NORTH CAROLINA DIVISION OF AIR QUALITY

Application Review

Issue Date: Date needed

Region: Winston-Salem Regional Office
County: Alamance
NC Facility ID: 0100237
Inspector's Name: Thomas Gray
Date of Last Inspection: 08/17/2023
Compliance Code: 3 / Compliance - inspection

Facility Data

Applicant (Facility's Name): Canfor Southern Pine - Graham Plant

Facility Address:
Canfor Southern Pine - Graham Plant
4408 Mt Hermon Rock Creek Road
Graham, NC 27253

SIC: 2421 / Sawmills & Planing Mills General
NAICS: 321113 / Sawmills

Facility Classification: Before: Title V **After:** Title V
Fee Classification: Before: Title V **After:** Title V

Permit Applicability (this application only)

SIP: 15A NCAC 02D .0503, .0504, .0512, .0516, .0521, .0524, .0530, .1111, .1806
NSPS: Subpart Dc and IIII
NESHAP: MACT DDDD, ZZZZ, and DDDDD
PSD: VOC BACT limits
PSD Avoidance: N/A
NC Toxics: Removed .1100, .0711
112(r): N/A
Other: Permit Shield for CAM

Contact Data

Facility Contact	Authorized Contact	Technical Contact
Kristie Hill HR Manager (336) 376-5803 4408 Mt. Hermon Rock Creek Road Graham, NC 27253	Chad Whitfield General Manager (336) 376-5801 4408 Mt Hermon-Rock Creek Road Graham, NC 27253	Kristie Hill HR Manager (336) 376-5803 4408 Mt. Hermon Rock Creek Road Graham, NC 27253

Application Data

Application Number: 0100237.22A and .21A
Date Received: 06/9/2021 and 10/31/2022
Application Type: Renewal and 502(b)(10)
Application Schedule: TV-Renewal

Existing Permit Data
Existing Permit Number: 06740T22
Existing Permit Issue Date: 09/06/2019
Existing Permit Expiration Date: 04/30/2023

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2022	7.08	62.31	265.61	102.23	9.65	19.52	12.92 [Methanol (methyl alcohol)]
2021	9.34	82.12	292.31	130.66	13.19	21.67	14.22 [Methanol (methyl alcohol)]
2020	8.76	77.06	316.78	190.39	24.66	23.32	15.41 [Methanol (methyl alcohol)]
2019	8.42	74.05	319.28	156.94	24.63	23.46	15.54 [Methanol (methyl alcohol)]
2018	8.36	73.60	309.08	93.18	33.55	22.75	15.04 [Methanol (methyl alcohol)]

Review Engineer: Jacob Larson

Review Engineer's Signature: **Date:**

Comments / Recommendations:
Issue: 06740T23
Permit Issue Date: Date needed
Permit Expiration Date: Date needed

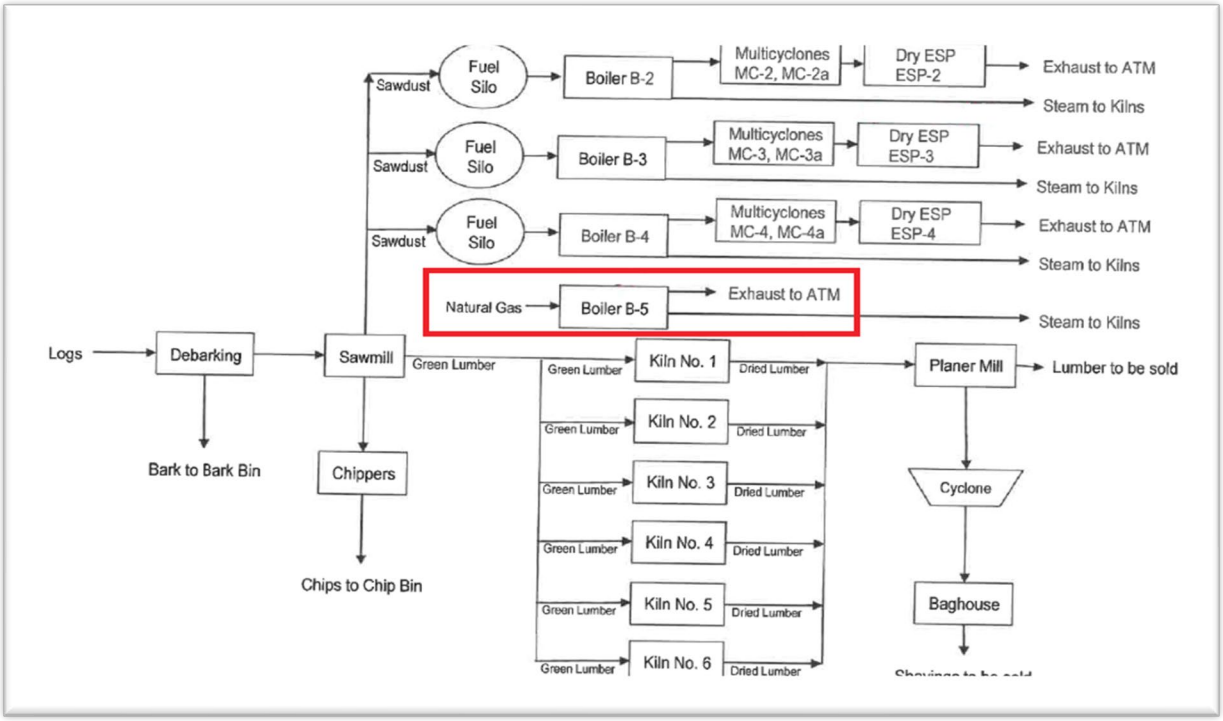
1. Purpose of Application

Canfor Southern Pine – Graham Plant (Canfor) currently holds Title V Permit No. 06740T22 with an expiration date of April 30, 2023, for a lumber mill facility in Graham, Alamance County, North Carolina. This permit application is for a permit renewal without modification; however, Application No. 0100237.21A, a 502(b)(10) change, will be incorporated into this renewal. The renewal application was received on October 31, 2022, or at least six months prior to the expiration date. Therefore, the existing permit shall not expire until the renewal permit has been issued or denied. All terms and conditions of the existing permit shall remain in effect until the renewal permit has been issued or denied. The 15A NCAC 02Q .0523 "Changes Not Requiring Permit Revisions" {(Section 502(b)(10)} application was received on June 9, 2021.

