BILLERUD

MAINTENANCE E & I

Subject: Jumper, Force & NOP Procedure		Doc ID: #27696	Page 1 of 8
Effective: 7/6/15	Document Owner: Safety Manager	Approved By: Quinnesec E&I Supervision	

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Purpose:
The purpose of this policy is to establish a uniform method of installing, recording, tracking and removal of the suppression of equipment safety interlocks or devices for Verso Paper Corp. (The word jumper will be used for brevity)

Scope:
This policy applies to all Verso Paper Corporation manufacturing locations. Each location may customize the policy for the purpose of administration but the key elements must exist in each location's version. The policy can be found under Safety Policies or under Maintenance Tab on Qu-Net.

Definitions:

- Jumper: A general term which includes the following methods of suppressing an interlock or device: A piece of wire, a piece of tubing, closing an instrument isolation valve, a software modification including "forces", temporary logic changes (NOP/AFI), or other means to temporarily modify the functionality of a control system to achieve a desired output.
    1. NOP – NO-Operation, a special command available in the Allen-Bradley series of PLCs (PLC3, 5, Control Logix) that means logic change. This command is used to mark a rung that has had temporary logic changes so that it can be found with a simple search**.** This is typically used in branch jumpers**.**
    2. AFI **–** Always False Instruction, a special instruction that is always false and can therefore be used to prevent logic from becoming true.
    3. Force – a special command in the PLC used to change the state of a hardwired input or Output. This method is not recommended as it can be globally turned off by disabling forces and is harder to track than AFI and NOP commands
    4. Temporary DCS logic modification applied to satisfy a desired condition
- Operation Department Management or qualified designee: (Acting Team Leaders, Operational Coordinators, Department Manager or Business Unit Manager.): Person(s) who have been designated by the operating department as having the process knowledge and responsibility to authorize the installation of a jumper. This person is responsible for recording, tracking and communicating special equipment or safety precautions associated with the installation and removal of jumpers.
- Skilled Person: A person who has the skills and knowledge necessary to install and remove a jumper ***and has been certified on this policy***. These persons may include: electricians, instrument technicians, process control engineers and contracted engineering.
- Jumper Bypass Database("Mill-Wide Electronic Database designed to track all activity associated with application, reporting and removal of "Jumpers") The Database is located on QuNet on the Web Application Tab and provides the following features:
    1. A user friendly program that includes all pertinent information needed to support jumper installation and removal. It also consists of drop down selections loaded with all Process Areas, PLC/DCS Systems, and has Automatic Notification of **DEPARTMENT MANAGER APPROVAL REQUIREMENTS** for covered processors.
    2. Report generation for printing a Control Room Field Copy of individual "Jumper's Installed and Removed"

3. Program has a reporting feature that provides filters for managing "Jumpers" specific to Process Areas.

- Compliance to Process Safety Management applies when jumpers are to be used with PSM Equipment. "MOC" and proper approval process.

Rules:

1. The jumper policy is mandatory for any jumper that will remain in place after completion of troubleshooting or diagnostic work performed by the skilled person.
2. Commissioning of new process equipment is not covered by this policy. Jumpers used during this process need to be tracked by the project manager. Once commissioned any jumpers remaining will follow this jumper policy.
3. Each mill will maintain a list of all interlocks that they deem necessary requiring an area manager's approval prior to applying the jumper. (See Attachment "A")
    a. Only operation department management (or their qualified designee) can authorize a jumper. This person must sign the Jumper, Force & NOP Report [If the jumper involves a PSM system, the operating department management must also follow the Management of Change Policy]
4. An entry into the Jumper Bypass Database must be inputted to track each device that is jumpered. (See Attachment "B")
5. Operation department management (or their qualified designee) shall advise the operator(s) of any special precautions related to the jumper and record these in a shift log or similar method prior to shift change.
6. Only a skilled person can install the jumper.
7. An Energized Electrical Work Permit is required when installing hard wire jumpers to energized equipment.
8. Hardwired Jumpers/Tubing is to be used as a last resort only. Whenever possible software jumpers will be used.
9. The Control Room Copy shall be posted in a designated location near the CRO that a jumper has been installed and a description of what has been jumpered.
10. The existence of the jumper shall be recorded in SAP PM as a Work Order. The description of the work order will begin with JMP to allow search capability. (Shift E&I will update the order electronically or add a note on the hard copy of the order for the MDA(Rose) to update)
    a. Weekly Searches of the PLC programs for jumpers will be conducted by the area E&I technicians. Any undocumented jumpers will be immediately communicated to the area and removed or documented as needed. This process will reconcile the PLC, Jumper Bypass Database and the Control Room Board for accuracy.
    b. Weekly searches of the DCS systems (Foxboro, Taylor/ABB...) for jumpers will be conducted by the area controls engineer. Any undocumented jumpers will be immediately communicated to the area and removed or documented as needed. This process will reconcile the PLC, Jumper Bypass Database and the Control Room Board for accuracy.
11. The jumper shall be removed as soon as practical. In general the maximum time allowed for a jumper to remain in place shall be no longer than the next scheduled outage of the equipment. Seasonal jumpers are considered exempt from this requirement; but will still require a communication plan when they are installed and removed.

12. When the necessary repairs have been completed the skilled person shall consult with operation department management (or their designee) and request approval to remove the jumper.
13. The Jumper Bypass Database will be updated with Removal information and then the Jumper can be removed.
14. The Removal Report is then attached to the Control Room Copy and delivered to the Area E&I Maintenance Supervisor for storage. File copies will be retained for 2 years.
15. Operation department management shall advise the operator(s) that the jumper has been removed and update the shift log.
16. All "Skilled Persons" will maintain their understanding of this policy. Each person is required to read and understand this policy on an annual basis. The completion will be tracked using the Verso Learning Center.
17. Operating department management and qualified designee's shall maintain their understanding of this policy. Each person is required to read and understand this policy on an annual basis. The completion will be tracked using the Verso Learning Center.

Sample: Install Jumper: See Flow Chart Attachment "C"

Determination of need:
If it is determined that a jumper must be installed and it will need to remain in place after the completion of troubleshooting or diagnostic activities by the skilled person then the following procedure must be followed.

Safety and Operational Review:
The skilled person together with operation department management (or their qualified designee) shall consult with each other to determine:

1. If department manager authorization is required to apply the jumper?
    a. Equipment is listed in attachment "A"
    b. If the risk associated with bypassing the interlock could create an unsafe working condition?
    c. If the risk associated with bypassing the interlock could result in equipment damage?
2. Any safety precautions necessary while the jumper is in place?
3. Any special operating precautions required?
4. The estimated duration the jumper will be in place?

Communication with the Operator(s)
Operation department management (or their qualified designee) shall inform the operator(s) of the installation of the jumper and any special precautions necessary. The existence of the jumper and the precautions shall be entered into a log or similar method so that other operators have the information.

Prior to Installing the Jumper:
An entry into the Jumper Bypass Database must be inputted to track each device that is jumpered, the install report printed and signed by the Skilled Person and Operations Department Management.

Installing the Jumper:
The jumper shall be installed by a skilled person.

Posting the Control Room Jumper Report:
The CRO will post in the designated location.
Removal of the Jumper: **See Flow Chart Attachment "D"**
After the necessary repairs are completed:

1. The skilled person shall consult with operation department management (or their qualified designee) and receive approval to remove the jumper
2. An entry is then made into the Jumper Bypass Database with Removal information which accounts for proper authorization to remove the jumper.
3. The skilled person removes the jumper
4. Once the jumper has been removed the Removal Report is printed and attached to the Control Room Copy and delivered to the Area E&I Maintenance Supervisor..
5. E&I will then add closing comments to the work order for completion.
6. Operation department management shall advise the operator(s) that the jumper has been removed and update the shift log.

Attachment "A"

Items Requiring <u>Business Unit Manager Approval</u> to Jumper, Force or NOP;

The following represents types of examples but not an all-inclusive list of the items that require department head approval:

All Flame Safety (Burner Management) PLC's and associated loops

Recovery 441009260

44FT-130- Primary Air Flow on Recovery
44FT-131- Secondary Air Flow on Recovery
44FT-132- Tertiary Air Flow on Recovery
44LT-271A, B, C, D Drum levels
44PS-167- Furnace pressure low switch

WFB 221001660

22FT-101- WFB Combustion Air Flow
22LT-176A & B WFB drum levels

Package Boiler 131515089
13FT-217- Combustion air flow
13LT-102- Package Boiler drum level

All divert logic on the Recovery Boiler while burning liquor!
441052960 Black Liquor Monitor Divert System Control Panel
44DE-056- Refractometer sensing head "A"
44DT-056- Microprocessor for refractometer "A"
44ZS-056- Position switch on sensing head isolation valve
44DI-057- Transmitter Comparator for 056 & 058
44EV-057- Solenoid to actuate the divert valve
44QV-057- Firing Liquor divert valve
44DE-058- Refractometer sensing head "B"
44DT-058- Microprocessor for refractometer "B"
44ZS-058- Position switch on sensing head isolation valve
44PS-161- Furnace pressure high switch

All ESP logic on the Recovery Boiler
441009160 Recovery ESP Cabinet

Kiln Flame Safety

Tec Dryer Flame Safety

Process Safety Related Items - anything that would inhibit the "Normal" operation of CVG's, Rupture Disks, DVG's, H2S, and CLO2

Fire System Related Items - anything that would inhibit the functionality of alarms and system response to fire suppression

If the Skilled Person or Operating Department Management is unsure that bypassing equipment interlock could create an

unsafe working condition or result in equipment damage, the Business Unit Manager should be notified and brought into the decision making process.

Attachment "B"

Online Bypass/NOP Reporting System

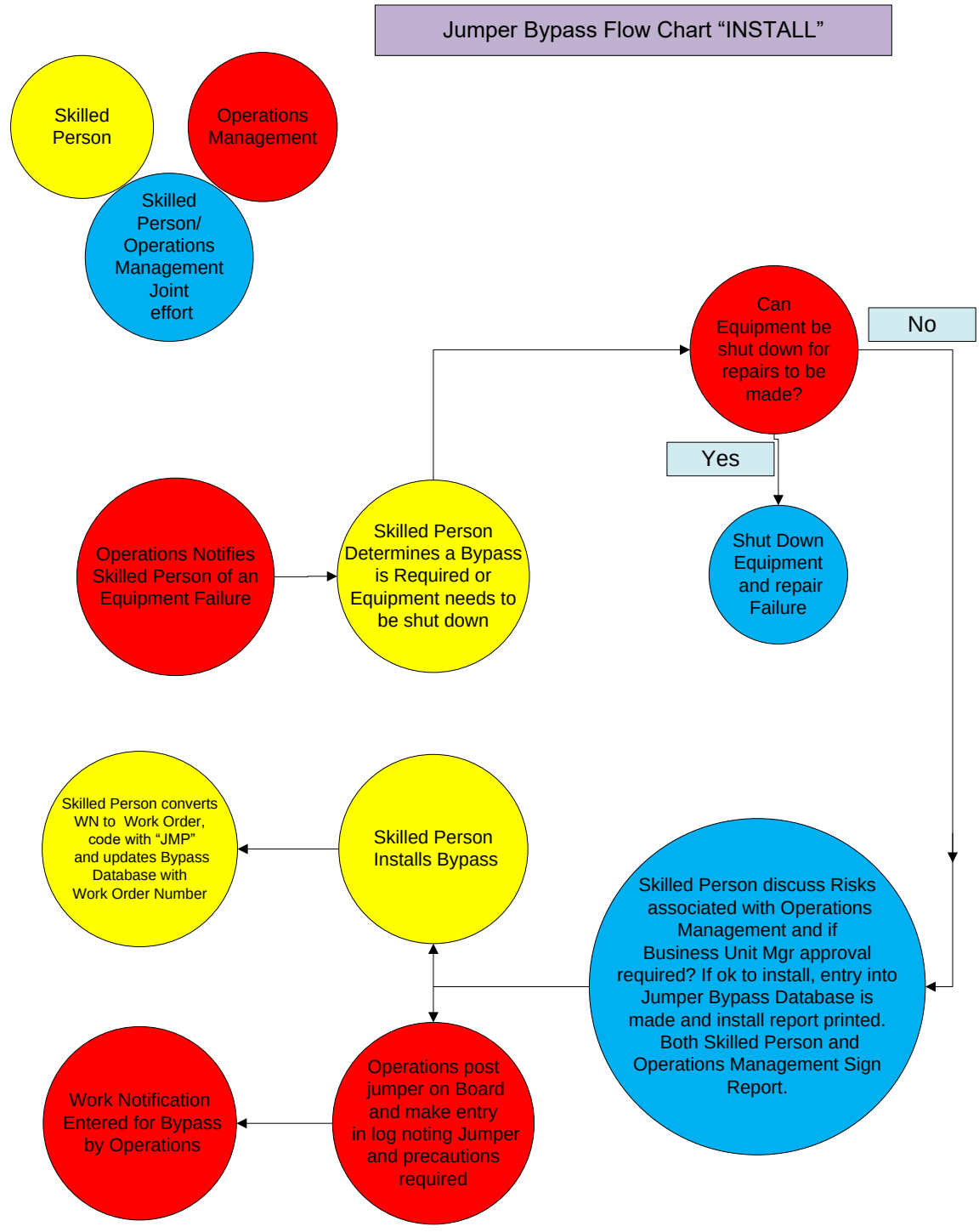
Department Manager Approval Required Prior to Installation

Jumper Bypass Report | Inserted Bypasses

Work Order:	4103########
Equipment_Number:	44SAL-###
Process_Area:	R&U - Recovery Boiler
PLC_DCS_System:	Recovery Boiler BMS Flame Safety PLC
Control_Policy_Critical_System:	Yes
Jumper_Bypass_Type:	<select one>
Bypass_Location:	Other_Info:
Reason_For_Bypass:	<select one>
Installed_By:	
Requester_Approver:	
Additional_Approver:	
Risk_Mitigation_Steps:	Reference_Drawings:

	Work Order
Select	4103607352
Select	4103600470
Select	notification 1000425612
Select	4103640633
Select	4103634350

Attachment "C"



Attachment "D"

Jumper Bypass Flow Chart "REMOVE"