I. POLICY/SCOPE

It is the policy of Quinnesec Mill that fire protection systems will be maintained in a state of readiness, and that priority will be given to minimize all potentials for serious fire due to inoperable or impaired equipment.

II. INTENT/PURPOSE

The intent of the fire system impairment policy is to establish procedures to be followed whenever a fire protection system or equipment is taken out of service (impairment) for maintenance, repairs, additions or alterations. This will ensure that all systems are returned to a fully operational status as soon as practical, work is completed in a timely manner, and appropriate precautions taken to minimize potential for significant property damage or serious injuries.

III. DEFINITIONS

Accelerator: A mechanical device provided on a dry pipe system to reduce the amount of time it takes water to flood the system after a sprinkler head opens.

Drip Drum: Low point drain on dry pipe system that is essential to maintaining integrity of the system – allows condensate to be trapped to prevent piping freeze-up, and subsequent impairment.

Dry Pipe System: A fire system that is normally charged with air to prevent freeze-up, typically in unheated applications (i.e. Woodyard, 40 Warehouse, and R&U.).

Flow Test (after impairment): A test to verify there is water flow after the closing and opening of a fire system control valve. Required each time a fire control valve is operated.

Impairment: Any time a fixed fire system or associated equipment is taken out of service.

Impairment Coordinator: The Fire System Specialist and Plant Protection work together to fulfill the requirements of this role.

Main Drain Test: A water flow test at the primary drain connection located on the system riser for the purposes of testing whether there is a major obstruction or dangerously reduced

water supply and verification of time required to return to normal pressure after closure of the valve.

Pre-Action System: A fire system that requires both release of air pressure and release by a detection system in order to operate, typically in high vibration or high impact areas. This includes fire systems #6 in Bldg 212 building, #8A in Bldg 221 and #5C in Bldg 163.

Impairment notification: A notification system provided by IF insurance (property insurance carrier) that is uniquely used for management of fire system impairments. See Attachment B.

Riser Valves: Valves provided to isolate individual fire systems.

Sectional Valves: Valves provided to isolate segments of the underground fire system. Closure of these valves reduces or eliminates flow available for fire protection.

IV. PROCEDURES/PRACTICES

A. The following types of fire protection systems or equipment are covered by these practices:

- Fire System Water Control Valves
  - Sectional valves
  - Fire system riser valves (both sprinkler and hose stations supply)
  - Smaller interior system valves (PM 3rd floor, R&U ash Hoppers, 41 mezz.)
- Fire Pump System (Electric and Diesel)
  - Electrical Pump Power Supply
  - Diesel Fuel Supply
  - Fire System Pressure Sensing Lines
  - Controllers
  - Batteries – Diesel Pump
  - Coolant Systems – Diesel Pump
  - Jockey Pumps
- Fire System Control Devices
  - Fire System Alarm Devices (waterflow/pressure switches)
  - Dry System Accelerator Devices (found on some dry pipe systems)
  - Fire Protection Control Systems (i.e. Protectowire – Woodyard)
  - Drip drum or drain valves
  - Valves controlling water/air supply to alarm devices

- Fire Hydrants
- Gas Extinguishing Systems - FM 200

B. Smoke or Fire Detection Systems for MCC's, Cable Trays and other critical applications (refer to Health and Safety)General Practice

1. All fire protection system water control valves that are locked will be under the exclusive control of Plant Protection personnel and the Fire System Specialist as directed by Health and Safety.

2. Fire protection impairments will be corrected on a priority basis.

3. Whenever possible, plan fire protection system and equipment impairments in advance to allow appropriate planning and alternative options to be evaluated. The following must be done to minimize the duration and extent of an impairment:
   - Ensure pre-approval of piping or system modifications with approval by Health and Safety, and Factory Mutual
   - Planned work done during non-operating periods, if possible
   - Shut down hazardous operations (i.e. hot work)
   - Reduce area of impaired protection by alternate arrangements
   - Ensure that required equipment, materials and personnel are available prior to taking a system out of service
   - Pre-fabricate replacement/repair materials, to the extent possible

4. Plant Protection, under the direction of Health and Safety, will evaluate the need for impairment and assist in determining the precautions needed for temporary protection, such as, but not limited to:
   - supplemental water supplies (hose streams charged)
   - additional fire extinguishers
   - additional fire prevention practices
   - staging mobile equipment
   - additional operator/Plant Protection rounds
   - relocation of combustibles

5. All efforts will be made to restore protection during the shift that the impairment is initiated. In the event the impairment extends beyond the original shift, Plant Protection will send an e-mail to DL-Fire and the Department Manager advising them of the status and estimated time for restoration of protection.

