

## PROCESS FAILURE MODE AND EFFECTS ANALYSIS

<b>Part or Process Name</b> SRB/ SUMTER FM002					<b>Manufactured By</b> Jemison Demsey Metals					<b>FMEA Date</b> 9/2/2011							
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#	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	Dents	Customer Reject, Sorting	6		Crane Damage	1	Visual Inspection compared to W/O requirements	1	6							
	Coil Width	Width Under Minimum	Lost trim, Customer Reject	7		Coil Variation	2	Tape Measure check compared to W/O	1	14							
3	Coil Head Stock	Coil Head Shape	Nonconforming material	7		Operator failure to crop if needed	2	Visual	1	14							
4	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	8	K	Mill, Debris in Leveler	3	Visual Inspection compared to W/O requirements	3	72	None, Surface Quality addressed in later Process steps.						
5	Material Thickness	Material outside gauge requirement	Customer Reject	8	K	Mill error	3	Gamma Gauger	1	24							
	Material Thickness	Material outside gauge requirement	Customer Reject	8	K	Incorrect data input on Gamma gauger	1	Manual Micrometer check	1	8							
	Material Thickness	Material outside gauge requirement	Customer Reject	8	K	Out of gauge condition not recognized on Gamma Gauge Report	1	Manual Micrometer check	1	8							
6	Surface Quality	Scratches	Customer Reject, Sorting	6	K	Bottoming out in pit	1	Visual Inspection compared to W/O requirements	1	6							
	Shape	Bends	Customer Reject, Sorting	6	K	Bottoming out in pit	1	Visual Inspection compared to W/O requirements	1	6							
7	Surface Quality	Gripper Dents, Bends	Customer Reject, sorting	8	K	Broken Grippers	2	Visual per W/O Requirements	1	16							
	Length	Out of tolerance per W/O Requirements	Customer Reject, Sorting, Rework	8	K	Gripper slipping, Chain/measuring blocks malfunction	1	Measure with Raytech or Tape Per W/O Requirements	2	16							
8	Strip Width	Strip out of width	Customer Reject, Rework	8	K	Incorrect Arbor Set Up, Mill	3	Measure with Raytech Per W/O Requirements	1	24							
	Edge Condition	Rough-Burred Edges	Customer Reject, Rework, Safety Issue	6		Incorrect Arbor Set Up (Improper Clearance, Knife Edge Dull/ Chipped)	4	Clearance Measurement/Knife Inspection, visual	2	48							

#	Process Function Requirements	Potential Failure Mode	Potential Effects of Failure	Severity	Class	Potential Cause(s) Mechanism(s) of Failure	Occ	Current Process Controls	Det	RPN	Recommended Action(s)	Responsibility & Target Date	Actions Taken	Sev	Occ	Det	RPN
9	Surface Quality	Scratches	Customer Reject, Sorting, Rework	6	K	Strip Dragging on Shear Blade	1	Visual Inspection compared to W/O requirements	1	6							
	Cut Edge Condition	Burr	Customer Reject, Sorting, Rework	6		Incorrect gap on Shear, Dull Blades	1	Visual, Micrometer measurement	1	6							
	Squareness	Material Outside Customer Spec	Customer Rejects, Rework	8		Feed Station Shear angle orientation	3	Raytech, Tape Measure	1	24							
10	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							
	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	Sheets dragging on sheet beneath.	1	Visual Inspection compared to W/O requirements	1	6							
11	Material Thickness	Material outside gauge requirement	Customer Reject, Internal Sort	8	K	Mill error	2	Manual Micrometer check compared to W/O requirements	1	16							
		Material outside gauge requirement	Customer Reject, Internal Sort	8	K	Operator misread micrometer	2	Manual Micrometer check compared to W/O requirements	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							
12	Tag Material	Mistagged Bundles	Misidentified Bundles, Customer Reject, Retag	8		Operator misreads W/O requirement, Misidentifies Bundles	3	Tag, size and Piece count compared to W/O Requirements	2	48							
	Package Material	Mispackaged Bundle	Wrong Packaging, Rework, Customer Reject	8		Personnel misreads W/O requirements	3	Visual compare to W/O requirements	1	24							
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