2. Facility Description

The Canfor facility is a lumber mill that processes whole logs into dimensional lumber. The raw material for the dimensional lumber, the principal product, is southern pine logs. The mill processes raw southern pine logs into planed pine lumber and wood chips/pine shavings. The pine logs are delivered to the plant and stored outside. The logs are initially debarked and then pass through the sawmill to be cut and trimmed into pieces approximately the size of the final product. Scraps from this process, which include bark, sawdust, and partial lumber pieces, are sent to one of four wood residue fuel houses or to the chipper. The chipper transforms scrap wood into saleable wood chips. From the sawmill, the cut lumber is dried in the facility's kilns (ID Nos. K-1, K-2, K-3, K-4, K-5, and K-6), that are heated by steam provided by the facility's three wood-fired boilers (ID Nos. B-2, B-3, and B-4). After 22-24 hours of drying in the kilns, the dry lumber is then processed by the facility's planer mill (ID No. PM-2). The saw dust from both the sawing operations and the facility's planer mill is burned in one of the facility's four wood-fired boilers. Canfor also has a natural gas-fired boiler (ID No. B-5) on its permit, but it has not been built yet. Currently, there is no natural gas supply to the facility.

Below is a diagram that was included in Application No. 0100237.19A as Figure 2-3 for the major modification of the permit which included adding boiler (ID No. B-5). The diagram was originally drawn by Environmental Consulting & Technology of North Carolina, PLLC, the consulting firm that prepared the application for Canfor. [Note after the baghouse, the shavings are to be sold.]



Canfor is a Title V facility because the potential emissions of VOCs exceed 100 tons per year (tpy) and individual and cumulative HAP emissions will exceed 10 and 25 tpy respectively.

3. History/Background/Application Chronology

History/Background

May 1, 2018	TV permit renewal issued. Air Permit No. 0674T21 was issued on May 1, 2018 with an expiration date of April 30, 2023. *(See Betty Gatano's TV review for permit No. 06740T20, dated May 1, 2018)*
January 18, 2019	Air Permit No. 06740T21 was issued for a minor modification which included removal of existing wood-fired boiler (ID No. B-1) and the addition of the boiler MACT DDDDD and to comply with the boiler MACT, two new electrostatic precipitators, (ID Nos. ESP-2 and ESP-3), were installed on the existing wood-fired boilers, (ID Nos. B-2 and B-3). Wood-fired boiler B-4 already has an electrostatic precipitator. *(See Charlie Yirka/Mark Cuilla's TV review for permit No. 06740T21, dated January 18, 2019)*
September 6, 2019	Air Permit No. 06740T22 was issued for a major modification which included an addition of a natural gas-fired boiler (ID No. B-5) to supplement steam from the wood-fired boilers. *(See Russell Braswell's TV review for permit No. 06740T22, dated September 6, 2019)*
June 15, 2021	A 502(b)(10) Notification Acknowledgement was issued to Canfor via email from DAQ's Brian Bland for the proposed change of replacing the Planer Mill Cyclone (ID No. C-2) that vents to bagfilter (ID No. BH-1).

Application Chronology

October 31, 2022	DEQ received permit application 0100237.22A for Title V renewal.
November 3, 2022	Sent acknowledgment letter indicating that the application for permit renewal was complete.
January 29, 2024	Draft permit and review forwarded for comments to Permitting Supervisor.
January 31, 2024	Comments received from Booker Pullen, Permitting Supervisor.
January 31, 2024	Draft permit and review forwarded to the Stationary Compliance Branch for comments. No comments were received February 09, 2024.
January 31, 2024	Draft permit and review forwarded to the Winston-Salem Regional Office for comments. Comments were received February 15, 2024.
February 16, 2024	Draft permit forwarded to the applicant for comments. Comments were received February 20, 2023. *Comments are listed at the end of this review.*
February 20, 2024	Conducted toxics review at the request of the applicant.
February 27, 2024	Draft permit with new toxic review forwarded to Mark Cuilla for approval. Approval and minor comments received on February 28, 2024.
February 28, 2024	Draft permit forwarded to applicant for comments. No comments received March 04, 2024.
XXXX xx, 2024	Draft permit and permit review forwarded to public notice.
XXXX xx, 2024	Public comment period ends. ___ comments received.
XXXX xx, 2024	EPA comment period ends. ___ comments received.
XXXX xx, 2024	Permit issued.

4. Permit Modifications/Changes and TVEE Discussion

The following table describes the modifications to the current permit as part of the renewal process.

Page No.	Section	Description of Changes
--	Cover page and throughout permit	Updated all dates and permit revision numbers.
--	Cover page	Added "Notice Regarding The Right To Contest A Division Of Air Quality Permit Decision" page
--	Summary of Changes to Permit	Added summary of changes made to Permit No. 06740T22 according to the most recent requirements of the renewal Title V permit
2	Table of Contents	• Added Section 3.0 as "Insignificant Activities List" • Added Section 4.0 as "General Permit Conditions"
3	List of Acronyms	Added "List of Acronyms"
4	Section 1	Removed page numbers in Permitted Emissions Table
5	2.1 A.1.a	Added B-4 to requirement
6-7	2.1 A.3	• Removed daily observation requirement. • Added opacity monitoring using COMS requirement • Added B-4 to requirement
7-8	2.1 A.5	• Separated B-4 from NSPS Dc requirement for clarity. • Changed NSPS Dc to current regulatory language
10	2.1 B.2.c	Changed monitoring condition to most recent shell version
11	2.1 D.1.a	Corrected PM emission limit .252 to .47 lbs/mmBTU
13	2.1 D.4	Changed NSPS Dc to current regulatory language
14-16	2.1 D.6	Changed MACT DDDDD to current regulatory language
17	2.2 A.1	Removed Toxics condition
17	2.2 A.3	Removed TPER condition
17	2.2 B.	Added DDDD condition for clarity
19	2.2 C.1.g	Added "on or after October 6, 2025" emission limits
18-22	2.2 C. 1	Changed MACT DDDDD to current regulatory language
24	Section 3	Added Insignificant Activities as Section 3 of the Title V Permit
25-32	Section 4	• Added General Conditions as Section 4 of the Title V Permit • Updated General Conditions **(version 7.0, 08/21/2023)**

Changes to TVEE include:

- Canfor submitted a request to have a "like kind" replacement of the Planer Mill Cyclone (ID No. C-2) in June 2021 under Application No. 0100237.21A which qualified as a 502(b)(10) change.
- Canfor submitted request to add insignificant Emergency fire pump (ID. No. I-Pump) under permit 0100237.22A

5. Regulatory Review

Canfor is subject to the following regulations. The permit was updated to reflect the most current stipulations for all applicable regulations, where necessary.

