biosolids Program Methods
- 33.1-23-02-05 Clean Water Act Program Methods
- 33.1-23-02-06 Coal Combustion Residuals Rule Program Methods
- 33.1-23-02-07 Non-Potable Water Program Methods
- 33.1-23-02-08 Potable Water Program Methods
- 33.1-23-02-09 Resource Conservation and Recovery Act Program Methods
- 33.1-23-02-10 Safe Drinking Water Act Program Methods
- 33.1-23-02-11 Alternate methods
- 33.1-23-02-12 Solids and Chemicals Program Methods
- 33.1-23-02-13 Personnel and Contact Information
- 33.1-23-02-14 Quality system
- 33.1-23-02-15 Access to premises
- 33.1-23-02-16 Access to records
- 33.1-23-02-17 Subcontracting
- 33.1-23-02-18 Certification Status
- 33.1-23-02-19 Response
- 33.1-23-02-20 Application contents for primary certification
- 33.1-23-02-21 Application period
- 33.1-23-02-22 Certification renewal
- 33.1-23-02-23 Modified application
- 33.1-23-02-24 Conditions for reapplication
- 33.1-23-02-25 Term of primary certification
- 33.1-23-02-26 Limit of certification
- 33.1-23-02-27 Term of reciprocal certification and application contents
- 33.1-23-02-28 Department notification – voluntary withdrawal or discontinuation of certification
- 33.1-23-02-29 Client notification required
- 33.1-23-02-30 Recertification

33.1-23-02-31 Certification modification, suspension, revocation, or denial

33.1-23-02-01. Applicability and Scope

This chapter applies to all laboratories required to be certified under North Dakota Century Code section 23.1-01-14. A laboratory that performs tests and analyses, the results of which must be reported to the Department to meet permit conditions or other Department program or regulatory requirements, must be certified for the parameters and methods required by the permit or Department program, unless the permit or Department program specifically exempts the parameters or methods from certification requirements. Certification requirements are equal to those required by federal programs for regulated parameters by promulgated methods unless otherwise specified or required by a Department program.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-02-02. Definitions.

In this article, unless the context otherwise requires, the following definitions apply:

1. "Analyte" means the chemical substance, physical property, or organism determined in a sample.
2. "Analyte Group" means a set of analytes that can be determined using the same method or technology.
3. "Biosolids" means sewage sludge or a solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Biosolids includes, but is not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from sewage sludge. Sewage sludge does not

include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screenings generated during preliminary treatment of domestic sewage in a treatment works.

4. “Certified Laboratory” means a laboratory that has a valid certification issued by the Department.

5. “Client” means an entity that has arranged with a laboratory to perform tests and analyses to meet the requirements of a Department issued permit or another Department program or regulatory requirement.

6. “Coal Combustion Residual Rule” means the sampling and analysis requirements under title 40 Code of Federal Regulations, part 257 and Appendices III and IV to part 257.

7. “Department” means the North Dakota Department of Environmental Quality

8. “Department program” means a program or rule administered by the Department that requires submission of data for compliance reporting purposes that must come from a certified laboratory.

9. “Field of testing” means the combination of analyte, method, matrix, and program for which a laboratory may hold accreditation or certification

10. “Initial Application” means an application submitted by a laboratory that either has never had certification or has not met the requirements and qualifications for either a renewal or revised application.

11. “Laboratory” means a facility that performs analyses on potable water, non-potable water, a hazardous liquid or solid matrix.

12. “Manual for the Certification of Laboratories Analyzing Drinking Water” means the EPA publication Manual for the Certification of Laboratories Analyzing Drinking Water, Fifth Edition and including Supplement 1 to the Fifth Edition of the Manual for the Certification of Laboratories Analyzing Drinking Water and Supplement 2 to the Fifth Edition of the Manual for the Certification of Laboratories Analyzing Drinking Water .

13. “Method” means an EPA promulgated or EPA accepted published scientific technique for performing a specific measurement. Method includes instructions for sample preparation, sample preservation, and sample analysis.

14. “Method Defined Parameter” means parameters that are physical or chemical properties of materials determined with specific methods used to evaluate whether the materials comply with certain Resource Conservation and Recovery Act of 1976 (RCRA), 42 U.S.C. section 6901 et seq., subtitle C regulations.

