



AustubeMills
SHAPING POSSIBILITIES

The role of Reactive Improvement in the search of Operations Excellence

Who are we ?



Sites

Acacia Ridge Brisbane - Structural tube

Newcastle NSW - Structural Tube

Somerton Victoria - Structural Tube and Profile

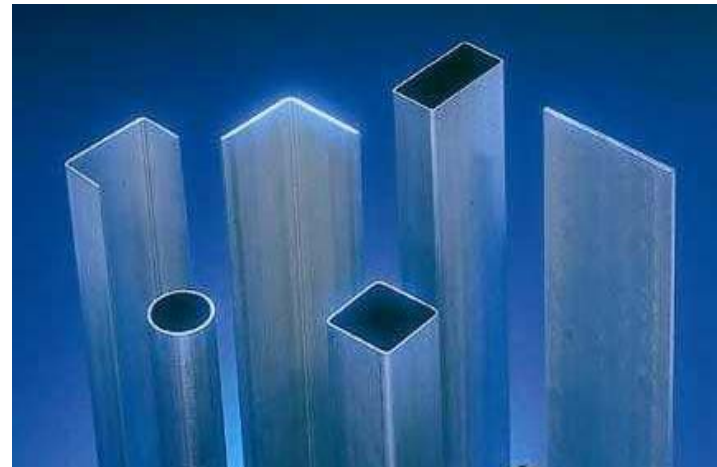
Somerton Site



Somerton Operation



- Profile Mill commenced operation in 1997
- Slitter commenced operation in 1998
- Tube Mill commenced operation in 1999
- Capacity 120,000 tonnes per annum
- Current loading approx 50,000 tonnes per annum
- Only manufacturer of In-Line Galvanised profiles in Australia
- Raw material received by rail – hot rolled coil ex Bluescope Steel
- Warehouse facilities on site
- Quality Management System certified to ISO9001
- Environmental Management System certified to ISO14001
- ACRS Certified



Somerton Operation



- ***Employees***
 - 88 full time employees on site
 - 4 Mill Crews – 48 employees
 - 2 Slitter/Warehouse Crew – 12 employees
 - 16 Staff – production, dispatch, finance, engineering, maintenance & purchasing
 - Self managed teams operating the slitter, mills and warehouse
 - No team leaders or shift supervisors
 - Additional 5 maintenance contractors

Somerton Operation



- **Self managed teams Structure**
- Mill line positions
- Coil entry, Welder, Galvo, Runout, Bundler, Product Handler, Change Over.
- Focus points:
 - Safety
 - Quality
 - Reliability
 - Wealth Creation
 - Value Delivery
 - Technical Competence

Tough time for manufacturing



- Every Day we hear about manufacturing closing Down
- Going off shore
- Down sizing
- Companies being sold



HOLDEN





What tools have we got to deal with these problems ?



Leaders standard work

Management reviews

Crew meetings

Communities of Practice Groups

Incident Report Management system

Crew meetings

Front Line Problem Solving

Focus points

Six Sigma

Gap analysis

Process standards

5S

Why Frontline Problem Solving AustubeMills

- It provided us a method to address our reactive problems, whilst the methodology supports us with our proactive improvement projects
- Frontline employees are highly engaged in the process
- Challenges our assumptions, use's our experience.



