

**TECHNICAL SUPPORT DOCUMENT FOR
LONGVIEW FIBRE TEMPORARY PSD REVISION,
PSD 01-03, SECOND AMENDMENT, REVISION 1**

By letter dated January 29, 2010, Longview Fibre requested a temporary allowance to operate one of their three Kraft recovery furnaces at rates higher than the rate listed in approval conditions in PSD 01-03, Second Amendment. In return for the ability to operate one furnace at a rate above the nominal value listed in the PSD permit, the company has proposed to not operate one of the other two furnaces.

Project Description

The project is to operate Recovery Furnace #22 (RF #22) at a rate higher than the nominal capacity listed in PSD 01-03, Second Amendment, for a limited period of time instead of operating both furnace #22 and furnace #19. The proposed project is to allow stress testing of RF #22 components and support equipment to determine the current actual black liquor processing capacity of RF #22. Currently, only the nominal long-term black liquor processing capacity is known. The term of the temporary operations is limited to six months and will be adequate to determine the actual long-term capacity of the recovery furnace.¹ In response to the temporary ability to operate RF #22 at a higher throughput rate, the company has proposed to not operate their largest RF #19.

As proposed by the company, operating only one of these recovery furnaces at a higher rate rather than both at lower rates will reduce total emissions. The company's analysis is based on operating RF #22 at a higher rate and not operating RF #19 at all during the period.

The company request is limited to allowing it to exceed the nominal black liquor throughput capacity for RF #22 and its associated smelt dissolving tank (SDT #22)² and that RF #19 be prevented from being legally used for the duration of the revision. The company proposes that all other emission limitations on RF #22 and the rest of the plant remain in effect during the time of the revision.

Recovery Furnace #22 is a modern design indirect contact recovery furnace while RF #18 and #19 are both older design direct contact furnaces. Direct contact furnaces spray black liquor into the hot flue gases to remove water prior to combustion. A direct contact furnace has significantly higher emissions of odorous reduced sulfur compounds compared to an indirect contact recovery furnace. In an indirect contact furnace, the black liquor is concentrated prior to introduction into the recovery furnace. The water and volatile compounds evaporated from the

¹ "We need to understand how to operate the precipitator at higher rates and to determine what engineering and modifications will be needed once we have successfully obtained the "Single Line Mill" NOC." Page 2 of the January 29, 2010, letter requesting a variance from the throughput rate for RF #22/SDT #22.

² Each Kraft recovery furnace operates in tandem with a smelt dissolving tank. The recovered pulping chemicals in the recovery furnace are known as 'smelt.' The smelt is routed to a tank where the smelt is dissolved in water in preparation for additional chemical steps prior to being sent back to the digesters. SDT #22 is the companion smelt dissolving tank for RF #22. Any reference in this document to a recovery furnace includes its associated smelt dissolving tank.

black liquor is combusted and the sulfur in the reduced sulfur compounds is recovered for re-use in the pulping process.

PSD Permitting History

This facility has received two PSD permits for modifications and installation of new equipment at the Longview Washington site. The first PSD permit (PSD X81-10) was issued by EPA Region 10 in 1981 and contained BACT emission limits for three new emitting units (a power boiler, a recovery furnace, and a lime kiln, plus new pulp digestion capacity). The permit established BACT emission limits in lb/hr, except Total Reduced Sulfur was limited by concentration or lb/ton black liquor solids fired, depending on unit covered. This original PSD permit permitted the project as a 'phased' project where some units would not be built for a number of years after the issuance date of the permit. To meet the requirement that BACT be required for future phases, the permit required a revised BACT evaluation be submitted by the company prior to the start of construction of each future phase. The permit also established an emission cap³ covering the recovery furnaces, lime kilns, and power boilers at the plant, with a different cap established for each of the phases. The available record is incomplete, but a reasonable conjecture is that the cap was based on the PTE of all units proposed to be installed under the PSD plus the PTE of all existing units at the plant. By a letter revision in 1987, EPA modified the permit to delete approval of the proposed power boiler and adjusted the combustion unit emission cap downward to reflect this change.

In 1989, Longview Fibre submitted the revised BACT evaluation for RF #22 along with a request to approve modifications and upgrades to RF #18 and #19. This application, the changes in the 1987 letter amendment, and the revised BACT determination for RF #22 was approved and issued in 1990 as PSD X81-10A. This permit established BACT in terms of concentration limits (ppm or grains/dscf) and using an assumed pulp production value modified the combustion unit emission cap. The BACT concentration limits were also expressed in terms of lb/air dried ton pulp/day based on company supplied conversion factors and, for RF #22, an assumed pulp production rate. This permit anticipated that RF #22 would be capable of recovering pulping chemicals for a pulp production rate of about 1000 ADTP/day.

