

## **New Updates to Chapter 4 of BLRBACs Safe Firing of Black Liquor Document**

### *4.10 Refractometer Calibration Standardization (Zero Offset) to Off-Line Test*

A Refractometer Standardization (“zero shifting” or “bias adjustment”) is an adjustment of the refractometer calibration curve to an off-line test to account for un-dissolved solids and/or changes in the black liquor chemistry. This is normally performed while the instrument is actively measuring black liquor solids.

All refractometers shall be verified against a reliable periodic off-line test. (See Chapter 6

– Off-Line Black Liquor Solids Measurement)

The refractometers shall be standardized:

1. On initial start-up of the recovery boiler.
2. At any time it is felt or known that one of the refractometers may be deviating from the known black liquor solids content.
3. Any time there is a 2% or greater difference between refractometers.

The reading of the refractometers shall be checked against the moisture analyzer or microwave analyzer at two hour intervals (8 hour intervals if firing above 70% solids), and the moisture analyzer or microwave analyzer shall be checked by the TAPPI Standard Method, T650-om-05, weekly.

All refractometer standardization changes shall be entered in the recovery boiler “log book.”

### *4.11 Refractometer Calibration*

A Refractometer Calibration involves placing two or more “samples” onto the sensor to generate a refractive index vs. dissolved solids curve. This is typically performed utilizing calibration oils or electronically (depending on supplier) in a controlled environment, while the sensing head is off of the process line.

Calibration procedures shall be done in a manner that does not affect the system’s ability to automatically perform a black liquor diversion utilizing the remaining (active) in-service refractometer. Improper procedures, or those that defeat the monitoring system described in Chapter 4, can result in the system failing in an unsafe condition. Refer to the manufacturer’s appropriate procedures

If the continuous solids monitor refractometer differs from the off-line test field measurement by

2% or greater on an absolute basis, the off-line test results must be confirmed and then if required the continuous monitor refractometer should be standardized and/or recalibrated according to the manufacturer’s recommended procedures. Repeated errors may indicate a failure of a refractometer component. Refer to the manufacturer’s recommendations for repair or replacement.