- People
- Process
- Product

Our Journey

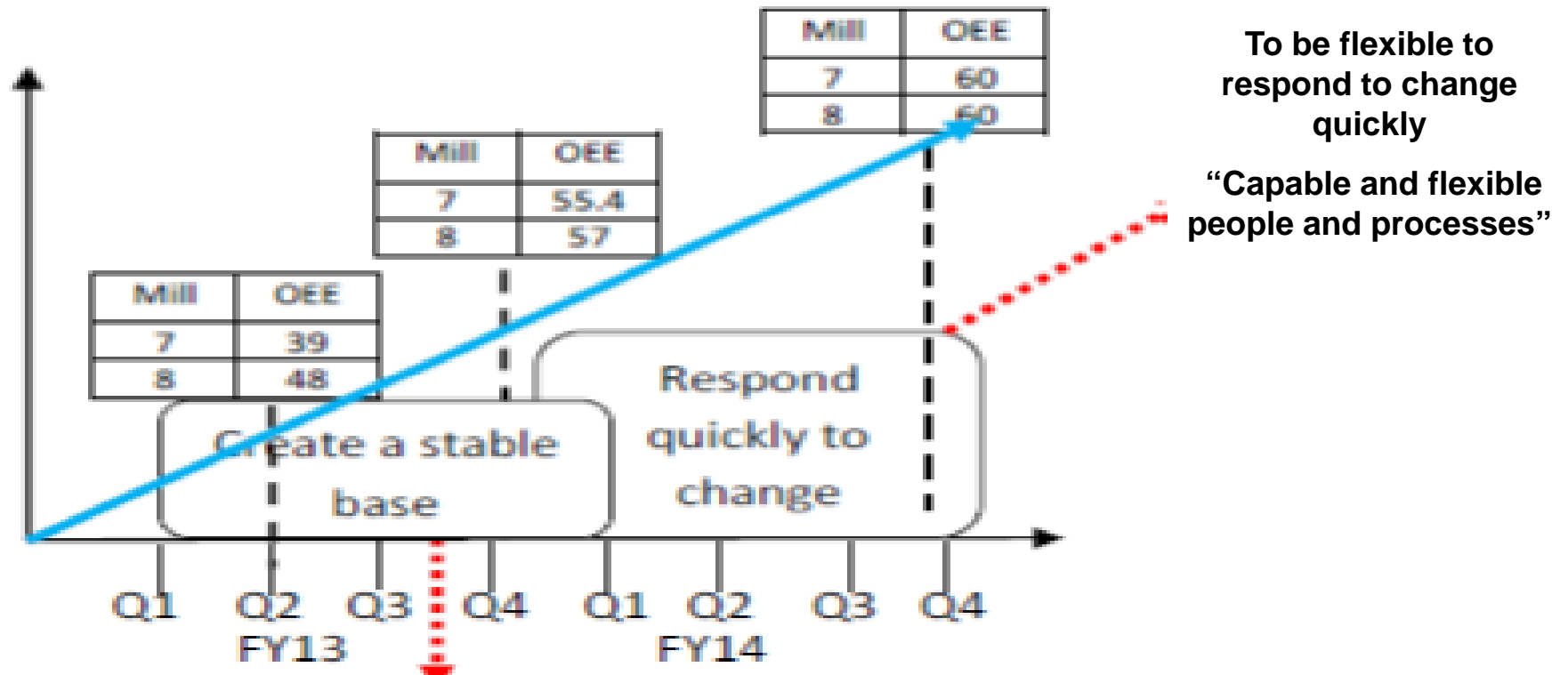


- **Frontline Problem Solving**
 - Partnered with CTPM.
 - Commenced in March 2012.
 - Approximately 75% of workforce has been trained.
 - 44 problems closed out. FY 14
 - High level of engagement from entire site.
 - Positive impact on OEE.
 - Personnel in all crews with knowledge in Front line problem solving
 - Purpose
- ***To stop build up of problems by getting to root cause and ensuring problem does not reoccur***

CI Strategy Target 60 OEE



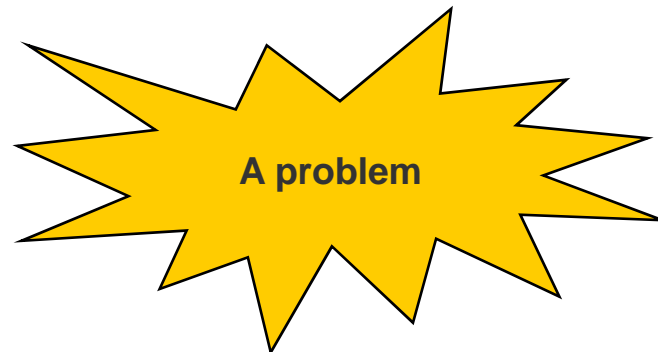
Where do we want to be



Process triggers



- Did it cause a delay longer than 120 min?
- Did you have multiple stops for the same reasons for 120 min or more?
- Did you drop product effecting Yield entitlement for the rolling?



A3 Sheet



Improvement Theme: _____ Title: _____ Site: _____
 Department: _____ Equipment / Process: _____ Prepared By: _____ Date Initiated: _____ Date Completed: _____ Latest Update Date: _____ Latest Version: _____

1. Define Problem (Plan)

Problem Statement: _____

Problem Description

	Is	Is Not
What		
Where		
When		
Size		
Point of Occurrence		

Problem Definition _____

Is there any history of this problem? _____

2. Contain Problem - Detail the containment action required and completed (Plan)

Detail the containment action that has been taken: _____

Date Implemented: _____ Place Implemented: _____ Implemented by: _____ Verification of action by: _____

3. Analyse Problem - Summary of the Cause & Effect diagram (Plan)

Materials Methods

People Machine

4. Develop Root Cause Solutions - Summary Result of Root Cause Analysis (Plan)

Cause # 1 _____

Cause # 2 _____

5. Implement Solutions - Summary of action completed (Do)

Proposed Actions / Approved Actions	Who	When	Completed Date

6. Evaluate Results - Evaluate the results of the improvements made (Check)

Tracking	Shifts	Weekly	Monthly
1	2	3	4
6	7	8	10

7. List Future Actions (Act)

Leader Signature: _____ Leader Signature: _____

Front Line Problem Solving A3 Summary Sheet

Sections 1,2 and 3 are to be completed for review at 9.30 meeting.

Crews are responsible for the submitting of A3 sheet



Improvement Theme: <u>Cobble between roll station & accumulator</u>		Action Reg No: _____		Title: _____		Site: _____	
Department: <u>Coil Entry</u>		Equipment / Process: _____		Prepared By: _____		Date Initiated: <u>18/7/14</u> Date Completed: _____	
						Latest Update Date: _____ Latest Version: _____	

1. Define Problem...Cobble between roll station & accumulator (Plan)

Problem Statement accumulator overfilled

Problem Description

	Is	Is Not
What	<u>cobble</u>	<u>broken X weld</u>
Where	<u>Entry to accumulator</u>	<u>uncoiler</u>
When	<u>18/7/14</u>	
Size	<u>235 x 8mm</u>	<u>Downtime 129 min</u>
Point of Occurrence	<u>between twist tracks</u>	

Problem Definition
ACCUMULATOR OVERFILLED
CACKLING COBBLE
BETWEEN TWIST
TRACK

Is there any history of this problem? YES

4. Develop Root Cause Solutions – Summary Result of Root Cause Analysis (Plan)

Cause # 1

Cause # 2

2. Contain Problem - Detail the containment action required and completed (Plan)

Detail the containment action that has been taken:
had extra hand at coil for large 8mm.