In 2000, to simplify calculations and inclusion of emission limits in the Air Operating Permit issued to the plant, the company requested the emission limitations expressed as lb/ADTP in PSD X81-10A be converted to lb/hr. This change was completed and issued using the nominal capacities of the units and conversion factors supplied by the plant. This is the first permit that listed a nominal black liquor capacity for RF #22.

In 2001, the company applied for a PSD permit to cover a number of both related and unrelated modification projects at the plant. No changes to RF #22 occurred as part of this project, but

³ While no longer an acceptable part of permitting a facility, this plant cap was a common feature of EPA-issued PSD permits in the early years of the program. Even under the rules in place at that time, a cap could not be used as a basis for evaluating PSD applicability for emission changes due to modifications at a stationary source.

changes to RF #18 and #19 did occur along with other modifications at the plant. When issued, PSD 01-03 revised the lb/ADTP and lb/hr emission limits and the combustion unit cap. Any remaining lb/ADTP limits were converted to tons/year and the nominal throughput capacity of the individual units added as limitations. The permit also modified the combustion unit cap to be the 1998/99 average actual emissions of the unmodified units plus the new PTE of the modified units.

PSD 01-03 was subsequently amended twice at the request of the company to address a number of typographical and other errors and to delete a shutdown recovery furnace.

When PSD 01-03 was issued, it listed the nominal throughput limitation for each recovery furnace. This was the first inclusion of unit capacity in a PSD permit issued to Longview Fibre. The nominal capacity of each recovery furnace came from plant records and application materials supplied to Ecology. The nominal capacities were used to determine the potential to emit in tons/year for each furnace based on the determination of BACT for the two furnaces (RF #18 and #19) that were modified as part of the project permitted in PSD 01-03. The nominal capacities for RF #18 and #19 first appear in the permitting record as part of a 1989 PSD permit application and did not change for the 2001 project.

Analysis

Ecology has reviewed the request and the permitting history of the facility and most especially, RF #22. Based on the permitting record, it is clear that the nominal throughput limit was not a component of the 1990 BACT decision for installation of RF #22. The BACT decision was clearly based on the company proposing the lowest or next to lowest concentration based emission limitations in any recovery furnace permit at the time of the application. The Ecology permit writer evaluated the information presented in the application, and consulted other states with Kraft pulp mills included in the BACT/LAER Clearinghouse database. The permit writer either agreed with the company that they had proposed the most stringent limit or modified the company's proposed limitation. At that time of permitting, the black liquor capacity of the proposed furnace was unknown, but an assumed pulp production capacity addition was used to convert the concentration limitations to a pulp production rate limitation.

The permitting record for the 1990 permit indicates that the emission rate anticipated from the proposed project would not cause or contribute to an exceedance or violation of any ambient air quality standard or AQRV.

As part of the 2001 PSD permit, the permit record indicates that the capacity of RF #22 was not limited in response to making a BACT determination for the modifications to other recovery furnaces that were modified during that project. The nominal black liquor solids capacity of the recovery furnaces was used by the permit writer to assist in making the ton/year limits on the individual units and the combustion unit cap to be enforceable as a practical matter as described in the 1988 EPA guidance memo on establishing limitations on the potential to emit. As in the

1990 permit (and the 2000 revision), the lb/hr and ton/year limitations are a simple extension of the BACT determined concentration limits using an assumed or nominal throughput rate.

The mass emission rates were not limited as a result of modeling to assure that the emissions would not cause or contribute to an exceedance of a NAAQS or AQRV in a Class I area.

PSD Applicability

The proposed project is narrow in nature. It is simply to operate RF #22 recovery furnace instead of operating RF #22 and #19 for a limited period of time. No physical changes to the recovery furnace, its smelt dissolving tank, or any associated equipment will be made to accommodate this temporary change other than resetting of valves in order to divert black liquor from RF #19 to RF #22. The company has agreed that all air pollutant emission limits on RF #22 and SDT #22 will remain in place for the duration of this test.

As proposed, this project will not debottleneck any other production unit. No additional product can be produced as a result of this temporary operation.