15. “National Primary Drinking Water Regulations” or “NPDWR” means the federal program authorized under title 40 Code of Federal Regulations, part 141, section 141.1 et seq.

16. "National pollutant discharge elimination system" or "NPDES" means the federal program authorized under title 40 Code of Federal Regulations, part 136, section 136.1 et seq.

17. "Non-Potable Water" means water not suitable for drinking. It is a matrix in the Clean Water Act Program, the Resource Conservation and Recovery Act Program and the Coal Combustion Residuals Rule Program.

18. "North Dakota Environmental Laboratory Certification Program Manual" means the manual used by the environmental laboratory certification program for chemistry parameters. It is available on the Department's website.

19. "Parameter" means the chemical substance, physical property, or organism being determined.

20. "Point value" means the numerical increments which represent the amount necessary to cover costs of reviewing applications, issuing certifications, conducting laboratory evaluations, training, collecting fees, and providing compliance assistance and other anticipated costs of administering the environmental laboratory certification program.

21. "Potable water" means water suitable for drinking. It is the matrix in the Safe Drinking Water Act Program.

22. "Proficiency test" means the process of testing and reporting of test results performed by a laboratory for a specific analyte or analyte group to determine the ability of a laboratory to employ applicable analytical methods and to produce an accurate measurement of the concentration of the analyte or analyte group in the sample.

23. "Reciprocal certification" means a reciprocal or secondary certification that is based on a primary certification.

24. "Renewal application" means an application submitted by a laboratory to renew an existing certification.

25. "Reporting limit" means the lowest level of an analyte that can be accurately recovered from the matrix of interest. This limit is equivalent to a level of quantitation.

26. "Resource Conservation and Recovery Act (RCRA)" means the federal law found under 42 U.S.C. section 6901 et seq. (1976) and its corresponding regulations found under title 40, Code of Federal Regulations, parts 239 through 282.

27. "Revised application" means an application that is submitted to make changes to an existing certification.

28. "SW-846" means the EPA guidance for using the "Test Methods for Evaluation Solid Waste: Physical/Chemical Methods," Publication SW-846, United States Environmental Protection Department (2019). This guidance consists of three main parts: chapters, methods and supporting documents and is the EPA SW-846 Compendium.

29. "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods " means the EPA publication also known as SW-846.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-02-03. General Requirements for Required Methods.

The analytical methods, sample collection, and preservation procedures used to analyze samples for programs required by a federal agency shall meet the requirements specified in the relevant parts of the Code of Federal Regulations. The laboratory's analytical methods, sample collection, and preservation procedures shall also meet the requirements specified by the Department program. Certification requirements are based on the analysis of regulated parameters by promulgated methods unless otherwise specified or required by a Department program.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-02-04. Biosolids Program Methods.

For analysis of sewage sludge samples required by state and federal rules, laboratories shall use the methods and test procedures in title 40, Code of Federal Regulations, part 503, and Publication SW-846.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-02-05. Clean Water Act Program Methods.

For analysis of water or wastewater samples required by state and federal clean water rules, laboratories shall use the methods and test procedures in title 40, Code of Federal Regulations, part 136.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-02-06. Coal Combustion Residuals Rule Program Methods.

For analysis of water or wastewater samples required by state and federal Coal Combustion Residuals in Landfills and Surface Impoundments rules and regulations as amended, laboratories shall use methods appropriate for groundwater sampling and that accurately measure hazardous constituents and other monitoring parameters in groundwater samples. Metals analysis must be for "total recoverable" concentrations. Parameters are found at Appendix III to part 257 and Appendix IV to part 257.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-02-07. Non-Potable Water Program Methods.

For analysis of water or wastewater samples as requested by the Department or to support studies of specific industries or for use in broad national surveys, laboratories shall use validated methods and test procedures. EPA methods are preferred but other state approved and validated methods may be acceptable.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-02-08. Potable Water Program Methods.