15A NCAC 02D .0503, Particulates from Fuel Burning Indirect Heat Exchangers – This rule limits particulate emissions from heat exchangers (i.e. boilers) that burn non-wood fuels which describes the natural gas fired boiler (ID No. B-5). The limit is calculated using the following equation:

$$E = 1.090 \times Q^{-0.2594}$$

Where E is the emission limit in pounds per million Btu burned and Q is the facility-wide heat input rate for fuel burned in heat exchangers. According to 02D .0503(d), wood is specifically excluded as a fuel as part of this rule. Therefore, Q is 25.2 and E is 0.47 pounds per million Btu.

According to emission factors published by US EPA, total PM emitted from the combustion of natural gas can be estimated as 7.6 pounds per million standard cubic feet of natural gas burned. Using the standard conversion rate of 1,020 Btu per standard cubic feet of natural gas, the PM emission rate for natural gas burned in a boiler can be estimated as 0.007 pounds per million Btu. This assumes that the boiler is properly operated and maintained.

Because permit conditions for both MACT Subpart DDDDD and PSD (see Section 6 below) require good operation, maintenance, and recordkeeping, the permit condition for 15A NCAC 02D .0503 does not require additional M/R/R

15A NCAC 02D .0504, Particulates from Wood Burning Indirect Heat Exchangers - Boilers B-2, B-3 and B-4 are subject to 02D .0504. Allowable particulate matter (PM) emissions are determined from the equation $E = 1.1698 (Q)^{-0.2230}$, where E equals the allowable emission limit for PM (in pounds per million Btu) and Q equals the maximum heat input in million Btu per hour. With a Q of 115.0 million Btu/hr (28.7 million Btu/hr + 28.7 million Btu/hr + 57.6 million Btu/hr), the allowable PM emissions from these boilers equal .41 pounds per million Btu. Canfor must conduct inspection and maintenance on the multicyclones (ID Nos. MC-2, MC-2A, MC-3, MC-3A, MC-4, and MC-4A) to ensure compliance with this rule. Boilers (B-2 and B-3) are subject to 15A NCAC 02D .0524, 40 CFR 60 Subpart Dc for maintaining records of monthly fuel usage only. Otherwise, no changes to the monitoring, recordkeeping, or reporting (MRR) are required under this permit renewal. Continued compliance is anticipated.

15A NCAC 02D .0512, Particulates from Miscellaneous Wood Products Finishing Plants – The planer mill (ID No. PM-2) and the rough log debarker (ID No. Debarker) are subject to 02D .0512. Canfor must conduct inspection and maintenance for the control devices (ID Nos. C-2 and BH-1) on the planer mill to ensure compliance with this rule. No MRR is required for the debarker. No changes to the permit are required under this permit renewal, and continued compliance is anticipated.

15A NCAC 02D .0516, Sulfur Dioxide from Combustion Sources - This rule limits emissions of sulfur dioxide (SO_2) from sources that burn fuel. The rule limits SO_2 to less than 2.3 pounds per million Btu of heat input. According to emission factors published by US EPA AP-42, SO_2 emitted from the combustion of natural gas can be estimated as 0.6 pounds per million standard cubic feet of natural gas burned for ID No. B-5. Using the same conversion used in the 15A NCAC .0503 discussion above, the SO_2 emission rate for natural gas burned in a boiler can be estimated as 5.5E-4 pounds per million Btu. SO_2 formation from natural gas combustion is solely a product of the sulfur content of gas supplied to the source. Pipeline quality natural gas is never expected to contain enough sulfur to cause compliance issues with the emission limit above.

This rule also applies to boilers (ID Nos. B-2, B-3, and B-4) as they emit SO_2 as the result of burning fuel (wood, in this case). No MRR is required when wood is fired in the boilers. This fuel is inherently low enough in sulfur to always be in compliance with this rule. No changes to the permit are required under this permit renewal, and continued compliance is anticipated.

15A NCAC 02D .0521, Control of Visible Emissions: The emission sources below are subject to 02D .0521. The sources were manufactured after July 1, 1971, and must not have visible emissions of more than 20 percent opacity when averaged over a six-minute period, except as specified in 15A NCAC 02D .0521(d).

- Natural gas boiler (ID No. B-5) – No monitoring/recordkeeping/reporting is required for visible emissions from the burning of natural gas in this source Continued compliance is anticipated.
- Planer Mill (ID No. PM-2) – The facility is required to conduct weekly visible emission observations to ensure compliance with 02D .0521. The permit condition will be updated to reflect the most current permitting language.
- Rough log debarker (ID No. Debarker) – No MRR is required to ensure compliance. The Debarker is in an enclosed area and is unlikely to produce VE outside of facility. No changes are needed under the permit renewal.
- Wood-fired boilers (ID Nos. B-2, B-3, and B-4) – These boiler are required to operate continuous opacity monitoring systems (COMS) pursuant to MACT 5d. Thus, pursuant to 02D .0521(g), for sources required to install, operate, and maintain such COMS, compliance with the numerical opacity limits in this Rule shall be determined as follows excluding startups, shutdowns, maintenance periods when fuel is not being combusted, and malfunctions approved as such according to procedures approved under 15A NCAC 02D .0535:
  (A) no more than four six-minute periods shall exceed the opacity standard in any one day; and
  (B) the percent of excess emissions, defined as the percentage of monitored operating time in a calendar quarter above the opacity limit, shall not exceed 0.8 percent of the total operating hours. If a source operates less than 500 hours during a calendar quarter, the percent of excess emissions shall be calculated by including hours operated immediately prior to this quarter until 500 operational hours are obtained.

15A NCAC 02D .0524- The Federal New Source Performance Standards (NSPS) - Are incorporated into North Carolina's State Implementation Plan (SIP) under 15A NCAC 02D .0524. NSPS that apply to the natural gas fired boiler (ID No. ES-B-5) is Subpart Dc "Small Industrial-Commercial-Institutional Steam Generating Units." And the insignificant diesel-fired emergency fire pump (ID No. I-Pump) is subject to Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, 40 CFR 60 Subpart IIII. These rules will be discussed further in Section 6 below.