Date Implemented: _____ Place Implemented: _____ Implemented by: _____ Verification of action by: _____

5. Implement Solutions – Summary of action completed (Do)

Proposed Actions / Approved Actions	Who	Proposed Date	Completed Date

3. Analyse Problem – Summary of the Cause & Effect diagram (Plan)

6. Evaluate Results - Evaluate the results of the improvements made (Check)

Tracking		Shifts	Weekly	Monthly
1	2	3	4	5
6	7	8	9	10

BLUE COBBLE
TOWER

7. List Future Actions (Act)

Approved Solutions: _____ **Approved A3 Summary Sheet:** _____

Leader Signature: _____ Leader Signature: _____



Improvement Theme:	Action Reg No:	Title: <u>CRACKING ON APEX OF 50X50X5.0A</u>	Site:
Department:	Equipment / Process:	Prepared By: <u>GOVIE, RUN-OUT BOYS</u>	Date Initiated: <u>14-08-14</u>
		Date Completed:	Latest Update Date:
			Latest Version:

1. Define Problem.....CRACKS (HAILLINE, MOON CRACKS & SPLIT / BAD CRACKING ON 50X50X5.0A)..... (Plan)

Problem Statement WHILE RUNNING 50X50X5.0A WE ARE GETTING OCCASIONAL DIFF. CRACKING ON APEX (HAILLINE, MOON CRACKS & SPLIT / BAD CRACKING) CAUSING TO DUMP & QUARANTINE SOME PACKS.		Problem Definition	
What	Is DIFFERENT KINDS OF CRACKING ON APEX OF 50X50X5.0A PRODUCT	Is Not	LEG LENGTH ISSUE
Where	PM1, PM2 RUN-OUT & BUNDLER		LEVELLER
When	ROLLING 50X50X5.0A (MEDIUM ANGLE)		50X50X5.0A (LIGHT ANGLE)
Size	NOT INCLUDING PMT AUTHORITY OF DUMPER/BUNDLER		SOME PACKS FOR RE-INSPECTION
Point of Occurrence	# 7 RUN-OUT & BUNDLER AREA		NOT TO MENTION QUANTITY OF SOME PACKS W/ POSSIBLE CRACKING SENT-OUT AS 1ST GRADE THAT MIGHT BE POTENTIAL FOR CUSTOMER COMP.
Is there any history of this problem? YES			

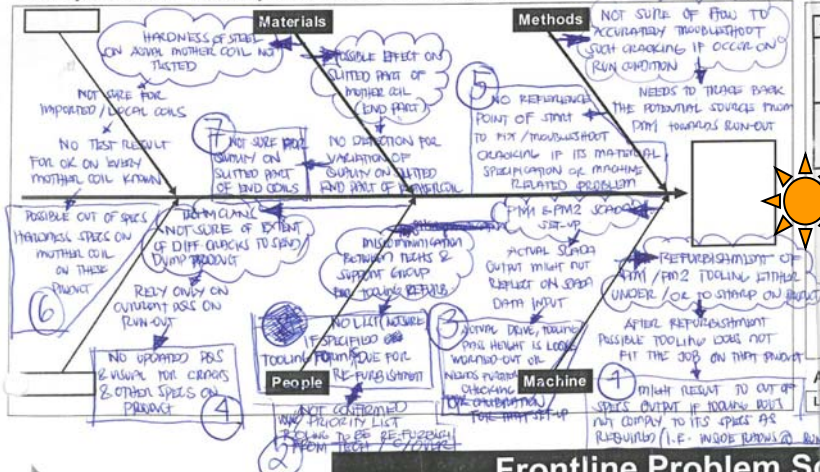
2. Contain Problem - Detail the containment action required and completed..... (Plan)

Detail the containment action that has been taken:

- INFORM C/O GUYS ON CRACK SITUATION AS IT OCCURS FOR RE-ASSESSMENT ON PM1&PM2 TO MAKE INTERIM ADJUSTMENT AS THEY CAN. CONTINUOUS INSPECTION BY VISUAL CHECK ON JUST RANGES WHERE WE CAN SEE CRACKING & TO DUMP, PUT IN A SHEET TO PLACE HEAT COIL # & RE-INFORM RELATED

Date Implemented: _____ Place Implemented: _____ Implemented by: _____ Verification of action by: C. MAYNE, C. V.A., M.R.

3. Analyse Problem - Summary of the Cause & Effect diagram..... (Plan)



4. Develop Root Cause Solutions - Summary Result of Root Cause Analysis..... (Plan)

POSSIBLE CAUSES - SEE ISRAFA DIAGRAM

Cause # 1

Cause # 2

Cause # 3

Cause # 4

Cause # 5

Cause # 6

Cause # 7

5. Implement Solutions - Summary of action completed..... (Do)

Proposed Actions / Approved Actions	Who	Proposed Date	Completed Date

6. Evaluate Results - Evaluate the results of the improvements made..... (Check)

Tracking	Shifts	Weekly	Monthly
1	2	3	4
5	6	7	8
9	10		

7. Next Future Actions..... (Act)

Approved Solutions:

Approved A3 Summary Sheet:

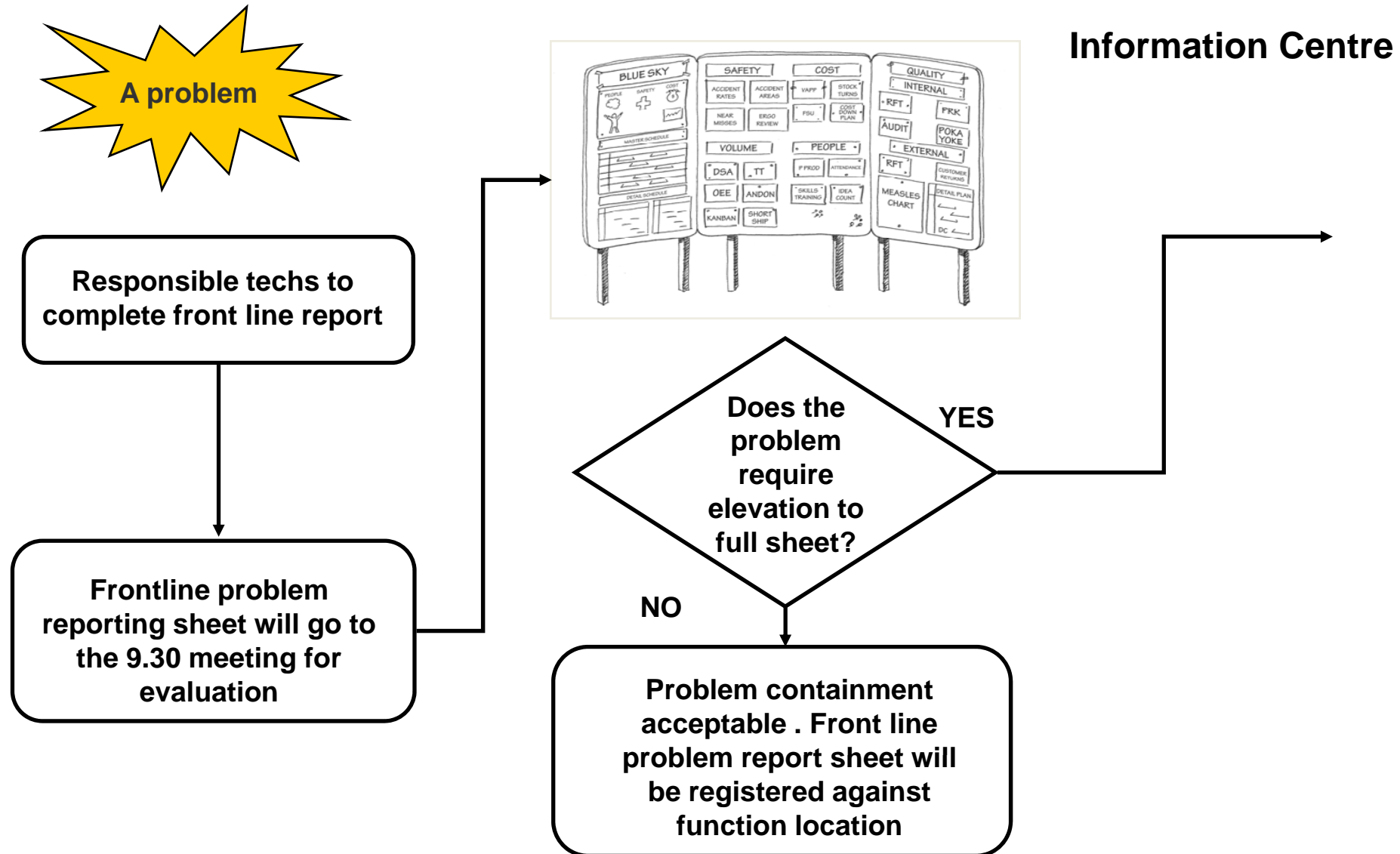
Leader Signature: _____

Leader Signature: _____

9.30 am Meeting

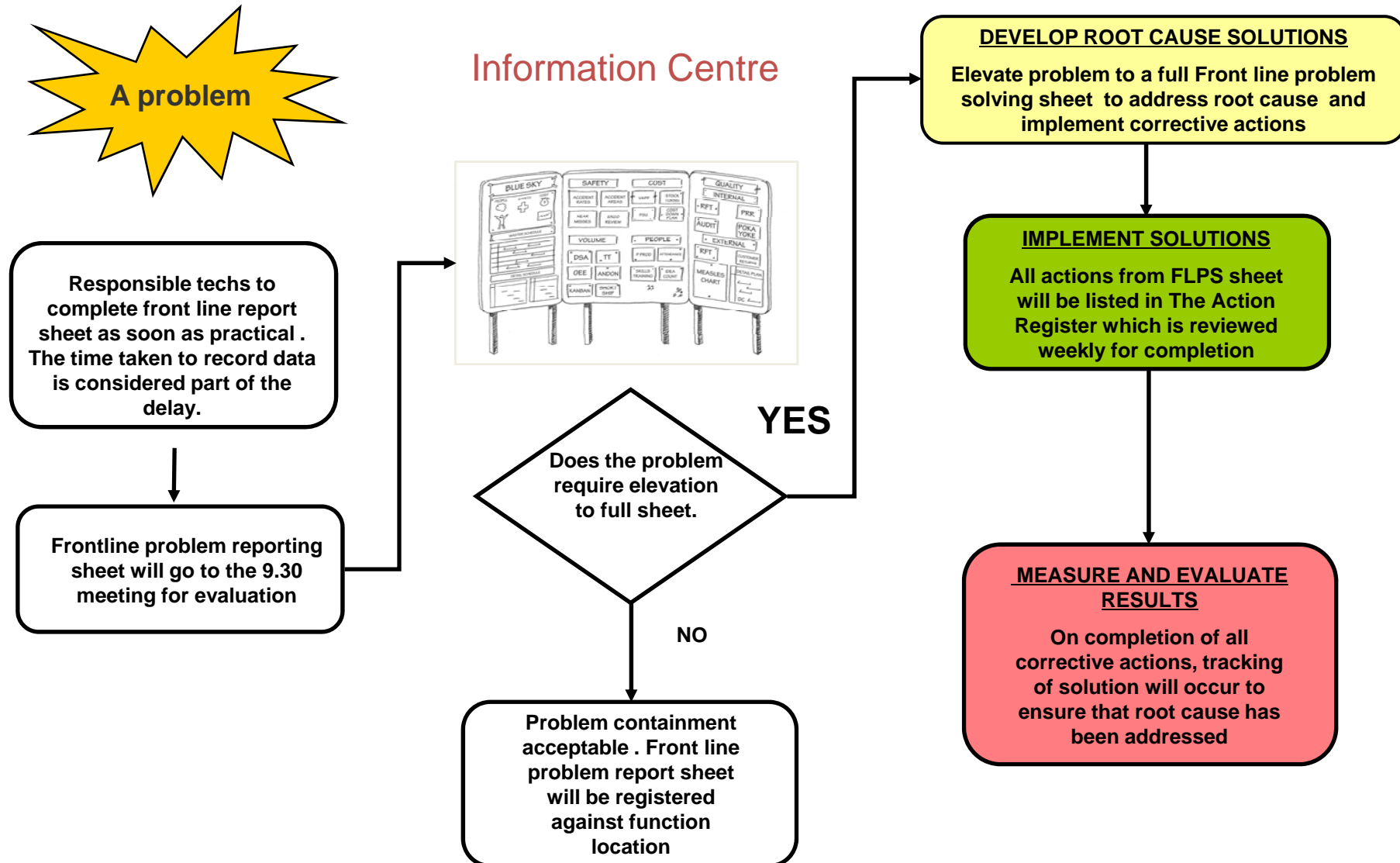


Front line problem reporting flow





Front line problem reporting flow



Frontline Review Meeting





Improvement Theme: ODEX Title: APEX CRACKING Site: Somerton

Department: MILL 7 Equipment / Process: FORMING PM1 Prepared By: M, AG, GVA, CM Date Initiated: 23/5/14 Date Completed: Latest Update Date: Latest Version:

1. Define Problem (Plan)

Problem Statement: PRODUCT CRACKING IN APEX

Problem Description

	Is	Is Not
What	CRACKING IN APEX	
Where	PM1	PM2
When	RUNNING 5mm AND 4mm L	
Size	5 HANS D/T + YIELD LOSS \$319 + 5 TON \$535 = \$905	
Point of Occurrence	MILL 7 PM1	

Problem Definition: CRACKING IN APEX OF 5mm AND 4mm PRODUCT.

Is there any history of this problem? YES

2. Contain Problem - Detail the containment action required and completed (Plan)

Detail the containment action that has been taken:

ADJUSTMENT MADE TO PRESSES 1,3,5,7

Date Implemented: Place Implemented: PM1 Implemented by: BLUE CREW TECH Verification of action by: CM

3. Analyse Problem - Summary of the Cause & Effect diagram (Plan)

Materials: STEEL HARDNESS NO BASE LINE PRESSURE SETTINGS