Plant nominal pulp production is limited to 3600 ADTP/day, the nominal ADTP capacity of the three operable recovery furnaces is approximately 3200 ADTP/day. Black liquor from any digester can be routed to any of the three recovery furnaces and the recovered chemicals can be re-routed to any digester.

Pulp produced by the digesters can be routed to any paper machine at the plant. As a result, there is no emission increase at other areas of the plant.

The project will result in a project-specific reduction in emissions of all pollutants except PM/PM₁₀ and NO_x. Longview Fibre has evaluated the emissions change of their proposal at a maximum throughput of 2160 TBLS/day. At this rate, the project is projected to have an emission decrease for all pollutants except for PM/PM₁₀ and NO_x. These two pollutants will result in a less than significant increase.

Ecology evaluated the potential emissions change at a significantly higher rate of 2640 TBLS/day; well beyond what Ecology anticipates could be achieved without physical changes to the recovery furnace or its supporting equipment. The information supplied to Ecology indicates that the plant has achieved this throughput rate through the operations of both RF #22 and RF #19 in recent years. At the rate of 2640 TBLS/day, emission change due to the project is projected to have annual increases in PM/PM₁₀ of 6 ton/yr (tpy) and NO_x of 4 ton/yr.⁴ At rates

⁴ Note: This analysis is not a future potential emissions minus baseline actual emissions analysis as described in 40 CFR 52.21(a)(2). An analysis using this methodology indicates an annual increase in PM above the significant emission rate would occur when assuming this project would be authorized for an entire year. If a more limited duration of six months is analyzed, then there is not a significant emission increase using the baseline actual to future actual emission rate calculation. The future actual rate proposed to use in the analysis is the 2640 TBLS/day throughput rate discussed in this document. Longview only evaluated the 2160 TBLS/day rate.

above this it is possible that over the course of a calendar year, one or more pollutants will become significant for PSD permitting purposes. An evaluation of the emissions change due to the described project is attached to this Technical Support Document.

Since the term of the permit revision is proposed to be limited to a maximum six months, less than one calendar year, the allowable emission increase is approximately half of what Ecology has evaluated.

Separately, Ecology evaluated whether a temporary revision of a PSD permit can be allowed. The federal PSD rules do not contain criteria or requirements related to revisions or amendments to a PSD permit. EPA has considered the subject of PSD permit revisions in unpublished guidance and developed an approach to allow for making revisions to existing permits. Ecology proposes to take the approach that since EPA allows permit revisions and a short-term revision to a PSD permit is a type of revision, that we can issue a temporary permit revision.

As a result of our analysis, Ecology has determined that the proposed project can be allowed as a temporary revision to PSD 01-03, Second Amendment, subject to the limitations described in the section "Proposed Temporary Permit Revision."

Ambient Air Quality

No evaluation of ambient air quality impacts has been performed beyond a qualitative analysis. The emissions for most pollutants are anticipated to be reduced as a result of this temporary revision. The increase in particulate is small and experience indicates that for an emission point near the center of a large property, it is unlikely that the particulate will cause or contribute to an exceedance of a NAAQS. The small increase in NO_x predicted over the 6-month term of this temporary permit revision is at the Ecology de minimis emission rate for NO_x, a rate we have determined to be not subject to permitting. Similar to the predicted PM increase, the scale of this emission increase plus the location of the emissions near the center of a large property is unlikely to impact ambient air quality.

The emissions of odorous sulfides are anticipated to be reduced due to operating the indirect contact recovery furnace compared to operating a direct contact furnace. When Longview Fibre (or any Kraft pulp mill) operates a direct contact furnace, odor complaints submitted by local citizens to Ecology and the mill increases when compared to operation of an indirect contact furnace.

Proposed Temporary Permit Revision

The following criteria are intended to make the company proposal enforceable and limit the duration of the revision. First and foremost, the proposed limitations only allow an exceedance of the throughput limitation for RF #22 (and smelt dissolving tank #22), prevents the operation of RF #19 (and its smelt dissolving tank), and changes no other emission limitations, BACT limits or listed emission caps, plant steam production limit, or pulp production limitations.

Proposed conditions for revision:

1. Conditions 1.21 and 1.45, specified in PSD 01-03, Second Amendment, applicable to Recovery Furnace #22 (RF #22) and Smelt Dissolving Tank #22 (SDT #22) are modified to be a monthly average throughput of 2640 TBLS/day (30-day average) provided all other conditions of this revision are met. All other emission limitations contained in PSD 01-03, Second Amendment in Conditions 1.22–1.26 and 1.46–1.50 applicable to RF #22 and SDT #22 remain in effect.
2. No physical changes to RF #22/SDT #22 or any supporting equipment such as black liquor concentrators, pumps, pipes, etc., pulp processing or paper making equipment can be made to allow for the increased throughput.
3. LFPP must conduct PM source tests at least monthly at RF #22 and SDT #22 for any month when the units operate at least five consecutive days at rates in excess of 1950 TBLS/day. The source tests must be conducted while the units are operating at a rate approximating the peak operational rate during the month.
4. If at any time during the term of this temporary permit revision, LFPP operates RF #19/SDT #19, then the throughput limitation contained in Conditions 1.21 and 1.45 of PSD 01-03 for RF #22/SDT #22 reverts to 1950 TBLS/day (daily average).
5. LFPP must promptly reduce the operating rate of RF #22/SDT #22 to a maximum of 1950 TBLS/day if an exceedance of any emission limit applicable to RF #22/SDT #22 or other plant-wide production or emission limitation occurs. Ecology's Industrial Section and Air Quality Program's Science and Engineering Section must be notified within 24 hours of such an exceedance. Prior to resuming operation at a rate greater than 1950 TBLS/day, LFPP must explain to Ecology's satisfaction the circumstances of the incident and how future incidents will be prevented.
6. This temporary revision expires on the earlier of the following conditions:
 - a. Any physical change identified in Condition 2 is made;
 - b. An application for a permanent permit allowing operation of RF #22 and SDT #22 at a higher rate than 1950 TBLS/day is determined to be complete; or
 - c. November 1, 2010.
7. LFPP may not use operating rates achieved under this temporary revision in any PSD applicability analysis for demonstrating production rates that the RF #22/SDT #22 system are capable of accommodating.

The rationale for the conditions is as follows:

1. The ability to exceed the throughput limit in the first sentence is the primary request of the company. The proposed throughput limitation is the rate evaluated by Ecology for emissions change analysis and results in a less than significant increase in emissions as a result of the project. The second sentence it to clarify that only the throughput limitation is allowed to be exceeded, the concentration and annual mass emission rate limits applicable to RF #22 and SDT #22 remain in effect. While not specifically called out, all other plant production limits (the plant-wide steam production limit, pulp production limit, and combustion unit emission caps) remain in effect.
2. If physical change is required to increase the throughput and the change is made, then the premise of the temporary revision and PSD applicability analysis is no longer valid. As a result, any physical change would invalidate the temporary revision to the PSD permit.
3. The current PSD allows for a reduced frequency of testing for PM from this unit. Based on the reduced frequency, there would be no testing occurring during the period of the temporary revision. As a result, Ecology wants to assure that at the anticipated higher throughput rate that the particulate limit will be met.
4. Non-operation of RF #19/SDT #19 for the ability to operate RF #22/SDT #22 at a higher rate is the project proposed by the company. If for any reason the company chooses to operate RF #19/SDT #19, returning to the throughput limit in PSD 01-03, Second Amendment during periods when RF #19/SDT #19 is operated is an appropriate condition of the approval. This is made stronger in proposed Condition 6.
5. This is to prevent long-term operation in violation of any of the limitations in PSD 01-03, Second Amendment, are exceeded as a result of operating RF #22/SDT #22 above the throughput rate in the permit. Ecology does not want to be allowing violations of permit conditions.
6. This condition contains the criteria for expiration of the temporary revision.

The first condition is a backup to the prohibition against making physical changes to RF #22 or any of its supporting equipment to allow for an increased throughput rate. The company request indicates that no physical change to any equipment is required to allow for a higher throughput rate up to some currently unknown rate.

The second condition is to acknowledge that the company is evaluating a large project at the facility that will require permitting under the state Notice of Construction program, the federal PSD program, or both. The date that Ecology determines that the application for this project is complete is proposed as one of the expiration criteria.

The third condition is the date certain expiration of the temporary revision. It is less than the year requested by the company and to encourage the company to be expeditious in pursuit of its proposed large project.

7. This condition is to clarify that this temporary increase in the throughput rate on RF #22/SDT #22 does not establish a new operating rate for use in PSD permitting analyses. Ecology's understanding of the concept of "capable of accommodating" in determining major new source review applicability is that this would be a long-term operating rate that the facility can and has achieved while in compliance with permit limitations and any physical constraints on operation of the facility. Ecology does not view this temporary revision as setting new operating rates that would be appropriate to utilize in any calculation of major new source review applicability.