6. IMPORTANT NOTES:

NOTE A:
Only hot work that is absolutely necessary will be allowed until the system is restored to service.
While the fire system is impaired, all hot work in the affected area will be required to have a hot work permit and will maintain a fire watch. This work will be treated as a high hazard area with additional extinguishers or charged hose lines available and additional fire watch personnel as required in the 'High Hazard' section of the mill's Hot Work Policy. *Prior to beginning hot work, contact Plant Protection for verification of fire system operation or impairment and receive your verification number.*

NOTE B:
When Riser #3 or sectional valves interrupting the flow of water to Riser #3, the R&U Control Room must be notified as to the status of the recovery boiler emergency back-up water.

C. Planned Fire System Impairment Procedures

1. Water Supply Valves

   a. **Planned impairments to fire system water supply valves will be managed according to the procedures found in Attachment A**, with Plant Protection officers having primary responsibility for compliance.

   b. Operations, maintenance and contract personnel will adhere and follow the procedures in Attachment A, including support and interaction with Plant Protection to assure proper management of impairments.

2. Other Than Water Supply Valves

   Impairments to other fire protection equipment will be managed per the procedures outlined in Attachment A, although all steps listed may not apply. A Impairment Notification will be completed, at a minimum. Discussion will occur between Plant Protection and affected areas. IF Insureance will be notified, precautions taken, and actions documented.

D. Emergency Impairments

1. **Plant Protection has the authority to isolate or shut down a fire protection system to limit damage when an emergency situation exists.** Notification and communication to operations, maintenance and FM Global will occur after action has been taken.

2. Restoration of protection will be according to procedures outlined in Attachment A.

E. Lockout and Line Breaking Considerations

1. The Fire System tag used is the Quinnesec Mill recognized zero energy state (ZES) control (as part of the impairment procedure). A tagout process is used in lieu of placing individual or group locks on a closed fire protection water supply valve. The Fire System tag also serves as the control for line breaking practices that occur during fire system repair and maintenance. See Attachment B.

2. The use of Fire System tags for lockout is limited to specific situations, as follows:
   - The line breaking work that is being conducted occurs on piping, valves or other related components located downstream of the red tagged valve, and
   - No backup or secondary fire protection system is provided

3. The Fire System tags is not an acceptable form of energy isolation for other fire protection apparatus/energy sources, such as isolation of an electric motor on an electric fire pump, or rebuild of a fire pump when a second pump is available.

4. The Quinnesec Mill Line Breaking Permit does not apply to fire system line breaking. Verification of energy isolation is achieved by drainage and visual verification (gauges, flow) of pressure release. Other aspects of the mill line breaking policy will be adhered to.

5. Clarifications for lockout and line breaking practices not identified here should be referred to Health and Safety.

F. Record Retention

1. All completed impairment tags and documentation must be retained for insurance company engineer review.

2. Documentation will be maintained by Plant Protection.

G. Training

1. Maintenance and mill engineering personnel will review this policy and procedures on an annual basis.

V. RESPONSIBILITIES

A. Plant Protection is responsible for fire system control and managing fire protection impairments, implementation and distribution of the Fire System tag, and recordkeeping and notification under the direction of Health and Safety.

B. Operating departments are responsible for assuring that appropriate precautions are taken in the event that a sprinkler system or other fire protection system is impaired in their area.

C. Maintenance, engineers and contractors are responsible for assuring that prior planning is conducted before requesting any isolation of a fire protection system during non-emergency conditions. This includes reviewing the work in advance with Plant Protection and Health and Safety.

D. Operations and maintenance departments are responsible for providing appropriate resources to ensure that fire systems are restored to full service as soon as practical when an impairment occurs.

E. Health and Safety has overall responsibility for managing and directing impairments on the fire protection systems.

Attachment A
Fire Protection Impairment Procedures

System or Valve Closure: Contact Plant Protection/Security when a fire system valve is requested to be closed. (Ext. 3299). Plant Protection will do the following:

1. Prepare a Fire System tag with the appropriate system, location and personnel information (Attachment B)
2. Contact the Area Production Shift Manager and/or Operations Maintenance Coordinator to review current area status (especially any hot work permits issued) and discuss precaution measures. If a hot work permit has been issued, make sure that hot work is discontinued, unless emergency conditions warrant.
    - When Riser #3 (recovery boiler emergency back-up water) or sectional valves interrupting the flow of water to Riser #3 require closure, the R&U Control Room must be notified.
3. Contact the individual/supervisor who will be conducting work on the fire system or equipment to be taken out of service. **Plant Protection and the individual/supervisor conducting or overseeing the work must meet at the control valve location when the closure occurs**.
4. Unlock the system and close the valve. Count the number of turns to close the valve, and document by contacting the Plant Protection office. Do not lock the valve closed.
5. Open drain(s) or hydrants on system and verify that pressure has been isolated.
6. Attach the fire protection "OUT OF SERVICE TAG" on the valve that was closed if it will be out of service for more that 24 hours. **Ensure that there is a discussion between Plant Protection and the individual/supervisor performing work on the responsibilities for immediate notification in the event of emergency, the tag as the lockout device, and notification upon completion of work**.
7. Notify the Area Production Shift Manager and/or Operations Maintenance Coordinator as to the system closure and remind them of the following:
    - Hot work not allowed unless previously authorized or emergency dictates
    - No smoking allowed in area
    - Additional rounds/awareness for fire watch
8. Fill out the IF Impairment form. Email completed form to IF, Fire system coordinator and DL Security. The form is to be completed and emailed when the system is taken out of service and restored.
9. Hang a fire system/yellow caution tag on the mill fire systems map. Tag to include location, equipment number, reason and estimated duration
10. Document closure In the Valve Closure Book , the Fire System Log Book and Plant Protection Log Book.

Attachment A
Fire Protection Impairment Procedures

Reopening Valve/Restore to Service: Contact Plant Protection immediately after work is completed and the valve is ready to be opened. Plant Protection will do the following:

1. Verify that all system piping and components are in place.
2. Close any drains or hydrants as needed to allow system to be returned to service.
3. Reopen the valve, counting the number of turns to reopen and call in to main gate, asking for verification.
4. Place fire protection chain and lock on valve, locking it in the OPEN position
5. Conduct 2 in. main drain test to verify valve position
6. Remove the fire protection "OUT OF SERVICE TAG" (page 3) on the valve that was closed and return it to the Plant Protection office for completion, then to Safety Supervisor.
7. Notify the Area Production Shift Manager and/or Operations Maintenance Coordinator as to the system status.
8. Notify Factory Mutual Insurance by phone (800) 411-3929 as to the system status. Be prepared to give the following information:
    - Factory Mutual Index No. 59797.00
    - Building involved
    - System Number and that the system has restored and is locked in the open position.
9. Remove Red Tag (page 2) from fire protection status board, complete the tag and give to Security Supervisor.
10. Document system status in the Valve Closure Book and System Log book.

Attachment B
Impairment notification

Impairment notification

Precautions when fire protection systems are impaired.

Client	Plant
Billerud	(Area of Mill Where Impairment Occurring)
Location	**Country**
Escanaba, Michigan	United States
Local contact person	
Dan Poupore or Ryan Stoken	
E-mail	**Telephone**
dan.poupore@billerud.com or ryan.stoken@billerud.com	1-906-786-1660 x2676

Please send the Impairment notification by e-mail to impairments@if.se

Important information

According to If's Insurance Conditions, impairments shall be handled as follows:

- Impairments less than 24 hours: Shall adhere to the below listed actions and be notified locally.
- Impairments more than 24 hours: Shall additionally be communicated to If P&C in advance.

Affected system:

○ Automatic Sprinkler System ○ Automatic Fire Detection System ○ Other system

Affected area and the main operation in this area	Riser #, Fire Valve #, and Area of Mill impacted by impairment						
Reason for impairment (Maintenance, testing, repair, frozen pipes or fittings, construction etc.)	Why you shut it down						
Duration of impairment	**Start**	Year:		Month:		Day:	From time:
	End	Year:		Month:		Day:	To time:

Prior to ALL types of impairments, following precautions shall be carried out:	**YES**	**NO**
1. Planning and preparation done to minimise the impairment period?	✓	
2. The extent of the work limited by using blinders and blanks?		
3. External notification to the public fire department and/or guard company?		✓
4. Internal notification to involved area manager(s) and staff?	✓	
5. Hot work specially permitted and controlled in the affected area/fire compartment?	✓	
6. Smoking strictly prohibited in the affected area (even if normally allowed)?	✓	
7. Other installed fire protection systems checked and found in full working order?	✓	
8. Adequate type and amount of fire extinguishers/water supply fully accessible and prepared?	✓	
9. Enforced fire watch or similar surveillance service provided during the period?	✓	
10. Necessary valves/closing devices fitted with clear notification tags (i.e. "out of order")?	✓	

Prior to impairments, with duration MORE THAN 24 HOURS:

11. Notification to If P&C Insurance (this form) by e-mail ○
12. Notification to the insurance broker (if applicable) ○

Verify that all impaired systems are restored from:

Restoration Date (dd/mm/yy) Back in Service Date & Time Time:

Comments: Any special notes about impairment- fully repaired, partially repaired, lines removed, etc

Notified by (client/employee):	Date of notification: