STATEMENT OF BASIS

Rayonier Performance Fibers, LLC

Fernandina Mill

Facility ID No.: 0890004

Nassau County

REVISED DRAFT Title V Air Operation Permit Revision No.: 0890004-020-AV

This permit revision is being issued for the purpose of incorporating the terms and conditions of Construction Permit 0890004-018-AC that pertains to the facility's production increase to 162,000 air dried metric tons (ADMT) per consecutive 12-months, rolling total, and the installation of a third multiple effect evaporator train consisting of three (3) refurbished existing evaporators bodies. The third MEE train will be used to increase the solids concentration of weak HCE (a byproduct stream from the manufacturing process that can be used at Kraft mills as a sodium source). This MEE train shall be vented to the existing Evaporator Vents Methanol Condenser System (EU 021).

In addition, the site-specific 40 CFR 63.457(c) liquid sampling locations have been corrected, and the 40 CFR 63.453(o) CMS monitoring parameter values have been incorporated into the permit.

This existing facility is located at Foot of Gum Street, Fernandina Beach, Nassau County, Florida; UTM Coordinates: Zone 17, 454.7 km East and 3392.2 km North; Latitude: 30° 39' 44" North and Longitude: 81° 29' 03" West.

This Title V Air Operation Permit Revision is issued under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210 and 62-213. The above named permittee is hereby authorized to operate the facility shown on the application and approved drawing(s), plans, and other documents, attached hereto or on file with the permitting authority, in accordance with the terms and conditions of this permit.

Facility Description

Rayonier is an acid sulfite based pulp mill using ammonia as a base chemical for the manufacture of dissolving pulps. This plant produces approximately 10 different grades of pulp. The pulp produced at this plant is used in products such as plastics, photgrahpic film, LCD screens , paints, cigarette filters, pharmaceuticals, food productions, cosmetics and textiles. The mill produces approximately 150,000 tons of performance fibers annually.

The sulfite process utlizies a sulfurous acid and ammonium bisulfite cooking solution to chemically separate the lignin from the cellulose. Pine wood chips and cooking solution are cooked in the six (6) batch digesters. The cooking process requires approcximately 6 hours to complete. The unbleached sulfite pulp and spent cooking solution (SSL- spent sulfite liquor) are separated over vacuum washers (red stock washers). The unbleached pulp is then sent into the screening area to remove any knots and tailings (uncooked, woody materials), while the SSL is pumped to the evaporators to concentrate the solids content before being burned in the recovery boiler. The collected knots and tailings are pressed for use as fuel in two of the three existing power boilers.

The sulfurous acid and ammonium bisulfite cooking solution is prepared in the “acid plant”.

The unbleached pulp exiting the screening operation enters the bleach plant. The first stage in the bleaching plant is the Hot Caustic Extraction (HCE) stage. Caustic soda is used to remove hemi-cellulose (small chain cellulose molecules), from the pulp in small pressure vessels called an HCE cells. The mill currently operates eight (8) such cells. The pulp is washed after this HCE stage. The spent solution, Hot Caustic Extract, is concentrated in a set of evaporators before being sold to Kraft mills for its sodium content and energy value.

Pulp leaving the HCE stage is further purified in continuous and batch stages using peroxide, chlorine dioxide, chlorine, sodium hydroxide, and sodium hypochlorite depending upon the pulp grade specifications. Following these bleaching stages, the pulp passes through centrifugal dirt cleaners before being sent to the pulp machine. The pulp machine forms the sheet by draining water from the pulp slurry (containing 99% water) over a moving wire to a consistency of 50% water. The remainder of the water is removed by passing the pulp sheet over pressing and drying cylinders heated internally with steam. The pulp sheet, which contains approximately 7% moisture, is then wound onto a “jumbo” before being transported to the finishing room where the pulp sheet is cut into smaller rolls or sheets based on customer specifications. No coatings are used on any of the pulp grades produced by the mill.

The digestion, the HCE stage, and the pulp machine are high users of steam for heating. The steam is produced in the power boilers. Steam is also used to produce about 90 percent of the mill’s electricity needs.

The recovery boiler provides steam for the evaporators and its emissions are scrubbed for sulfur dioxide removal using an ammonia solution. The ammonium bisulfite produced in the scrubber is used for cooking acid make-up.

40 CFR 63 Subpart S Applicability

This facility is subject to the requirements of 40 CFR 63 Subpart S. Hazardous air pollutant emission points include 1) the combined digester and washer systems vent where the methanol is removed by the Direct Contact Condenser, 2) the vents from the two sets of multiple effect evaporators where the methanol is removed by a Direct Contact Condenser, and 3) the waste water collection and treatment systems where the spent scrubbing media from the direct contact condensers is routed.

There are three streams of water that contain collected methanol. These are a) alkali in the water stream used in the Vent Gas Scrubber, b) the liquid effluent stream from the Direct Contact Condenser used to treat the gases from the digester system vent and the pulp washing system, and c) the liquid effluent stream from the Direct Contact Condenser used to treat the collected gases from the Evaporator System Vent.

These streams are sent to the wastewater treatment system via open pump stations. The two streams used to collect methanol from the pulp washing system and the digester system vent are sent to the Number 1 Pump Station and Bar Screen. The stream collecting the methanol from the evaporator system vent is discharged to the Number 3 Pump Station.

Rayonier is authorized to use WATER9 to calculate the fraction of incoming methanol in each of the three mentioned streams that is emitted to the air. In each case, the stream enters an enclosed sewer line until it is discharged into the open pump station. The WATER9 model is also used to estimate the total methanol emissions from the pump stations.

The WATER9 model is also used to predict the fraction of the influent methanol emitted to the air from the biological effluent treatment system. Rayonier has determined, using the procedures in Appendix C to Part 63, that the aeration stabilization basin contains five mixing units.

The total methanol emissions is determined from the direct measurement of the methanol emissions from the pulping and washing Direct Contact Condenser and those from the evaporator Direct Contact Condenser, and the WATER9 determined methanol emissions from the methanol concentration in the liquid streams from each pump station (No. 1 Pump Station & Bar Screen and No. 3 Pump Station) and the biological effluent treatment system.

Because the Fernandina Beach Mill produces dissolving and specialty grade pulp, the mill is required to achieve compliance with the bleach plant provisions of 40 CFR 63.445 as expeditiously as practicable but in no event later than 4 years from the issuance of Construction Permit No. 0890004-018-AC, i.e. no later than February 19, 2010.

40 CFR 63 Subpart MM Applicability

The Recovery Boiler is subject to the requirements of 40 CFR 63 Subpart MM. The standard has established particulate matter as the surrogate for HAP metals. The scrubber on the recovery boiler is installed to recover sulfur as opposed to the control of particulates. Therefore, in this case, the scrubber parameters required by the Subpart MM standards do not relate to particulate emissions. Due to the scrubber, the gas stream from the recovery boiler is wet and therefore opacity monitoring is unsuitable. On May 19, 2004, EPA approved the use of a beta monitor as an Alternative Monitoring Method instead of the standard required continuous opacity monitor and scrubber operating parameters.

40 CFR 63 Subpart DDDDD Applicability

The No. 1 Power Boiler is subject to the applicability requirements of 40 CFR 63 Subpart DDDDD - National Emission Standards for Industrial/Commercial/Institutional Boilers and Process Heaters. It is an affected unit under this subpart subject to the initial notification requirements only.

The Nos. 2 and 3 Power Boilers are subject to the applicability requirements of this subpart. They are affected units subject to the existing source requirements of the subpart.

40 CFR 60 Subpart Kb Applicability

Prior to October 15, 2003, the No. 6 fuel oil storage tank was subject to the requirement of 40 CFR 60.116(a) and (b) to maintain capacity records. However, effective October 15, 2003, EPA exempted from Subpart Kb recordkeeping requirements and Subpart Kb the following storage vessels:

- Capacity <75 m^3,
- Capacity between 75 m^3 and 151 m^3 storing liquid with vapor pressure <15 kPa,
- Capacity equal to or >151 m^3 storing liquid with vapor pressure < 3.5 kPa.

The capacity of the No. 6 fuel oil storage tank is 300,000 gallons (1135.5 m^3). According to the physical properties stated in the Amerada Hess Corporation Material Safety Data Sheet for No. 6 fuel Oil (all sulfur grades), dated January 18, 1994, the vapor pressure of No. 6 fuel oil is less than 0.0001 mmHg (0.0000144 kPa). Therefore, the No. 6 fuel oil storage tank is not subject to the requirements of 40 CFR 60 Subpart Kb.

Emissions Units Descriptions

No. 1 Power Boiler (Emissions Unit No. 001):

The No. 1 Power Boiler is a No. 6 fuel oil fired boiler with a venturi scrubber (Scrubber A under normal operations) to control particulate matter emissions. It is recognized that Scrubber B will also be used to control particulate matter emissions from this power boiler on an as needed basis.

This emissions unit is permitted under Stipulation dated March 10, 1982 and a subsequent Order dated April 5, 1982. It appears from file review that Rule 62-296.410, F.A.C., is the basis of the permitted emission limits for this emissions unit. This emissions unit has only fired No. 6 fuel oil.

This emissions unit is subject to CAM requirements.

No. 2 Power Boiler (Emissions Unit No. 002):

The No. 2 Power Boiler is a combination oil and wood waste fired boiler. Particulate matter emissions are controlled by a multiclone unit (with no reinjection of fly ash), followed by a Venturi scrubber (Scrubber A). The boiler is fed to Scrubber A under normal operation or to Scrubber B on an as needed basis.

This emissions unit is subject to CAM requirements.

No. 3 Power Boiler (Emissions Unit No. 003):

The No. 3 Power Boiler is a combination oil and wood waste fired boiler. Particulate matter emissions are controlled by a multiclone unit (with no reinjection of fly ash), followed by a Venturi scrubber (Scrubber B). The boiler is fed to Scrubber B under normal operation or to Scrubber A on an as needed basis.

This emissions unit is subject to CAM requirements.

Vent Gas Scrubber and Direct Contact Condenser (Emissions Unit No. 005):

Emissions from numerous vents from the cooking acid plant, the red stock washers, the unwashed stock tank, the spent sulfite liquor storage tanks, the spent sulfite liquor washers, the digesters, and the blow pits are collected and scrubbed in the Vent Gas Scrubber. The scrubber consists of a packed tower containing two designated packed sections. The lower section is designed for sulfur dioxide emissions control via gas absorption using alkaline scrubbing media (soda ash or sodium hydroxide). The absorbate, sodium bisulfite, is pumped from the scrubber sump to the sodium bisulfite storage tank. From here, it is recirculated back to the scrubber for reuse.

The sulfur dioxide concentration in the stack is continuously measured with a CMS, therefore, this emissions unit is exempt from CAM.

The standards of 40 CFR 63 Subpart S require sulfite mills to control the total HAP emissions from each digester system vent, each evaporator system vent, and each pulp washing system. These systems are to be enclosed and vented into a closed-vent system and routed to a control device that meets the requirements 40 CFR 63.444(c). For the digester system vent and pulp washing system, Rayonier uses the upper packed section of the Vent Gas Scrubber as the control device to meet the referenced Subpart S standards, i.e. the Direct Contact Condenser. The upper packed section consists of a 6-foot section of pall ring packing for condensing methanol from the gas stream. The gas stream is cooled below 150°F and contacted directly with fresh well water at approximately 80°F. The methanol in the gas stream condenses at this temperature, dissolves in the water and is removed from the gas stream. This is a once through process. The condensed methanol held in the water is sent to the biological effluent treatment system for treatment in order to comply with the requirements of 40 CFR 63 Subpart S.

40 CFR 63.453(a) requires that the pH or oxidation/reduction potential of the gas scrubber effluent, the gas scrubber vent gas inlet flow rate, and the gas scrubber liquid influent flow rate to be continuously monitored for each gas scrubber used to comply with the sulfite pulping system requirements of 40 CFR 63.444(c). However, the measurement of pH or oxidization/reduction potential and scrubber gas inlet flow rate are not adequate indicators of the performance of the direct contact condenser due to the fact that there is little change that occurs in the pH or oxidation/reduction potential when the cooler influent water cools the gas stream and the methanol dissolves in the water.

40 CFR 63.453(m) requires facilities using a control device, technique or an alternative parameter other than those specified in the monitoring section of the Subpart, to install a CMS and establish appropriate operating parameters to be monitored that demonstrate continuous compliance with the applicable control requirements. Rayonier proposed that the final gas temperature and the liquid inlet flow rate be monitored as alternative parameters. The Department approved the use of these parameters in the Initial Performance Test Plan Approval letter dated March 7, 2002.

Recovery Boiler (Emissions Unit No. 006):

The hot flue gas from the recovery boiler along with the non-condensible gases from the evaporator methanol condensers (EU 021), are routed to a multi-stage, wet scrubber followed by a four-compartment filter unit.

Spent Sulfite Liquor is burned in the recovery boiler to produce steam and recycle sulfur. The evaporated, spent sulfite liquor contains sulfur compounds, which are converted to sulfur dioxide during combustion. The sulfur dioxide is recovered from the flue gas in the multi-stage, wet scrubber. Ammonium hydroxide is the scrubbing media. The sulfur dioxide reacts with the ammonium hydroxide to form ammonium bisulfite. The ammonium bisulfite solution is drawn off, filtered through sand filters, and pumped to the acid plant and recycled as the base for making the cooking acid used in the digesters.

The sulfur dioxide in the flue gas also reacts with the ammonium hydroxide (scrubbing media), to form ammonium sulfate, a fine, aerosol-type particulate that is emitted in the moist vapor leaving the scrubber. This ammonium sulfate is the predominate source of particulate emissions from the recovery boiler as the spent sulfite liquor (red liquor fired), contains little ash.

Collecting the ammonium sulfate is difficult because it is a wet stream. Measuring opacity is also difficult because the water vapor tends to interfere with the measurements. Ammonium sulfate also has a high reflectance and therefore the use of opacity monitors is not successful.

On December 12, 1990, the facility petitioned for the approval of the operation of a Brinks Demister System in lieu of meeting the July 12, 1976 LRACT Determination of visible emissions of 10% opacity. The LRACT visible emissions standard of 10% opacity was based on the State of Washington's standard, which was rescinded at the time of the 1990 petition. During this case, the Department concluded that the LRACT visible emissions standard was inappropriate and the general visible emissions standard of less than 20% opacity (now Rule 62-296.320(4)(b)1., F.A.C.), was applied to this emissions unit. As justification for the alternate compliance verification procedure, the facility provided test results, which demonstrated plume interferences due to humidity, which inhibited accurate evaluations of the plume opacity. It was therefore determined, in the Final Order dated June 19, 1991, that compliance with the opacity limitation will be based on the record of on-line operation of the Brinks Demister System. An Alternate Sampling Procedure was issued for this opacity determination, No. ASP-91-H-01.

The Brinks Demister consists of four, enclosed; rubber-lined metal compartments each containing 52 candles. Each candle is a 24-inch diameter, 12–feet high tube wrapped with 6 inches of tightly wound polyester fiber filter. Gases flow up through the center of each candle then pass through the 6 inches of filter medium, out an opening near the top of the compartment and on to the stack.

The flue gas is normally passed through 3 of the 4 filter compartments, while the fourth compartment is on a wash cycle. Much of the particulate flows with the moisture down the inside of the candle and out to the effluent treatment system while the filters are in operation. However, some particulate is caught within the filter medium and must be periodically washed from the filters. The washing is accomplished by sealing the gas inlet with water in the bottom of the compartment and adding evaporator condensate (acidic) to dissolve any ammonium sulfate built up within the filters.

Fuel Oil is fired in the recovery boiler to heat the boiler and prepare the spent sulfite liquor for burning. The heat input from this oil firing is considerably less than from full-spent sulfite liquor firing. During the burning of oil, the flue gas is completely scrubbed by the scrubber and the sulfur dioxide is removed with the ammonia/water media. Because there is far less sulfur dioxide in the flue gas when firing only oil, very little ammonium bisulfite is formed from the gas coming in contact with the ammonia/water media. The Brinks Demister is bypassed during periods of startup when oil is burned. During this period, the filters are not needed and are not used since any fine oil-derived particulate, which gets through the scrubber, has the potential of plugging the filter medium. When the first spent sulfite liquor gun is introduced to the boiler, ammonia water is used for scrubbing, the bypass valve is closed and all flue gas passes through the Brinks mist filters.

This emissions unit has a CMS required for compliance purposes; therefore, it is exempt from CAM for SO2 monitoring. This emissions unit is subject to 40 CFR 63 Subpart MM; therefore, it is exempt from CAM for particulate monitoring.

Molten Sulfur storage and handling facility (Emissions Unit No. 007):

Molten sulfur is transferred from rail tank cars to a 55,000-gallon storage tank via an enclosed piping system. The surface below the rail cars is paved and bermed to capture any potential spills. All emissions are fugitive in nature and are associated with spills.

CAM is not applicable to this emissions unit.

Biological Effluent Treatment System (Emissions Unit No. 010):

The effluent from 1) the spent scrubber media from the Vent Gas Scrubber, 2) the water stream from the methanol Direct Contract Condenser at the Vent Gas Scrubber, and 3) the liquid effluent from the pre-condenser and the main condenser at the Evaporator Vents Methanol Condenser System are combined with other mill effluent and treated in a primary, open clarifier and the aerated stabilization basin (biological treatment system). The biological treatment removes the methanol from the effluent via bacterial digestion.

Evaporator Vents Methanol Condenser System (Emissions Unit No. 021):

The steam that is used to eject the vent gases from the two trains of multiple effect evaporators dedicated to increasing the solids concentration of red liquor, along with the evaporator vent gases themselves, are piped to a pre-condenser which condenses the steam followed by the main condenser which condenses the methanol.

In addition, a third multiple effect evaporator train consisting of three (3) refurbished existing evaporators bodies, authorized to be installed under Construction Permit No. 0890004-018-AC, shall be used to increase the solids concentration of weak Hot Caustic Extract (the spent solution from the pulp washed after the Hot Caustic Extraction stage which is sold to Kraft mills for its sodium content and energy value). This third MEE train is also vented to the pre-condenser followed by the main condenser and the multi-stage wet scrubber/Brinks Demister at the Recovery boiler (Emissions Unit No. 006) before being vented to the atmosphere.

The water used to condense the steam and methanol in the two condensers is reclaimed from the biological effluent treatment system after the methanol has been digested. The condensate formed in the pre-condenser and the main condenser is sewered to the biological effluent treatment system via the Number 3 Pump Station for compliance with the 40 CFR 63 Subpart S requirements. The non-condensible gases from the main condenser are sent to the multi-stage wet scrubber/Brinks Demister at the Recovery boiler (Emissions Unit No. 006) before being vented to the atmosphere.