15A NCAC 02D .0530, Prevention of Significant Deterioration - The federal PSD regulations have been incorporated into the North Carolina regulation 15A NCAC 02D .0530 and North Carolina PSD rules reference the PSD definitions of a major stationary source in 40 CFR 51.166(b). The addition of the natural gas-fired boiler (ID No. B-5) in Permit No. 06740T22 allowed for increased capacity for steam generation and therefore increased annual throughput for the kilns and all associated wood and lumber handling processes. The 'de-bottlenecking" of the facility would increase emissions beyond the combustion of natural gas in the boiler. This resulted in an increase in emissions of VOCs greater than the PSD significance threshold of 250 tpy and triggered PSD permitting requirements. (See Russell Braswell's Permit Review for T22 dated September 6, 2019). PSD and BACT are discussed further in Section 6 below.

15A NCAC 02D .1100, Control of Toxic Air Pollutants - This rule requires that facilities not emit toxic air pollutants ("TAPs") such that they contribute to an exceedance of an acceptable ambient limit ("AAL") listed in 02D .1104. In general, facilities that emit TAPs at rates greater than those listed in 15A NCAC 02Q .0711 from non-exempt sources must perform air dispersion modeling to

demonstrate compliance with the AALs. This condition will be removed as of this permit renewal see section 7 for more discussion about Air Toxics.

15A NCAC 02D .1111, Maximum Achievable Control Technology (MACT) – The following emission sources are subject to MACT standards:

- Six steam heated lumber drying kilns (ID Nos. K1 through K-6) – NESHAP for Plywood and Composite Wood Products Manufacturing, 40 CFR Subpart DDDD.
- Emergency generator and Emergency Pump (ID No. IGen 1 and I-Pump) – NESHAP for Stationary Reciprocating Internal Combustion Engines (RICE), 40 CFR Part 63 Subpart ZZZZ.
- Boilers (ID Nos. B-2, B-3, B-4 and B-5) – NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters," 40 CFR 63 Subpart DDDDD

More discussion on MACT is provided under Section 6.

15A NCAC 02D. 1806, Control and Prohibition of Odorous Emissions – This condition is state-enforceable only, is applicable facility-wide, and states that the Permittee shall not operate the facility without implementing management practices or installing and operating odor control equipment sufficient to prevent odorous emissions from the facility from causing or contributing to objectionable odors beyond the facility's boundary. No changes to the permit condition is required under this permit renewal, and continued compliance is anticipated.

15A NCAC 02Q .0711, Emission Rates Requiring a Permit – This condition is state-enforceable only and is applicable facility-wide. This condition will be removed as of this renewal. See Section 7 for more discussion about NC air toxics.

6. NSPS, NESHAPS/MACT, PSD, 112(r), CAM

NSPS

According to Permit Review (T20) by Betty Gatano dated May 1, 2018, the boilers (ID Nos. B-2, B-3, and B-4) are subject to 40 CFR Part 60, Subpart Dc "Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units." This rule applies to boilers that are constructed, modified, or reconstructed after June 9, 1989, and have a maximum design heat input capacity $\geq$ 10 million Btu/hr and < 100 million Btu/hr. Requirements for these boilers under NSPS Subpart Dc are discussed below:

Boilers B-2 and B-3

Boilers B-2 and B-3 are wood-fired boilers, each with a maximum heat capacity of 28.7 million Btu per hour. Wood-fired boilers are not subject to a sulfur dioxide (SO_2) standard under NSPS Subpart Dc. Also, only boilers with a heat capacity of 30 million Btu per hour or greater are subject to the PM and opacity standards. Thus, the only requirement for boilers B-2 and B-3 under NSPS Subpart Dc is to record and maintain records of the amount of fuel combusted during each month, per 40 CFR 60.48c(g)(2). No changes to the permit conditions are required, and continued compliance is anticipated.

Because these boilers are not subject to the PM, SO_2, or opacity standards under NSPS Dc, they are subject to 15A NCAC 02D .0504, 02D .0516, and 02D .0521, as noted in Section 5 above.

Boiler B-4

Boiler B-4 is a wood-fired boiler with a maximum heat capacity of 57.6 million Btu per hour. It was installed in 2007 and is subject to NSPS Subpart Dc. As noted above, wood-fired boilers are not

subject to a SO_2 standard under NSPS Subpart Dc. Because boiler B-4 is larger than 30 million Btu per hour, it is subject to the PM and opacity standards under NSPS Subpart Dc. The initial performance test to demonstrate compliance with the PM emission standard was conducted on March 18, 2008 with a retest conducted on May 9, 2008.

Test Date	Pollutant	Test Result	Emission Limit	Compliance
03/18/2008	Filterable PM	0.050 lb/mmBtu	0.03 lb/mmBtu	No
05/09/2008	Filterable PM	0.007 lb/mmBtu	0.03 lb/mmBtu	Yes

Notes:

- lb/mmBtu = pound per million Btu
- The March 2008 testing results were approved in a memorandum by Shannon Vogel of the Stationary Source Compliance Branch (SSCB) dated May 29, 2008.
- The May 2008 testing results were approved in a memorandum by Shannon Vogel of the SSCB dated June 20, 2008.

Under NSPS Subpart Dc, a boiler with a maximum heat input capacity of greater than or equal to 30 million Btu per hour shall not have visible emissions more than 20 percent opacity when averaged over a six-minute period. To demonstrate compliance with this standard, Canfor has elected to install a continuous opacity monitoring system (COMS). Refer to section 2.1 A.5.d of permit for emission limitations of this requirement.

Canfor must also record and maintain records of the amount of fuel combusted during each month, per 40 CFR 60.48c(g)(2).

The permit condition will be updated to reflect the most current permitting language, and continued compliance is anticipated.

Because this boiler is not subject to the SO_2 standard under NSPS Dc, it is subject to 15A NCAC 02D .0516, as noted in Section 5 above.

Boiler B-5

NSPS that applies to the natural gas fired boiler (ID No. ES-B5) is Subpart Dc "Small Industrial-Commercial-Institutional Steam Generating Units." Subpart Dc applies to new boilers with a heat input greater than 10 million Btu per hour. The rule has different requirements for boilers depending on the size and fuel type of the specific boiler. For boiler (ID No. ES-B5), the rule only requires that the facility keep records of fuel use monthly in addition to any other recordkeeping required by 40 CFR 60.48c or recordkeeping requirements of the EPA. At the time of this permit review, this boiler has not been installed.

I-Pump

The insignificant diesel-fired emergency fire pump (ID No. I-Pump) is subject to Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, 40 CFR 60 Subpart IIII. Canfor complies with NSPS Subpart IIII by purchasing an engine certified to NSPS Subpart IIII for the same model year and maximum engine power for this engine. This engine was installed at the facility in July of 2022 and is a John Deere Model R572935 (engine serial # 6068HFC48) which was manufactured in May of 2021, and was purchased as a certified engine to meet the applicable 40 CFR 60 Subpart IIII emission standards (Engine Family: MJDXL13.5103). Continued compliance is expected.

NESHAP/MACT

MACT subpart DDDD

The facility's six lumber drying kilns (ID Nos. K-1 through K-6) are subject to "NESHAP from Plywood and Composite Wood Products," 40 CFR Part 63 Subpart DDDD. Per the rule, these sources have no requirements other than initial notification. As indicated in the review for a previous permit renewal (T14),[1] Canfor has verified the initial notification for the kilns was submitted to DAQ on April 26, 2006. This permit current renewal does not affect this status.

MACT subpart DDDDD

The facility's three wood-fired boilers (ID No. B-2, B-3 and B-4), existing wet biofuel stokers with a heat input capacity 10 million Btu per hour or greater and controlled by dry ESPs, are subject to NESHAP for major sources: Industrial, Commercial, and Institutional Boilers and Process Heaters," 40 CFR 63, Subpart DDDDD which includes the monitoring, recordkeeping, and reporting contained in Environmental Management Commission Standard 15A NCAC 02D .1111 "Maximum Achievable Control Technology" (MACT).

Emission Limits required in the permit for boilers (B-2, B-3 and B-4) except during startup and shutdown shall meet the following emission limits except during startup and shutdown.

Pollutant	Emission Limit
Hydrochloric Acid (HCl)	2.2E-02 lb per MMBtu of heat input (prior to October 6, 2025) 2.0E-02 lb per MMBtu of heat input (on or after October 6, 2025)
Mercury (Hg)	5.7E-06 lb per MMBtu of heat input (prior to October 6, 2025) 5.4E-06 lb per MMBtu of heat input (on or after October 6, 2025)
Carbon monoxide (CO)	1,500 ppm by volume on a dry basis corrected to 3 percent oxygen, 3 run average (prior to October 6, 2025) 1,100 ppm by volume on a dry basis corrected to 3-percent oxygen, 3-run average (on or after October 6, 2025)
Filterable Particulate Matter (PM) or Total Suspended Metals (TSM)	3.7E-02 lb per MMBtu of heat input (PM) or 2.4E-04 lb per MMBtu of heat input (TSM) (prior to October 6, 2025) 3.4E-02 lb per MMBtu of heat input or 2.0E-04 lb per MMBtu of heat input (TSM) (on or after October 6, 2025)

Annual performance test are required for boiler (B-2, B-3, and B-4) with the emission limitations noted above.

The facility's natural gas-fired boiler (ID No. B-5), a unit designed to burn gas 1 fuel with auto trim, is subject to the NESHAP for major sources: Industrial, Commercial, and Institutional Boilers and Process Heaters," 40 CFR 63, Subpart DDDDD contained in Environmental Management Commission Standard 15A NCAC 02D .1111 "Maximum Achievable Control Technology" (MACT), however at this time, Boiler B-5 has not been installed so the Permittee shall comply with the applicable requirements upon startup this source.

MACT Subpart ZZZZ

[1] Mark Cuilla (December 19, 2008).

According to the Permit Review for T20 by Betty Gatano dated May 1, 2018, the facility has an existing emergency engine (ID No. IGen 1) used to drive emergency water pumps to the boilers in the event of a power outage. Adding water to the boilers during an emergency allows the boilers to be brought down in a controlled manner without sustaining damage from overheating. The engine is a 4-stroke, lean-burn unit, firing propane as fuel. It was originally manufactured in 1991 and is considered an existing source under the MACT Subpart ZZZZ. The table below provides an overview of requirements under MACT Subpart ZZZZ for this engine.

Source ID	Description	Overview of MACT 4Z Requirements
IGen 1	Propane-fired emergency engine (118 hp)	• Install a non-resettable hour meter on the engine • Change oil and filter every 500 hours of operation or annually • Inspect all hoses and belts every 500 hours of operation or annually and replace if necessary • Operate no more than 100 hours for maintenance and readiness testing • Inspect spark plugs every 1,000 hours of operation or annually • Achieve compliance by October 19, 2013

Previously, DAQ had a policy of requiring emission sources at Title V facilities to comply with 15A NCAC 02Q .0102(b)(6), even though the rule says explicitly it is not applicable to Title V facilities. At the time this engine was permitted, this policy was in place, and the engine was included in the permit because it was subject to a MACT.
However, this policy has since been redacted, and regulation 15A NCAC 02Q .0102(b)(6) has been repealed. Insignificant activities at Title V facilities are now determined based solely on 15A NCAC 02Q .0503(7), "Insignificant by Category," or 15A NCAC 02Q .0503(8), "Insignificant by Size or Production Rate." This engine (ID No. IGen 1) meets the definition of insignificant under 15A NCAC 02Q .0503(8), as shown in the following table.

Emission Source ID	Emissions (tons/yr)				
	PM/PM10/PM2.5	NOx	SOx	CO	VOC
IGen 1	0.00	1.02	0.00	0.14	0.03

Notes:
- IGen is a 118 hp engine.
- Emissions calculated using emission factors in Table 3.2-2 from US EPA AP-42 (August 2000), for a four stroke, lean burning engine. Emission factors were converted to lb/hp-hr, assuming a 30percent efficiency as per guidance in earlier version of US EPA AP-42 (Supplement B 10/1996).
- Annual emissions assume 500 hours of operation per year for emergency engines.

This engine was moved to the insignificant activities list under permit renewal (T20). However, the engine remains subject to all applicable rules including MACT Subpart ZZZZ. Continued compliance is anticipated during the current renewal.
A diesel fired fire water pump (ID No. I-Pump) was installed in facility as a replacement for engine (ID No. IGen 1). However, the engine still remains in the facility as of this renewal and will remain on the permit.

The diesel-fired fire water pump (ID No. I-Pump) is subject to the NESHAP for Stationary Reciprocating Internal Combustion Engines, 40 CFR Part 63 Subpart ZZZZ. As a compression ignition engine constructed after June 12, 2006, with a site rating less than 500 hp and located at a major source of HAP, it meets the criteria of 40 CFR 63.6590(c)(6), which requires Canfor to meet the requirements of 40 CFR 63 Subpart ZZZZ for this engine by meeting the requirements of 40 CFR part 60 Subpart IIII. No further requirements apply to this engine. Continued compliance is anticipated.

PSD

The PSD program regulates emissions from major stationary sources of regulated air pollutants in areas designated as 'attainment' or 'unclassifiable' for those pollutants. As provided in 40 CFR 81.334, Alamance County is currently designated as 'attainment' or 'unclassifiable' for all regulated criteria pollutants, and nonattainment new source review does not apply to the Canfor facility in Graham.

Lumber mills are not included on the list of 28 categories detailed in 40 CFR 51.166(b)(1)(i)(a), however, Canfor has the potential to emit VOCs above the 250 tpy threshold. Therefore, the Canfor mill is an existing major source regulated under the PSD program. Boiler (ID No. B-5) is subject to PSD and has a BACT limit of 0.0054 pounds per million Btu for VOCs and shall apply during all periods of operations, including start-ups, shutdowns, and malfunctions. Work practice requirements outlined in Table 2.1 D.5-2 in the permit are required to meet that limit. The results of monitoring activities shall be maintained in a logbook on-site. A summary report of the monitoring and recordkeeping activities is required to be reported to DAQ every six months.

112(r)

The facility is not subject to Section 112(r) of the Clean Air Act requirements because it does not store any of the regulated substances in quantities above the 112(r) thresholds. No change with respect to 112(r) is anticipated under this permit renewal.

CAM

The CAM rule (15A NCAC 02D .0614) applies to each pollutant specific emissions unit (PSEU) at Title V facilities that meets all three following criteria:

- the unit is subject to any (non-exempt: e.g. pre-November 15, 1990, Section 111 or Section 112 standard) emission limitation or standard for the applicable regulated pollutant.
- the unit uses any control device to achieve compliance with any such emission limitation or standard.
- The unit has potential pre-control device emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source (i.e., 100 tons per year for criteria pollutants or 10/25 tons per year for HAPs).

As indicated in a previous permit renewal[2] for Emission Sources ID Nos. B-2, B-3, B-4 and PM-2 and for Emission Source ID No. B-5 added to Permit T22, pre-controlled PM_{10} emissions from each of the control devices are less than 100 tons per year, and thus, CAM is not applicable to this facility. The table below summarizes the pre-controlled emissions.

[2] Mark Cuilla (December 19, 2008).

Emission Source ID No(s).	Control Device ID No(s).	Pre-controlled Emissions (tpy)	Comments
B-2	MC-2 MC-2A	25.5	Based on an emission factor of 0.203 pounds per million Btu from 2000 testing.
B-3	MC-3 MC-3A	20.2	Based on an emission factor of 0.161 pounds per million Btu from 2000 testing.
B-4	MC-4 MC-4A ESP-4	3.0	Based on an emission factor of 0.012 pounds per million Btu for total PM (filterable and condensable) from May 9, 2008 testing.
B-5	N/A	1.14	From Permit T22, Figure 8-1 Determination of Significant Emission Increases. Page 13 of 20
PM-2	C-2 BH-1	0	No "in duct" PM10 emissions from planning. DAQ's "Woodworking Emission Calculator Revision C" July 2007.

A "Permit Shield for Non-Applicable Requirements" was added under Air Permit No. 06740T14, clarifying that CAM is not applicable to the facility. This permit renewal does not affect the status of this condition.

7. Facility Wide Air Toxics

Four boilers (ID Nos. B-2 through B-5) and six lumber drying kilns (ID Nos. K-1 through K-6) are exempt from the toxics rules per GS 143-215.102(a) and 15A NCAC 02Q .0702(a)(27)(B). General Statute G.S. 143-215.102(a) was approved on June 28, 2012 and exempts from State Air Toxics those sources of emissions that are subject to certain Federal emissions requirements under 40 CFR Part 61 (NESHAP), Part 63 (NESHAP), or Case-by-Case MACT pursuant to 42 U.S.C. §7412(j). The four boilers are subject to 40 CFR 63, Subpart DDDDD and the six kilns are subject to 40 CFR 63, Subpart DDDD. A modeling analysis was conducted November 16, 2009 for Boilers (ID. Nos. B-1 through B-4) and the six lumber drying kilns (ID Nos. K-1 through K-6) with the following results.

Pollutant	Averaging Period	% of AAL
Acrolein	1-hour	47
Arsenic	annual	96
Benzene	annual	30
Beryllium	annual	3
Cadmium	annual	13
Chromium Soluble Chromate	24-hour	<1
Formaldehyde	1-hour	95
Nickel	24-hour	<1
Phenol	1-hour	4

These values were modeled by the most current version of the US EPA approved regulatory modeling system AERMOD. The analysis demonstrated compliance, on a source-by-source basis, with the AAL for each toxic modeled. Summaries of past reviews and permit changes related to toxics below.

Boilers (B-1 and B-5)
The facility has since removed wood fired boiler B-1 and has added natural gas fired boiler B-5 to the current permit via permit modification 0100237.19A on September 06, 2019. Note Boiler B-5 has not been implemented in the facility as of this permit renewal. The PSD review of VOC emissions was completed during the 2019 modification. The excerpt below from Mathew Porter's toxics review for the PSD project dated April 01, 2019 indicates that the current facility configuration (Boiler 1 retired, natural gas Boiler 5 installed) was conservatively covered by the previous TAP modeling analysis.