For analysis of suitable drinking water samples as requested by the Department or to support studies of specific industries or for use in broad national surveys, laboratories shall use validated methods and test procedures. EPA methods are preferred but other state approved and validated methods may be acceptable.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-02-09. Resource Conservation and Recovery Act Program Methods.

For analysis of wastewater, waste, and solid and hazardous waste samples, laboratories shall use the methods and test procedures found in the SW-846 or as deemed by the Division of Waste Management within the Department. Modifications may be used with the approval of the Department or accrediting body except for Method Defined Parameters. Method-defined parameters can only be determined by the methods prescribed in RCRA regulations because the methods are part of the regulations. These methods must be followed exactly as written, or the resulting data cannot be used to ensure regulatory compliance. A list of method-defined parameters found under title 40 Code of Federal Regulations, part 260, section 260.11.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-02-10. Safe Drinking Water Act Program Methods.

For analysis of drinking water samples required by state and federal Safe Drinking Water Act rules, laboratories shall use the methods and test procedures in title 40 Code of Federal

Regulations, part 141. Laboratories also shall comply with the Manual for the Certification of Laboratories Analyzing Drinking Water requirements.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-02-11. Alternate methods.

Provisions for the use of alternate methods to be used in the Safe Drinking Water Act Program and the Clean Water Act program are found within the corresponding federal laws and regulations. A laboratory may request approval for alternate methods by following the instructions provided in the appropriate sections of the federal laws and regulations for the Clean Water Act Program and the Safe Drinking Water Act Program.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-02-12. Solids and Chemicals Program Methods.

For analysis of solids and chemical samples as requested by the Department or to support studies of specific industries or for use in broad national surveys, laboratories shall use validated methods and test procedures. EPA methods are preferred but other state approved and validated methods may be acceptable.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-02-13. Personnel and contact information.

A laboratory must have adequate staff with the education, training, or experience to meet the requirements of certification. At least one staff person must be identified as the laboratory administrator and that person's contact information must be provided with the certification application. The laboratory administrator must notify the Department when there are changes in contact information for the laboratory administrator, change of address, owner, or legally responsible party no later than 30 days after the change occurs.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-02-14. Quality system.

The laboratory must have a quality assurance and quality control program that meets the criteria specified in the North Dakota Environmental Laboratory Certification Program Manual that includes:

1. a quality assurance manual or plan;
2. standard operating procedures; and
3. traceability, documentation, record keeping, and reporting.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-02-15. Access to premises.

The laboratory shall allow the Department and its agents reasonable access to the laboratory for inspection and evaluation purposes and shall produce such information and records as the Department requests to determine compliance with this article.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-02-16. Access to records.

The laboratory shall maintain all records used to demonstrate the laboratory's compliance with certification requirements. If a laboratory analyzes samples from a client, then upon request, the laboratory shall provide to the client the records that support the client's test results. The laboratory shall also make records available to the Department upon its request.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-02-17. Subcontracting.

A laboratory that has samples analyzed by another laboratory shall use laboratories that have valid Department certification if the data is to be reported to the Department.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-02-18. Certification Status.

1. A laboratory may not alter or misrepresent its certification status and attending documents issued by the Department in any brochures, promotional literature or advertising materials. A laboratory must not describe its certification status in a manner that implies certification in areas that are outside the actual scope of certification. General statements, such as "A North Dakota Certified Laboratory" or "Certified in North Dakota" are not specific enough and can be misleading. The Department may require appropriate corrective action, including publication of a retraction of the misleading information.

2. A laboratory may not represent analytical results as certified after its certification has expired or been discontinued, suspended, or revoked.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-02-19. Response.

A laboratory shall timely respond in writing to any written communication from the Department.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-02-20. Application contents for primary certification.

1. A laboratory shall submit an initial application if:

- a. it has never received primary or reciprocal certification under this article;
- b. it has had its primary certification or Department reciprocal certification revoked in total;
- c. its certification has expired for more than one year; or
- d. it has submitted an application that has remained incomplete for more than one year.

2. To apply for initial or renewal of certification, a laboratory shall submit an application on forms provided by the Department. The required information includes:

- a. identifying information;
- b. at least one field of testing for which the laboratory seeks certification.;
- c. the laboratory's most recent quality assurance manual or plan meeting the standards of the North Dakota Environmental Laboratory Certification Program Manual;
- d. the laboratory's most recent standard operating procedures for each field of testing that meets the standards of the Environmental Laboratory Certification Program Manual;
- e. if the application is an initial request for certification, the most recent proficiency test result for each field of testing for which the laboratory is requesting certification. The proficiency test must have been completed no more than 12 months prior to the date that the renewal

application is received by the Department, no more than 6 months prior to the date the initial application is received and must meet the proficiency test requirements.

f. a list of the laboratory's detection limits and reporting limits for each field of testing for which the laboratory is requesting certification; and

g. any other additional information requested by the Department as necessary to determine compliance in this article.

3. The owner of laboratory facilities with multiple locations shall submit a separate application for each laboratory location.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-02-21. Application period.

Initial applications and revised applications may be submitted to the Department at any time.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-02-22. Certification renewal.

When a laboratory's certification has expired, the laboratory must apply for a renewed certification.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-02-23. Modified application.

A laboratory with a valid certification shall submit a modified application, including the information required for primary certifications or reciprocal certifications, to the Department to:

1. add a program for which the laboratory does not currently have certification; or
2. add a test method in a program for which the laboratory is already certified; or
3. add a parameter or analyte to a test method for which the laboratory is already certified; or
4. to change the name of the certified laboratory on the certification documents.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-02-24. Conditions for reapplication.

A laboratory notified of or involved in a corrective action or with a suspended certification is not eligible to apply for a certification renewal for the affected field of testing until the laboratory receives confirmation from the Department that the corrective action is complete, or the laboratory has been reinstated after suspension. If the Department revoked the laboratory's certification, the laboratory shall apply for initial certification, in accordance with this article, as if it were a new laboratory.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-02-25. Term of primary certification.

1. Primary certification is granted following the procedure as outlined in the North Dakota Environmental Laboratory Certification Program Manual.

2. Certification becomes effective the date of issuance and is valid for three years unless suspended, revoked, or voluntarily discontinued. Any request for an extension must be in writing. The certification period may be extended at the discretion of the Department.

3. Standards of quality in the Manual for Laboratories Analyzing Drinking Water must be met in order to qualify for certification.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-02-26. Limit of certification.

Certification of a laboratory is not an endorsement by the Department of the quality or validity of the data generated by a laboratory. Certification does not guarantee the usability of data generated by a laboratory for an intended purpose. The users of laboratory results are responsible for determining whether to accept or reject analytical data from a certified laboratory.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-02-27. Term of reciprocal certification and application contents.

1. Reciprocal certification is granted following the procedure as outlined in the North Dakota Environmental Laboratory Certification Program Manual.
2. A laboratory holding a primary accreditation or certification from another accrediting body may apply for reciprocal certification in North Dakota.
3. The Department may approve other certifying authorities of federal agencies and agencies of other states for reciprocal recognition of laboratory certification programs or portions of programs that are substantially equivalent.
4. A certification program is considered substantially equivalent if a review of the certification authority's rules are substantially equivalent to the rules and guidelines of the Department's laboratory certification program and including:
 - a. inspections of certified laboratories are performed at intervals not exceeding three years;
 - b. the certifying authority requires an acceptable corrective action response associated with enforcement action, suspension, or revocation from the laboratory;
 - c. the certifying authority is the primary authority for necessary enforcement actions, such as suspension or revocation of the laboratory's certification.
5. the Department may give reciprocal certification for a laboratory that:
 - a. submits an application meeting the certification requirements of section 33.1-23-02-23;
 - b. submits the appropriate fees with its application;
 - c. provides a copy of current certification documents including certificate, letter and list of certified parameters, from the primary certifying state or private or federal authority; and
 - d. provides a copy of the primary certifying authority's most recent audit report and including any corrective action that was taken
6. A laboratory certified under this section shall notify the Department within 30 days after any enforcement action is taken by the reciprocal certifying authority.
7. Laboratories certified under reciprocity agreements are subject to this article unless specifically stated as a unique requirement for primary certification
8. Certification becomes effective the date of issuance and is valid for up to 365 days unless suspended, revoked, or voluntarily discontinued. The certification period may be extended at the discretion of the Department. The certification period on the North Dakota certificate shall not exceed the certification period on the primary certificate.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-02-28. Department Notification - Voluntary Withdrawal or Discontinuation of Certification.

1. If a laboratory chooses to withdraw its application for certification or discontinue its current certification, in total or in part, the laboratory shall notify the Department in writing and specify the effective date of withdrawal or discontinuation and the field of testing for which certification is being withdrawn or discontinued. The laboratory shall submit notification at least 30 days before the effective date of withdrawal or discontinuation.

2. After the effective date of voluntary withdrawal or discontinuation of certification, the laboratory may not provide analytical results for compliance reporting or any Department program for the field of testing for which certification has been withdrawn or discontinued.

3. A laboratory shall apply for revised reciprocal certification within 30 days of the issuance of a primary revised certification.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-02-29. Client notification required.

1. When the laboratory is voluntarily discontinuing certification: at least 30 days before the effective date of the laboratory's discontinuation of certification, the laboratory shall notify clients and affected regulatory agencies in writing of the discontinuation date and which fields of testing will be affected. The laboratory shall submit a copy of each client notification to the Department at the same time the notification is sent under section 33.1-23-02--40.

2. The laboratory shall notify clients immediately if:

a. the primary certification authority downgrades the status for a parameter or field of testing to "not certified"; or

b. certification is revoked, suspended or terminated by the primary certification authority

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-02-30. Recertification.

To be recertified after voluntary withdrawal or discontinuation of certification, a laboratory shall submit an application meeting the requirements for:

1. a revised application, if reapplying within one year of the date that certification was discontinued; or
2. an initial application, if certification has been discontinued for more than one year.

History: Effective _____, 2019.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-02-31 Certification modification, suspension, revocation, or denial.

The department may modify, suspend, revoke, or deny a certification for reasons pertaining to: circumstances which do not meet the purpose and provisions of this article, the provisions of the certification, or the materials submitted as part of the application for certification; or, violations of any applicable laws or rules. The department shall provide written notice to the laboratory specifying the basis for the modification, suspension, revocation, or denial. The laboratory may request a hearing in accordance with North Dakota Century Code chapter 28-32 on the issue of modification, suspension, revocation, or denial of the laboratory's certification. The laboratory's hearing request must be made in writing and received by the department within 30 days after the laboratory's receipt of the notice.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

CHAPTER 33.1-23-03

ENVIRONMENTAL LABORATORY CERTIFICATION PROFICIENCY TESTING

Section

33.1-23-03-01 Proficiency testing requirements

33.1-23-03-02 Laboratory testing of proficiency test study samples

33.1-23-03-03 Reporting results

33.1-23-03-04 Restrictions on exchanging information

33.1-23-03-05 Evaluation of results

33.1-23-03-06 Repeat proficiency tests

33.1-23-03-01. Proficiency Testing Requirements.

1. A laboratory shall successfully complete at least one proficiency test for each field of testing for which it applies for certification. The laboratory must complete the proficiency test no more than 6 months prior to submitting the application. If no proficiency test sample is available for an analyte, the laboratory is exempt from the requirements of this section only for that analyte.

2. Proficiency tests results must be included with the initial or revised certification application required for a primary certification or for reciprocal certification. Proficiency test results may also be reported to the Department by the proficiency test provider upon completion of the study.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-03-02. Laboratory testing of proficiency test study samples.

To ensure valid proficiency test results, the laboratory shall:

1. obtain all proficiency test study samples as unknowns from a nationally recognized accreditation program approved vendor;

2. manage, analyze, report, and otherwise handle all proficiency test samples in the same manner as routine samples, including the same staff, procedures, equipment, and facilities used for routine analysis for the field of testing,

3. employ the same calibration, quality control, acceptance criteria, sequence of analytical steps, number of replicates, and other standard operating procedures for proficiency test samples as used when analyzing routine samples; and

4. follow sample preparation steps for the proficiency test sample as instructed by the proficiency test sample provider.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-03-03. Reporting results.