Methods: STAND PRESSURE NOT CORRECT TOOTHING MACHINERY OUT OF SPEC TOOTHING GEOMETRY OUT

People: ATTENTION TO DETAIL REQUIREMENTS ON SETTING AFTER TOOTHING RECO

Machine: PM1 ENTRY GUIDE UP HILL POSITION RADIUS TO SHAFT ON PM1

What: ROLL RE DRESSED FRESH

Why: APEX CRACKING

4. Develop Root Cause Solutions - Summary Result of Root Cause Analysis (Plan)

Cause #1: ATTENTION TO DETAIL ON SETTING AFTER TOOTHING RECO

Cause #2: RADIUS TO SHAFT ON PM1

5. Implement Solutions - Summary of action completed (Do)

Proposed Actions / Approved Actions	Who	Proposed Date	Completed Date
STEEL HEAT UP INFO (SAMPLES)	M L	27/5/14	27/5/14 ✓
CHECK TOOTHING RADIUS	G-VN, CM	27/5/14	28/5/14 ✓
CHECK ROLL SHAFTS PAPER	M L		
Modify Press Roll coatings		27-14	
Next PM1 try to REVERSE	BLUE CREW		
Gather samples of head to over next 2 rollings Blue Crew		9-7-14	

6. Evaluate Results - Evaluate the results of the improvements made (Check)

Tracking	Shifts	Weekly	Monthly
1	2	3	4
6	7	8	10

7. List Future Actions (Act)

Leader Signature: Lead Signature:

AR: 204

NEW TOOTHING FIRST RUNNING TOOTHING NOT RUN

Front Line Problem Solving A3 Summary Sheet

Tracking card



.....Front Line Problem Solving Assignment Card.....



Date initiated :

Action Register No:

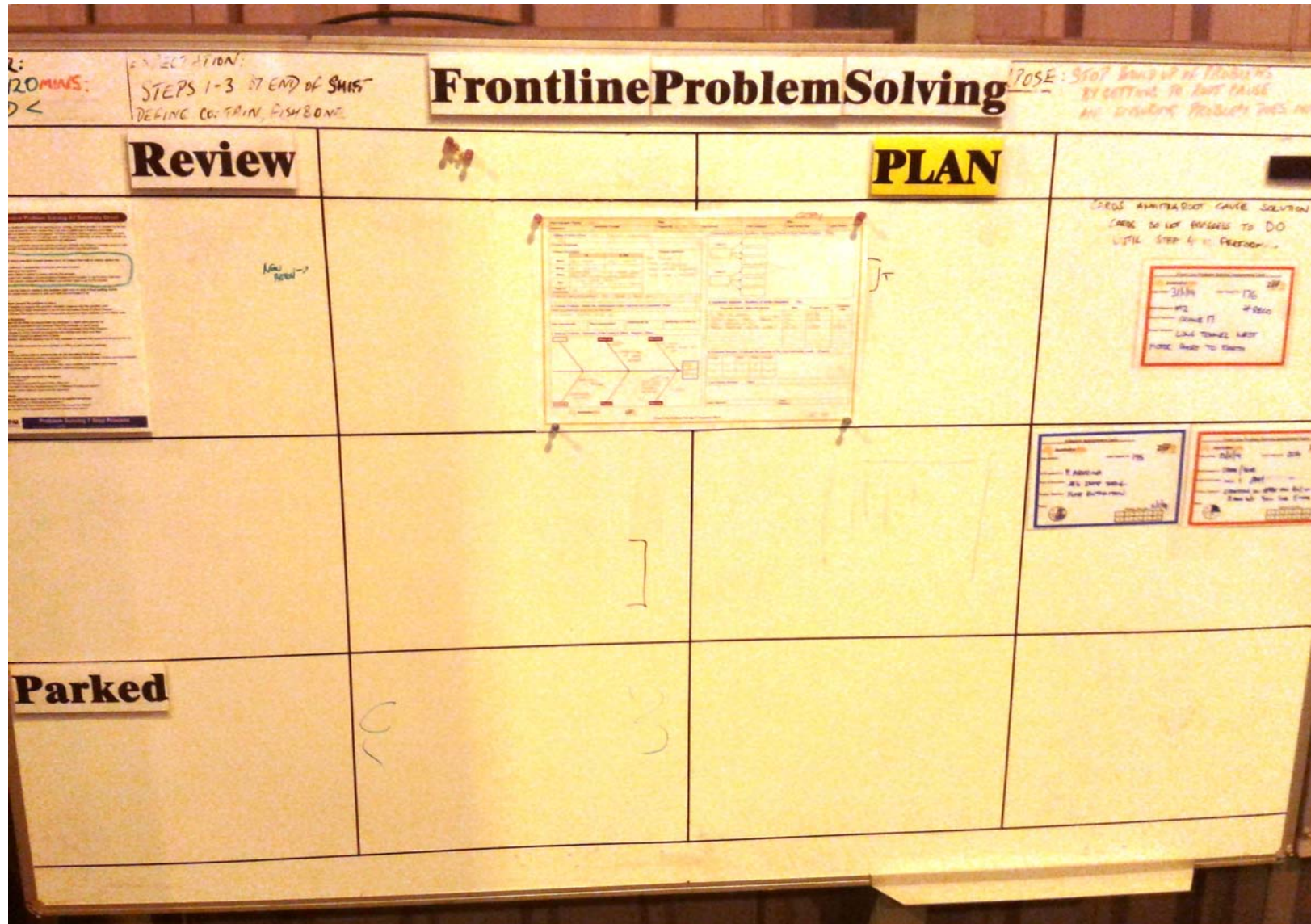
FLPS assigned to :

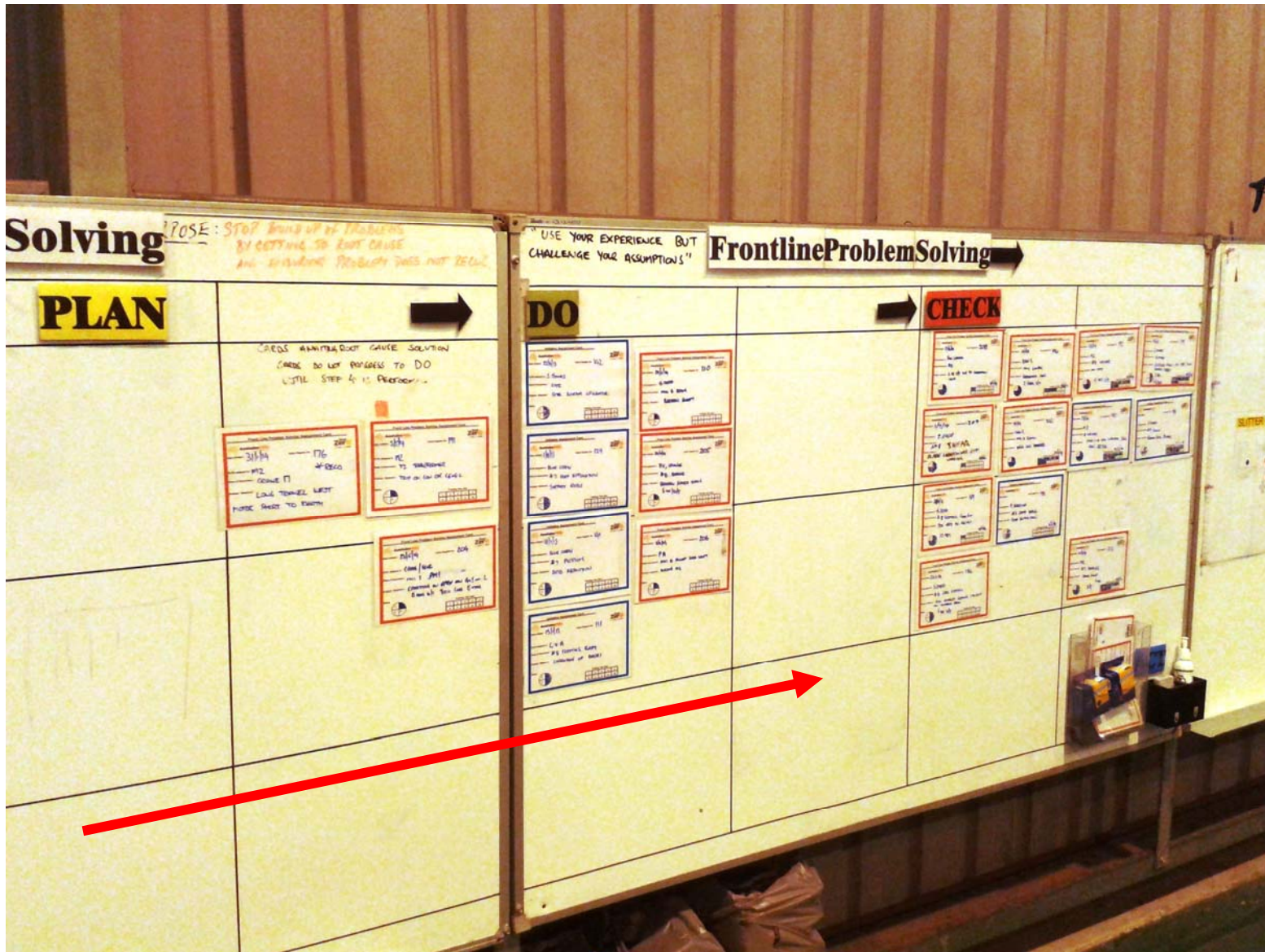
Point of Occurrence :

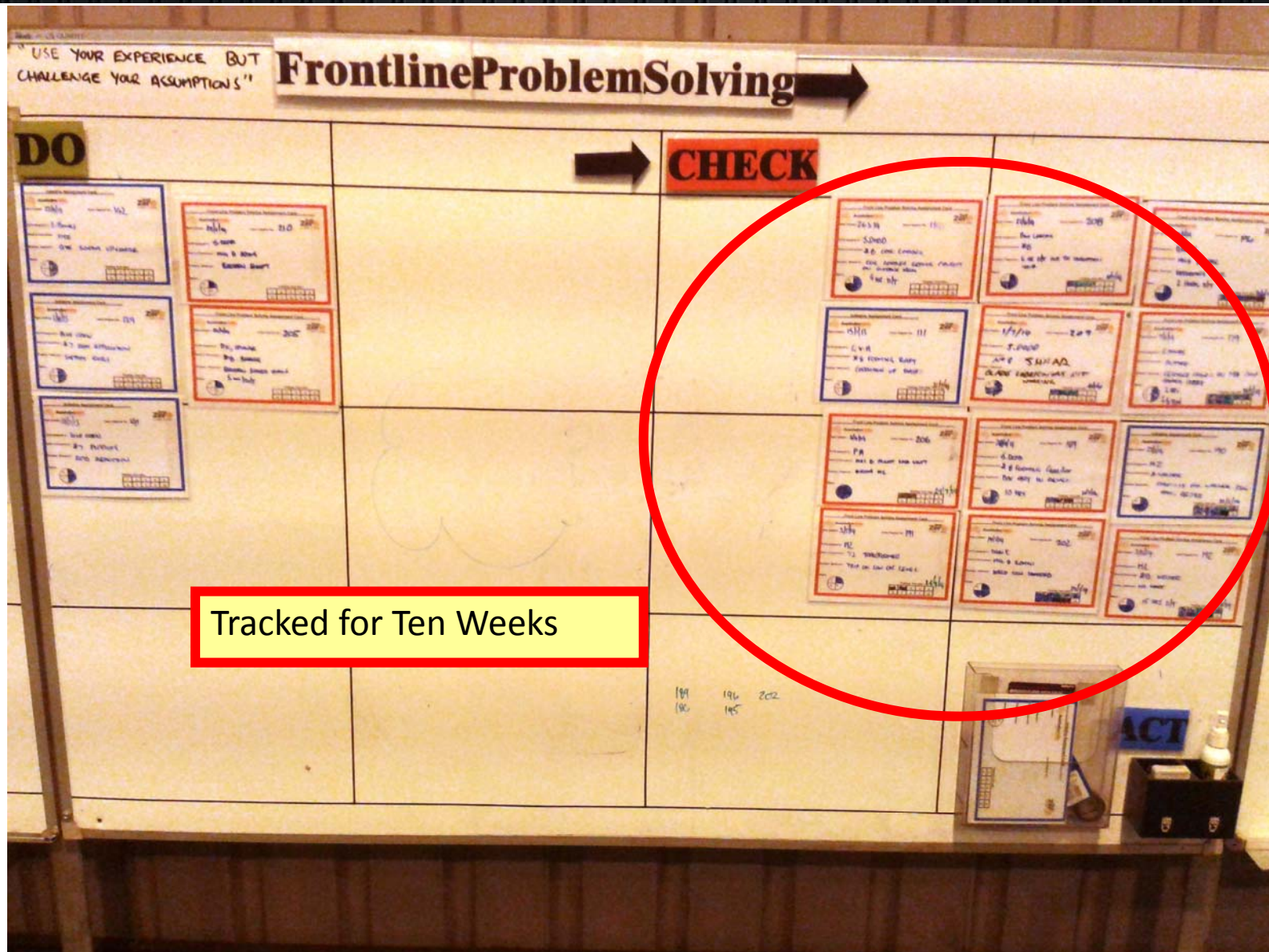
Problem Statement :

Tracking from date :

