

## PROCESS FAILURE MODE AND EFFECTS ANALYSIS

<b>Part or Process Name</b> CTL/ SUMTER FM001					<b>Manufactured By</b> Jemison Metals					<b>FMEA Date</b> 9/2/2011							
<b>Core Team</b> Rick Rowland, Patrick Macias, Craig Scott, David Wannamaker					<b>Prepared By:</b> Patrick Macias					<b>Revision Date/ Revision Level</b> 4/19/2024 3							
#	Process Function Requirements	Potential Failure Mode	Potential Effects of Failure	S e v	C l a s s	Potential Cause(s) Mechanism(s) of Failure	O c c	Current Process Controls	D e t	R P N	Recommended Action(s)	Responsibility & Target Date	Actions Taken	S e v	O c c	D e t	R P N
1&2	Coil Identification	Incorrect coil loaded	Mixed Steel	8	K	Operator misidentified coil	2	Tag compared to production order	1	16							
	Visual Defects	Handling Damage	Customer Reject, Sorting	3		Handling Damage	1	Visual Inspection compared to W/O requirements	1	3							
	Coil Width	Width out of Spec	Customer Reject	7		Coil Variation	3	Tape Measure check compared to W/O	1	21							
3	Shape	Edge Wave, Center Buckle, Bow	Customer Reject, Rework	8	K	Improper Leveler Set Up, Mill	3	Visual, Leveler adjustments	3	72	None, shape addressed in later Process steps						
	Surface Quality	Defects; IE Pits, Scratches, Scale, Roll Marks, Rust/Stains	Customer Reject	7		Mill, Debris in Leveler	4	Visual Inspection compared to W/O requirements	3	84	None, surface quality addressed in later Process steps						
4	Shape	Bends	Customer Reject, Sorting	6		Bottoming out in pit	1	Visual Inspection compared to W/O requirements	1	6							
	Surface Quality	Scratches	Customer Reject, Sorting	6		Scratching on pit table rollers	2	Visual Inspection compared to W/O requirements	2	24							
5	Surface Quality	Roll Marks, Scratches	Customer Reject, sorting	6	K	Debris on Feed Roll, Feed Roll Slipping	1	Visual per W/O Requirements	1	6							
	Edge Condition	Damaged edges	Customer Reject, Sorting, Rework	6		Pancakes too tight	1	Visual	1	6							
	Length	Out of tolerance per W/O equirements	Customer Reject, Sorting, Rework	6	K	Feed Roll Slipping	1	Measure with Raytech or Tape Per W/O Requirements	1	6							
	Squareness	Out of tolerance per W/O equirements	Customer Reject, Sorting, Rework	6		Strip orientation to Shear	2	Raytech, Tape Measure	1	12							
6	Length	Out of tolerance per W/O Requirements	Customer Reject, Sorting, Rework	6		Measuring roll Slipping or Failure	1	Measure with Raytech or Tape Per W/O Requirements	1	6							
7	Cut Edge Condition	Burr	Customer Reject, Sorting, Rework	6		Incorrect gap on Shear, Dull Blades	1	Visual, Micrometer measurement	1	6							
	Surface Quality	Scratches	Customer Reject, Sorting, Rework	6	K	Strip Dragging on Shear Blade, Debris in Carpet	1	Visual Inspection compared to W/O requirements	1	6							
8	Surface Quality	Scratches	Customer Reject, Sorting	6		Conveyor Speed adjusted incorrectly	1	Visual Inspection compared to W/O requirements	1	6							
	Shape	Bends	Customer Reject, Sorting	6		Conveyor Speed adjusted incorrectly	1	Visual Inspection compared to W/O requirements	1	6							

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	Material Thickness	Material outside gauge requirement	Customer Reject, Internal Sort	8	K	Mill error	2	AGT Gauger, automated with SPC	1	16							
	Material Thickness	Material outside gauge requirement	Customer Reject, Internal Sort	8	K	Planning error. Wrong coil applied to work order.	2	Gauge highlighted on W/O by planner & verified by operator	3	48	Intermediate action is listed (highlighting & verification) Long term action is a change in ERP system that will automatically flag/prevent application of the wrong coil to the part specification.	Intermediate Complete 4/3/24 Long Term Action is targeting 1/1/25 Start Date. Executive Team & IT function have responsibility.	Long term action - contract signed on new ERP system and overview training has already completed. Additional training & setup is in progress.	8	2	1	16
	Rockwell Hardness	Material out of hardness spec	Improper Formability, Customer Reject	8		Improper hardness from Mill	3	Hardness test (when required per W/O)	1	24							
9	Shape	Bends	Customer Reject, Sorting	6	K	Stacker incorrectly set up	1	Visual Inspection compared to W/O requirements	1	6							
	Surface Quality	Scratches	Customer Reject, Sorting	6	K	Air Stacker Incorrectly adjusted	1	Visual Inspection compared to W/O requirements	1	6							
10	Tag Material	Mistagged Bundles	Misidentified Bundles, Customer Reject, Retag	8		Operator misreads W/O requirement, Misidentifies Bundles	2	Tag, size and Piece count compared to W/O Requirements	2	32							
	Package Material	Mispackaged Bundle	Wrong Packaging, Rework, Customer Reject	8		Personnel misreads W/O requirements	3	Visual compare to W/O requirements	1	24							
	Bundle Weight	Misweighed bundle, Bundle tag misrepresenting Bundle actual weight	Invoice Error	3		Scale Malfunction, Operator misreads/mis-inputs scale information	3	W/O Reviewed For scrap Percentage	2	18							
										0							