| Black Liquor Recovery Boiler Advisory Committee BLRB | Classification | Meeting Date | Incident # |
|---|---|---|---|
| Recovery Boiler Incident Questionnaire | Form Rev. October 9, 2017 | | |
| ["Click" on 1st **gray text** below to enter data; please use "Tab" to jump to next entry field, or "Click" on the next **gray text;** Please read the heading of the fill-in; Fill in Additional Sections as Required]. Detailed Instructions | Double-click to open file: Instructions for ESP Incident Fill-in Ques | | |

**Email completed form to Dean Clay, ESP Secretary, @ dclay@bsimail.com or dclayesp@gmail.com**

**SECTION 1**

| | | |
|---|---|---|
| **Power & Recovery Manager:** Click here to enter text. | **Phone:** Click here to enter text. | **Email:** Click here to enter text. |
| **Prepared By and Date:** Click here to enter text. | **Phone:** Click here to enter text. | **Email:** Click here to enter text. |
| **Supplier of Component with Leak:** Click here to enter text. | **Year Leak Component Installed:** Click here to enter text. | **Form reviewed with mill personnel:** Choose an item. |
| **Number of Spouts:** Click here to enter text. | **When was unit last waterside chemical cleaning:** Click here to enter text. | **Was Economizer included in last chemical clean:** Choose an item. |

**Incident Summary Information,** please complete all the entry fields.

**Choose an item.**

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| **Classification:** | By ESP Subcommittee |
| **Co, Mill, Location:** | Click here to enter text. |
| **Unit Data:** | RB#Click here to enter text.,Click here to enter text., Click here to enter text., Click here to enter text., Drums - Choose an item., DCE - Choose an item., Floor - Choose an item. |
| **Unit Size:** | Click here to enter text. MMlb DS/day, Click here to enter text. lb/hr steam, Click here to enter text. PSIG, Click here to enter text.ºF, Click here to enter text. PSIG Design |
| **Incident Date/Time:** | Click here to enter a date., Earliest Indication: Click or tap to enter a date. at Click or tap here to enter text. |
| **Downtime hrs, leak/total:** | Click here to enter text. |
| **ESP?** | Choose an item. |
| **Leak/Incident Loc:** | Choose an item., Click here to enter text. |
| **How discovered:** | Choose an item., Click here to enter text. |
| **Wash adjacent tube:** | Choose an item. |
| **Root cause:** | Choose an item., Click here to enter text. |
| **Leak detection:** | Choose an item. |
| **Bed cooling enhanc** | Choose an item. |
| **Last full inspection:** | Click here to enter a date. |
| **Sequence of events:** | **Skip, Please Provide a Detailed Sequence of Events in Section 2.A** |
| **Repair procedure:** | Click or tap here to enter text. |
| **Future prevention:** | Click or tap here to enter text. |

**SECTION 2**

**A. Sequence of Events**, *This should be completed for all incidents, including dissolving tank explosions and smelt spout leaks. Thoroughly describe all events leading up to, during, and following the occurrence. State day and time of first indication of a leak. Include observations, procedures used, times, flows, pressures, bed temperatures, waste streams entering the furnace, water level and pressure vs. time following ESP, etc. Please be clear when the decision to ESP was made and when the ESP was initiated. If no ESP, please clearly state date and time when the unit was shut down:*

Click here to enter text.

**B. Detailed Description of Failure.** *Include root cause (or possible root causes) discussion, include lab analysis results if available. Describe conditions that contributed to leak (e.g., cause of leak –physical,*

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| *corrosion, scale, faulty weld, water wash, etc.): If weld defect, what kind? (lack of penetration, lack of fusion, undercut, porosity, etc.):*<br>Click here to enter text. |
| **C. Any Similar Tube Failures in Previous Years:** Choose an item.<br>**If YES, please provide details:** Click here to enter text. |
| **D. Additional Comments on the Incident:** Click here to enter text. |

**SECTION 3.A - Operating Conditions at time of Incident (Complete for ALL incidents, unless leak was found on a hydro)**

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|---|---|---|
| **Approximate unit load, %:** Click here to enter text. | **Steam Flow at time of incident, lb/hr:** Click here to enter text. | **Fuels being fired at the time:** Choose an item. |
| **Black liquor solids firing rate, lb/hr:** Click here to enter text. | **Height of char bed at the time of incident (above bottom of primary airports), ft.:** Click here to enter text. | **To what extent was smelt running?:** Click here to enter text. |
| **$O_2$, Combustibles (CO & TRS), preceding, during & following incident (attach charts in Section 11 if available):** Click here to enter text. | **Number liquor guns in Service/Idle:** Click here to enter text. | **Liquor, % solids at guns at time of Incident:** Click here to enter text. |
| **Liquor, Pressure at Guns, psig:** Click here to enter text. | **Liquor, Temperature at Guns, $^oF$:** Click here to enter text. | |
| **Is liquor firing system in accordance with BLRBAC recommendations:** Choose an item.<br>**If NO, please describe differences:** Click here to enter text. | | |
| **Any side streams added to liquor:** Choose an item.<br>**If YES, describe source, amounts, how added, where added, etc., (Include spent acid, salt cake-H2O slurry, other liquors, etc.):** Click here to enter text. | | |