"An increase in VOCs emissions typically results in an increase in toxic air pollutants (TAPs), and therefore, required an evaluation under 15 NCAC 02D .0700. According to 2018 and 2009 annual emissions shown in Section 4.2.14 of the PSD application, facility-wide TAPs emissions have decreased or remained the same as those modeled in an air toxics air quality dispersion modeling analysis completed in 2009. The 2009 modeling also included the now retired wood-fired boiler (B-1), which emitted higher TAPs than the new natural gas-fired boiler (B-5). Thus, the 2009 modeling was based on more conservative emissions totals when compared to emissions totals from 2018 and the new boiler. Based on phone call and email discussions the new boiler will be installed at the same footprint as the retired boiler B-1 and have comparable stack parameters. Therefore, re-analysis of TAPs emission impacts was not required." [3]

Chlorine
Chlorine emissions were found to exceed the lb/day TPER and were evaluated as part of a previous TV permit renewal.[4] The DAQ demonstrated via modeling the maximum chlorine impact from the boilers was only two percent of the chlorine AAL on a 24-hour averaging period. Therefore, the chlorine emissions do not pose an unacceptable risk to human health, and reference to chlorine emissions were removed from the permit under the previous TV permit renewal (Air Permit No. 06740T18).

Arsenic
DAQ conducted air modeling of potential arsenic emissions from the boilers with the production restrictions removed. Emission rates of arsenic used in the modeling were based on stack testing conducted at New South in February 2011. The stack tests measured arsenic emissions at 1.36 E-6 lb/million Btu for boiler B-2 and 1.07 E-7 lb/million Btu for boiler B-4. Arsenic emissions from boiler B-2 were considered representative of boiler B-3 because these boilers have similar emission controls. The emission rate for each boiler is shown in the table below.

Boiler	Max Heat Input (mmBtu/hr)	Emission Factor (lb/mm Btu)	Emission Rate (lb/hr)
B-2	28.7		3.90E-05
B-3	28.7		3.90E-05
B-4	57.6	1.07E-07	6.16E-06

Notes:
- mmBtu = million Btu
- Source test results approved in a memorandum by Gregg O'Neal of the SSCB dated November 11, 2011.

Alex Zarnowski of the Air Quality Analysis Branch ran a screening level air model using the emission rates for arsenic in the table above and worst-case stack parameters. This analysis

[3] Mathew Porter's toxics review (April 1, 2019)
[4] Betty Gatano (September 3, 2013).

demonstrated the maximum impact of arsenic was 78 percent of the old AAL on an annual averaging period and 9 percent of the new AAL.[5] Given the large margin of compliance with conservative assumptions (i.e., worst-case stack parameters), the DAQ has determined no air toxics demonstration for arsenic is needed from Canfor.

Canfor requested higher arsenic emissions rates than those measured during the 2011 test be used in the permit. The requested emission rates were initially proposed in a permit application from Canfor received on May 2, 2011. The requested emission rates for boilers B-2, B-3, and B-4 are approximately 40 percent higher than those measured during testing. The proposed emission rates for arsenic are shown in the table below.

Boiler	Max Heat Input (mmBtu/hr)	Emission Factor (lb/mm Btu)	Emission Rate (lb/hr)	Emission Rate (lb/yr)
B-2	28.7		5.45E-05	0.478
B-3	28.7		5.45E-05	0.478
B-4	57.6	1.5E-07	8.64E-06	0.078

Notes:
- mmBtu = million Btu
- Annual emissions determined by multiplying the hourly emissions by 8,760 hours.

Tom Anderson, Supervisor of the AQAB, reviewed the proposed emission rates and determined "a 40 percent increase in emissions should not result in the AAL being exceeded."

The four boilers (ID Nos. B-2 through B-5) and six lumber drying kilns (ID Nos. K-1 through K-6) have been evaluated as described above and all toxic pollutants modeled less than their respective AAL thresholds. Since theses emission sources modeled below the AAL concentrations, the emissions should not cause an unacceptable health risk. This permit renewal will remove conditions 15A NCAC 02D .1100 and .0711 from the permit.

8. Facility Emissions Review

The facility-wide potential emissions have not changed because of this TV permit renewal. Actual emissions for criteria pollutants and HAPs for the previous five years reporting periods are provided in the header of this permit review.

9. Compliance Status

DAQ has reviewed the compliance status of Canfor. During the most recent inspection, conducted on April 21, 2022, by Andrew Kormos of the Winston Salem Regional Office, the facility appeared to be in compliance with all applicable requirements. The facility's history of air quality violations within the last five years and the status is summarized below. The facility's Annual Compliance Certification was received on March 1, 2023, and indicated compliance with all applicable requirements in 2022.

December 13, 2019	NOV/NRE for NSPS Dc. Stack test failed for filterable PM emissions. Violation resolved May 13, 2020
March 12, 2020	NOD-inspection. 15A NCAC 02D .0512. Late internal inspection of bagfilter and cyclone.

[5] Alex Zarnowski (August 28, 2013)

March 26, 2020	NOV/NRE for excessive COMS downtime and indicative of improper Operation and Maintenance in 3Q and 4Q of 2019 for Boilers Nos. 2, 3, and 4. Violation resolved May 5, 2020.
February 3, 2021	NOV/NRE for NSPS Dc. Stack test failed for filterable PM emissions. Violation resolved December 17, 2021
November 30, 2021	NOV/NRE for ESP failure on boiler B-2 and subsequent operation without controls led to a violation of Subpart 5D PM standard. Violation resolved March 29, 2022.
April 21, 2023	NOV/NRE for seven exceedances of MACT 5D's 10% opacity limit and two violations of improper Operation and Maintenance during Quarter 1 of 2022. Violations resolved December 04, 2023.
August 21, 2023	NOV/NRE for four deviations of the 5D 10% opacity limit. Violation resolved January 09, 2024.
September 06, 2023	NOV for setting oxygen trim system set lower than required setpoints. Violation was resolved October 04, 2023.

10. Public Notice/EPA and Affected State(s) Review

A notice of the DRAFT Title V Permit shall be made pursuant to 15A NCAC 02Q .0521. The notice will provide for a 30-day comment period, with an opportunity for a public hearing. Consistent with 15A NCAC 02Q .0525, the EPA will have a concurrent 45-day review period. Copies of the public notice shall be sent to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 02Q .0522, a copy of each permit application, each proposed permit and each final permit shall be provided to EPA. Also pursuant to 02Q .0522, a notice of the DRAFT Title V Permit shall be provided to each affected State at or before the time notice provided to the public under 02Q .0521 above. No affected states or local agencies are within 50 miles of this facility.

11. Other Regulatory Considerations

- A P.E. seal is NOT required for this renewal application.
- A zoning consistency determination is NOT required for this renewal application.
- A permit fee is NOT required for this renewal application.
- EPA has promulgated a rule (88 FR 47029, July 21, 2023), with an effective date of August 21, 2023, removing the emergency affirmative defense provisions in operating permits programs, codified in both 40 CFR 70.6(g) and 71.6(g). EPA has concluded that these provisions are inconsistent with the EPA's current interpretation of the enforcement structure of the CAA, in light of prior court decisions[6]. Moreover, per EPA, the removal of these provisions is also consistent with other recent EPA actions involving affirmative defenses[7] and will harmonize the EPA's treatment of affirmative defenses across different CAA programs.

  As a consequence of this EPA action to remove these provisions from 40 CFR 70.6(g), it will be necessary for states and local agencies that have adopted similar affirmative defense provisions in their Part 70 operating permit programs to revise their Part 70 programs (regulations) to remove these provisions. In addition, individual operating permits that contain Title V affirmative defenses based on 40 CFR 70.6(g) or similar state regulations will need to be revised.

  Regarding NCDAQ, it has not adopted these discretionary affirmative defense provisions in its Title V regulations (15A NCAC 02Q .0500). Instead, DAQ has chosen to include them directly in individual Title V permits as General Condition (GC) J.

  Per EPA, DAQ is required to promptly remove such impermissible provisions, as stated above, from individual Title V permits, after August 21, 2023, through normal course of permit issuance.

12. Recommendations

The permit renewal application for Canfor Southern Pine has been reviewed by DAQ to determine compliance with all procedures and requirements. DAQ has determined this facility is complying or will achieve compliance, as specified in the permit, with all requirements that are applicable to the affected sources. DAQ recommends the issuance of Air Permit No. 06740T23.

[6] NRDC v. EPA, 749 F.3d 1055 (D.C. Cir. 2014).

[7] In newly issued and revised New Source Performance Standards (NSPS), emission guidelines for existing sources, and NESHAP regulations, the EPA has either omitted new affirmative defense provisions or removed existing affirmative defense provisions. See, e.g., National Emission Standards for Hazardous Air Pollutants for the Portland Cement Manufacturing Industry and Standards of Performance for Portland Cement Plants; Final Rule, 80 FR 44771 (July 27, 2015); National Emission Standards for Hazardous Air Pollutants for Major Sources:
Industrial, Commercial, and Institutional Boilers and Process Heaters; Final Rule, 80 FR 72789 (November 20, 2015); Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Commercial and Industrial Solid Waste Incineration Units; Final Rule, 81 FR 40956 (June 23, 2016).

Applicant Comments – Dale Overcash Trinity Consultant on behalf of Canfor
DAQ notes in red.

1. On the signature page of the permit, the first date provided for "Complete Application Date(s):" should be 10/31/1022 (and not 12/30/2022). The application was submitted six months prior to expiration, and the DAQ tracking system contains 10/31/2022 as the date the application was received by the agency. The 10/31/2022 date was included in the DAQ Application Review document. Change accepted.
2. We noticed that DAQ has added that the provisions of 15A NCAC 2Q .0504 and .0521 are applicable to Boiler 4. The previous permits excluded Boiler 4. Canfor agrees with this update as while Boiler 4 is subject to the more stringent NSPS Subpart Dc and NESHAP Subpart DDDDD (Boiler MACT) requirements, it is also subject to these two SIP requirements. We suggest the following updates regarding 15A NCAC 2Q .0504 and .0521 within the permit and the review document.
    a. Boiler 4 (B-4) should be added to Condition No. 2.1-A.3.a. Change accepted.
    b. The application review document excludes B-4 when discussing applicability to 2D .0504 (p. 6). The heat input is included, but the ID (B-4) is missing. Change accepted.
3. In Condition No. 2.1-A.4.c., it is suggested that the following term be added to the end of the permit condition – "*This requirement has been met*." This same term has been added within the permit where certain other requirements have been met. Change accepted.
4. It is suggested that Permit Condition No. 2.1-A.5.e.iii. be deleted from the permit. This testing requirement for annual/every 5-year testing is not an NSPS requirement. NSPS only requires an initial test. Furthermore, there is a testing requirement within the Boiler MACT condition (see 2.2-C.1.k.) that provides a more aggressive or recurring test schedule for the same pollutant – filterable PM; and this test schedule is a requirement of Boiler MACT. This permit change was accepted for the purpose of simplifying the permit. The DAQ believes that the MACT DDDDD testing condition is sufficient in demonstrating the compliance with NSPS Dc without the additional periodic testing.
5. It is suggested that Condition No. 2.1-A.5.f.iv. be deleted. The referenced to 2.1 A.5.f at the end of the condition should be to 2.2-C.1.l.; but it would seem to make more sense to delete this condition as the Boiler MACT condition is a stand-alone requirement and captures what seems to be intended for this condition. Change accepted.
6. It is suggested that Condition No. 2.1-A.5.g.iv. be deleted. While this might be an NSPS requirement that was developed prior to Part 70, Part 70 requires record retention for five years. This condition contradicts Part 70 (See Section 4, Condition O.). Change accepted.
7. The last sentence of Condition No. 2.1-A.5.h. should be amended to remove the term "in paragraphs ii, ii and iv". Change accepted.
8. In accordance with 15A NCAC 2Q .0702(a)(27(B), the air toxic conditions – 2.2-A.1 and A.3 should be removed from the permit. The sources listed in A.1. are subject to a Part 63 standard. The pollutants listed in A.3 would also be emitted from sources subject to a Part 63 standard. See Section 7 for toxics review. Change accepted.
9. In Condition No. 2.2-B.2.d., it is suggested that the following term be added to the end of the permit condition – "*This requirement has been met*." This same term has been added within the permit where certain other requirements have been met. *(Note: There is no 2.2-B.1 permit condition in the permit.)*. Change accepted.
10. In Condition No. 2.2-C.1.e.i. change the term "and operating limit standards" to "operating limit standards, and work practice standards". Also, please delete the term "2.1."
11. In Condition No. 2.2-C.1.e, change iii. to ii. Change accepted.
12. In Condition No. 2.2-C.1., condition f. is missing. The conditions are e, g, h, … . Change accepted.