1. A laboratory shall submit the results of all proficiency tests to the Department no later than 30 days after the laboratory receives the results from the proficiency test sample provider.
2. A laboratory conducting proficiency testing as part of an initial or revised application shall submit the results of proficiency tests as part of the application.
3. A laboratory shall either provide a copy of the original results to the Department or authorize the proficiency test sample provider to provide all results directly to the Department.
4. Proficiency test samples analyzed or reported to the proficiency test sample provider after the provider's study closing date are not valid for compliance with the proficiency testing requirements under this section.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-03-04. Restrictions on exchanging information.

Prior to the time the results of the proficiency test are submitted to the proficiency test sample provider, a laboratory may not:

1. communicate proficiency test results to another laboratory, including intercompany communication; or
2. attempt to obtain the assigned value of any proficiency test sample from a proficiency test sample provider or another laboratory.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-03-05. Evaluation of results.

1. A laboratory must demonstrate passing performance to the Department, as determined by the proficiency test sample provider, for each parameter and method or field of testing reported.
2. A laboratory may use one proficiency test sample for multiple methods.
3. A laboratory may not request a revised report from the proficiency test sample provider when the requested revisions are the result of error on the part of the laboratory.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-03-06. Repeat proficiency tests.

1. A laboratory with primary certification may repeat proficiency tests after obtaining unacceptable results as follows:

a. if the first proficiency test result is unacceptable, the laboratory must resolve the suspected cause, document the corrective action and complete a second proficiency test within 30 days of receiving the unacceptable result;

b. if the second proficiency test result is unacceptable, the laboratory must:

(1) resolve the suspected cause and submit a corrective action report to the Department within 30 days of receiving the second unacceptable result; and

(2) order and complete a third proficiency test within 30 days of receiving the unacceptable result of the second proficiency test;

c. if the third proficiency test result is unacceptable, the laboratory may not provide analytical results for compliance reporting or any Department program for the field of testing for which the laboratory failed to demonstrate acceptable proficiency test results. The laboratory may resume providing analytical results when the laboratory passes two consecutive proficiency tests conducted at least 15 days apart. The laboratory must submit a corrective action report to the Department within 30 days of passing the second of the two proficiency tests.

2. The North Dakota Environmental Laboratory Certification Program Manual governs when a portion of a multiple analyte group proficiency test is unacceptable.

3. The Department may request additional information necessary to validate sample results generated during the testing period covered under this section.

4. A laboratory with reciprocal certification must follow the repeat proficiency test guidelines established by its primary certification Agency.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

CHAPTER 33.1-23-04

ENVIRONMENTAL LABORATORY CERTIFICATION FEE DETERMINATION

- 33.1-23-04-01 Method
- 33.1-23-04-02 Computation of cost per point value
- 33.1-23-04-03 Payment of fees
- 33.1-23-04-04 Initial or renewed application points
- 33.1-23-04-05 Revised application points

33.1-23-04-01. Method

1. Certification fees for primary initial, renewed or revised application are based on matrix, type and complexity of analytical methods that a laboratory is certified to perform.
2. Certification fees for reciprocal initial, renewed or revised applications are based on the number of fields of testing on a certificate.
3. Each fee item is assigned a point value. The cost per point value determined is multiplied by the total number of points for each application. Total applicable fees are computed by the following equation:

$$X = (Y)(Z)$$

Where:

X = total fees applied to the certification application invoice

Y = cost assigned to the point value in section 33.1-23-04-02

Z = sum of point values as determined for initial, renewed, or revised applications.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-04-02. Computation of cost per point value.

1. The Department computes the cost per point value based upon the salaries, wages, benefits and operating expenses.
2. The point value can be found on the Department's website.
3. The cost associated with the point value may be adjusted on an annual basis to account for any increase in the consumer price index published by the department of labor, as of the close of the twelve-month period ending on august thirty-first of each calendar year.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-04-03. Payment of fees.

1. A laboratory must pay the fees required in this article within 30 days of receiving the Department's invoice.
2. Certification of a laboratory shall not be awarded until all fees are paid.
3. Fees are nonrefundable once an invoice has been issued.

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-04-04. Initial or renewed application points.

1. The points assessed for certification application or category types designated in this subsection are multiplied by the cost per point value determined to calculate the appropriate fee

<u>2. Application or Category Type for Primary Certifications</u>	<u>Point Value</u>
<u>a. Initial application</u>	<u>6</u>
<u>b. Renewed application</u>	<u>3</u>
<u>c. Matrix fee, aqueous</u>	<u>5</u>
<u>d. Matrix fee, solid</u>	<u>5</u>
<u>e. Matrix fee, drinking water</u>	<u>5</u>
<u>f. Electrometric assays (ion-selective electrodes)</u>	<u>1</u>
<u>g. Gravimetric Assays, Residues (solids)</u>	<u>1</u>
<u>h. Gravimetric Assays, Oil and Grease (HEM)</u>	<u>2</u>
<u>i. Titrimetric or Potentiometric Titration Assays</u>	<u>1</u>
<u>j. Colorimetric or Nephelometric Spectrophotometry</u>	<u>2</u>
<u>k. Combustion or Oxidation</u>	<u>3</u>
<u>l. IC (Ion Chromatography)</u>	<u>3</u>
<u>m. Flow Injection - Gas Diffusion – Amperometry</u>	<u>5</u>
<u>n. Waste Characteristic Extractions</u>	<u>2</u>
<u>o. Waste Characterization Assays</u>	<u>2</u>
<u>p. FLAA (Flame Atomic Absorption Spectrometry)</u>	<u>2</u>
<u>q. CVAA (Cold Vapor Atomic Absorption)</u>	<u>3</u>
<u>r. Hydride AA (Gaseous Hydride Spectrometry)</u>	<u>3</u>
<u>s. CVAFS (Cold Vapor Atomic Fluorescence Spectrometry)</u>	<u>3</u>
<u>t. TDAA (Thermal Decomposition Atomic Absorption Spectrometry)</u>	<u>3</u>
<u>u. GFAA (Graphite Furnace Atomic Absorption Spectrometry)</u>	<u>3</u>
<u>v. Ultra-Low Level Metals Assays</u>	<u>3</u>
<u>w. ICP (Inductively Coupled Plasma Emission Spectrometry)</u>	<u>4</u>
<u>x. ICP/MS (Inductively Coupled Plasma-Mass Spectrometry)</u>	<u>5</u>
<u>y. GC (Gas Chromatography)</u>	<u>3</u>

z. GC/MS (Gas Chromatography-Mass Spectrometry)	4
aa. HPLC (High Performance Liquid Chromatography)	3
bb. LC/MS (Liquid Chromatography-Mass Spectrometry)	4
cc. HR-GC/MS (High Resolution GC - Mass Spectrometry)	10
dd. LC/MS/MS (Liquid Chromatography-Mass Spectrometry-Mass Spectrometry)	10
ee. WET (Whole Effluent Toxicity Assays)	5
ff. other	contact Department

3. Application or Category Type for Reciprocal Certification	Point Value
a. Initial and renewed application	10
b. Level 1: 0-200 parameters	2
c. Level 2: 201-500 parameters	5
d. Level 3: 500-1000 parameters	10
e. Level 4: 1000-2000 parameters	20

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14

33.1-23-04-05. Revised applications.

1. Fees for laboratories with primary certification and applying for a revised application to add a new test category to the laboratory's certification are computed by the following equation:

$$X = Y + Z$$

Where:

X= Total fees

Y = any incurred costs for an onsite audit to review new instrumentation or technology

Z = fees associated with the point value of the new test category as outlined in the initial or renewed application points section.

2. Laboratories with primary certification and applying for a revised application to add or drop parameters under a method whereby the laboratory is already certified will be charged 1-point value to update the certificate and list of certified parameters.

3. Laboratories with reciprocal certification and applying for a revised application must pay the following:

a. fees equal to 1-point value when using the same primary certificate number as used for the initial or renewed application

b. when using a primary certificate number other than the one used for the initial or renewed application, fees are computed according to the following equation:

$$X = Y + Z$$

Where:

X = Total fees

Y = fees associated with 1-point value

Z = fees associated with the level as described in the initial or renewed application points section

History: Effective _____, 2020.

General Authority: NDCC 23.1-01-14

Law Implemented: NDCC 23.1-01-14