**SECTION 3.B – Liquor Solids Determination Method (Complete if incident may have been caused or influenced by liquor system conditions)**

| | | |
|---|---|---|
| **Continuous recorder reading:** Choose an item. | **Type of instrument-meter, refractometer, etc.:** Click here to enter text. | **Instrument manufacturer and model:** Click here to enter text. |
| **Number of meters/ refractometers, location, series or parallel:** Click here to enter text. | **Time since instrument last calibrated, days:** Click here to enter text. | **Low solids alarm at ?% solids:** Click here to enter text. |
| **Low solids trip at ?% solids:** Click here to enter text. | **Auto block and divert valves:** Choose an item. | **Liquor fuel pump shutdown on Liquor Trip:** Choose an item. |
| **Direct Contact Evaporator Dilution:** Choose an item. | | |

**SECTION 4 - Auxiliary Fuel Conditions at Time of Incident (Complete if Auxiliary Fuel is being fired at time of the incident):**

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|---|---|---|
| **Auxiliary Fuel Type:** Choose an item.<br>**If have 2nd Fuel:** Choose an item. | **Igniter Type:** Choose an item.<br>**Fuel:** Choose an item. | **Number of Burners in Service Below Liquor Guns/Above Liquor Guns (Load Burner):** Click here to enter text. |
| **Number of Burners Idle Below Liquor Guns/Above Liquor Guns (Load Burner):** Click here to enter text. | **Main Flame Monitored with Scanner, for burners Below Liquor Guns:** Choose an item. | **Main Flame Monitored with Scanner, for burners Above Liquor Guns:** Choose an item. |

**SECTION 5 – Leak Detection System (Complete if there is a Leak Detection System installed at the time of the Incident)**

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|---|---|---|
| **Type of System:** Choose an item. | **System Manufacturer, or Note if** | **When was system installed:** |

| | | |
|---|---|---|
| **If Combined System, Select 2nd Type:** Choose an item. | **Mill Design:** Click here to enter text. | Click here to enter text. |
| **Was System in Operation at Time of Incident:** Choose an item. | **Did System Provide Initial Detection of, or Confirm, Leak:** Choose an item. | **System Performance Comments:** Click here to enter text. |

**SECTION 6 –Enhanced Bed Cooling (Complete if Bed Cooling Enhancement was used)**

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|---|---|---|
| **Explain the Method and Medium Used:** Click here to enter text. | **Application By:** Click here to enter text. | **Time Delay After ESP/Fire Out to Start of Application:** Click here to enter text. |
| **Charbed Height Above Bottom of Primary Air Ports at Start of Application:** Click here to enter text. | **Total Time of Application:** Click here to enter text. | **Quantity of Medium Used:** Click here to enter text. |
| **Time Savings Credited to Cooling:** Click here to enter text. | **Bed Temperature at Completion of Cooling:** Click here to enter text.<br>**How was Bed Temperature Measured:** Click here to enter text. | **Additional Observations/Comments:** Click here to enter text. |

**SECTION 7 – Smelt Spout Incident (Complete if a smelt spout problem was involved)**

| | | |
|---|---|---|
| **Number of Spouts:** Click here to enter text.<br>**Location of Spouts:** Click here to enter text. | **Spout Type:** Choose an item. | **Spout Trough Material:** Choose an item. |
| **Design of Water Cooling System:** Choose an item. | **Source of Cooling Water, Type of Chemical Treatment:** Click here to enter text. | **Water Flow Rate per Spout, GPM:** Click here to enter text.<br>**Low Water Flow Alarm Setting, GPM:** Click here to enter text. |
| **Water Temperature, Inlet/Outlet °F:** Click here to enter text.<br>**High Outlet Water Temperature Alarm Setting °F:** Click here to enter text. | **Any Valve on Outlet Water Side of Spout:** Choose an item. | **How Often are Spouts Changed:** Click here to enter text.<br>**How Long Was Spout in Service:** Click here to enter text. |
| **Any History of Spout Leaks:** Choose an item.<br>**If YES, please explain:** Click here to enter text. | | |

**SECTION 8 – Post ESP Review and Inspection (Complete if ESP was Activated)**

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|---|---|---|
| **Was Recovery Boiler Area Evacuated:** Choose an item.<br>**What is Length of Evacuation per Your Policy, hrs:** Click here to enter text. | **Can Your Policy Evacuation Length Be Changed During the ESP:** Choose an item.<br>**Comments:** Click here to enter text. | **Did you Measure Elevation of Water Remaining in Furnace Tubes After ESP:** Choose an item.<br>**If YES, What Was Elevation, and How Measured:** Click here to enter text. |
| **Did All ESP System Functions Complete per Design:** Choose an item.<br>**If NO, Describe Issues and Corrective Actions Taken:** Click here to enter text. | | |
| **Did you Review Floor Tube Thermocouple Data:** Choose an item.<br>**Please Include Thermocouple Information in Section 11** | **Did you inspect the lower furnace after ESP, before refiring:** Choose an item.<br>**If YES, Findings:** Click here to enter text. | |
| **Has any Damage been noted Following ESP which Could be Attributed to the ESP:** Choose an item.<br>**If YES, please describe damage, and Why you Believe it was Caused by ESP:** Click here to enter text. | | |

**If there was an Explosion, with damage to either the Recovery Boiler or to the Dissolving Tank, please "Double-Click" on an icon below and complete the section; please submit it with your report.**

Sect 9 RB Explosion.docx

**SECTION 9 – Recovery Boiler Explosion**

Sect 10 DT Explosion.docx

**SECTION 10 – Dissolving Tank Explosion**

**SECTION 11 – Please, "Insert" boiler sideview with leak location arrow(s), photos of leak, photos of repairs, charts, graphs, lab reports, etc., starting below, use as many pages as needed:**