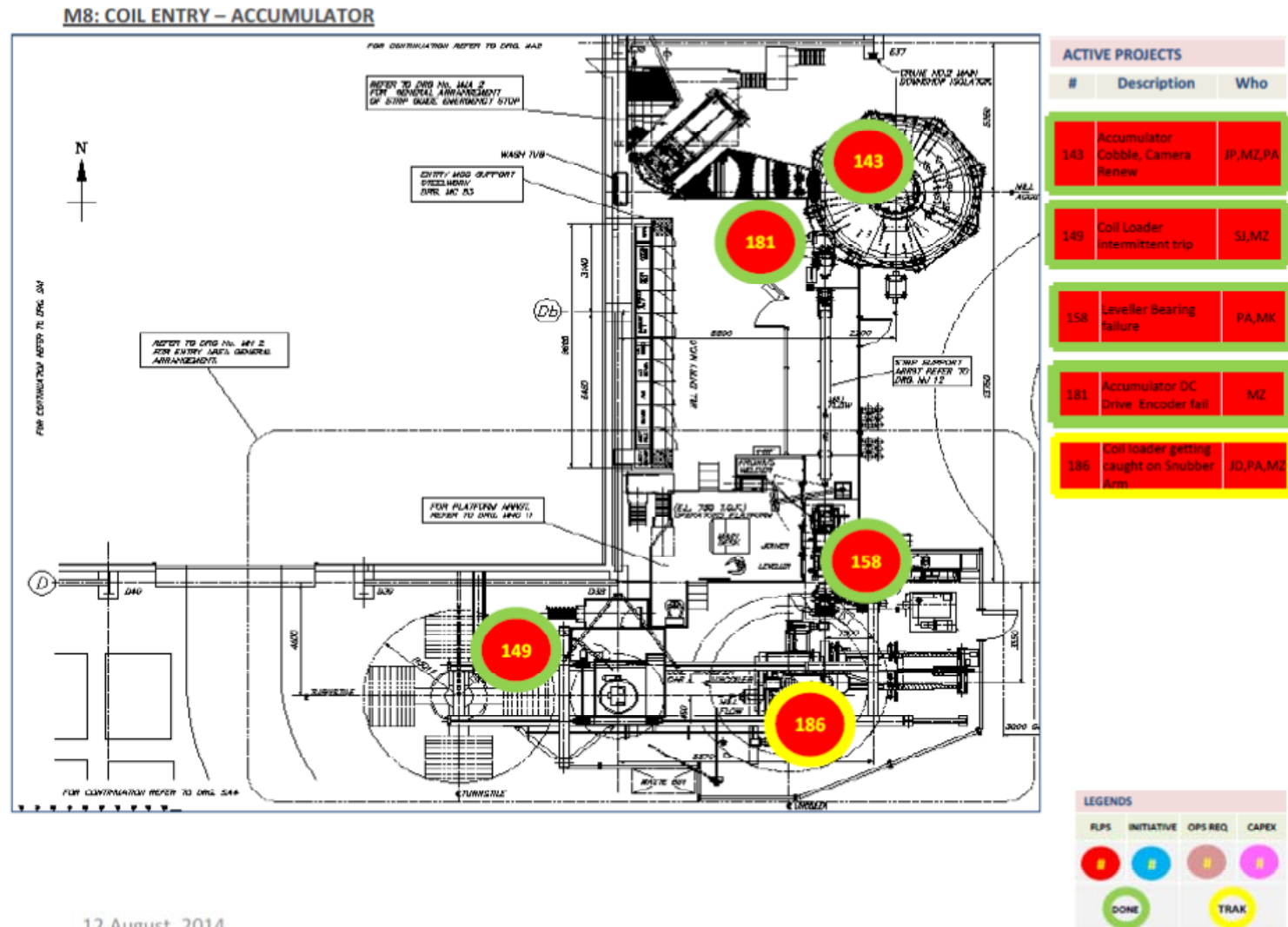
1	2	3	4	5
6	7	8	9	10







Work area rash map



Completed A3



158

Improvement Theme: _____ Title: _____
 Department: MILL-8 Equipment / Process: COIL ENTRY / LEVELLER Prepared By: FABIAN G SHAW Date Initialed: 22/10/13 Date Completed: _____ Update Date: _____ Latest Version: _____

1. Define Problem..... (Plan)

Problem Statement: **UNABLE TO FEED 3.6mm GAUGE STRIP (TG-1) THROUGH JOINING STATION LEVELLER.**

Problem Description

	Is	Is Not
What	NOT FEEDING STRIP THROUGH LEVELLER ROLL	A PROBLEM WITH ALLIGATOR, STRIP FEED FORWARD, CLAMPS.
Where	LEVELLER ROLL	
When	ROLLING TG-1 CHS.	
Size	3.6mm GAUGE	
Point of Occurrence	DT = 1059 MIN 17.65 HR.	

Problem Definition: BEARING FAILURE AT THE LEVELLER. BROKEN SHAFTS (OVR) AT THE LEVELLER. BURST HYDRAULIC LINES AT THE LEVELLER.

Is there any history of this problem? **UNSURE - NEVER ENCOUNTERED BEFORE.**

2. Contain Problem - Detail the containment action required and completed..... (Plan)

Detail the containment action that has been taken:
STOPPED MILL & INSPECTED. PROBLEM AREA AFTER DOING A FULL ISOLATION.

Date Implemented: 22/10/13 Place Implemented: MILL 8 - COIL ENTRY Implemented by: RED CREW Verification of action by: _____

3. Analyse Problem - Summary of the Cause & Effect diagram..... (Plan)

Materials: HEAVIEST GAUGE ON MILL 8 - 3.6mm

Methods: FREQUENCY OF PM CHECKS

People: CONTAMINATION OF BEARING FROM MILL SCALE DUST

Machine: BEARING FAILURE DUE TO NO GREASE (BEING DRY) - NO PM CHECKS. TOP & BOTTOM NOT CAPTURED AT AN EARLY STAGE OF FAILURE. FAILURE TO REPORT AT EARLY STAGE. LEVELLER ROLL WORN. DAMAGED BEARING. (NO GREASE). WORN BEARING HOUSING. BROKEN SHAFTS. BROKEN COUPLINGS. BROKEN HYDRAULIC HOSE LINE.

4. Develop Root Cause Solutions - Summary Result of Root Cause Analysis..... (Plan)

Cause #1: **NO GREASE**

FITTERS: PM FEED WAS SET TO 3.6mm

OPERATORS: DON'T HAVE A CHECK ON THEIR PRE-OP CHECK SHEET FOR THE LEVELLER!

5. Implement Solutions - Summary of action completed..... (Do)

Proposed Actions / Approved Actions	Who	Proposed Date	Completed Date
Check frequency of PM on Leveller (Fitter)	P. AQUILINA	24/10/2013	22/10/2013
Check Operator Pre-Operation Checks	P. AQUILINA	24/10/2013	24/10/2013
Change frequency of PM's to 143 monthly	P. AQUILINA	24/10/2013	22/10/2013
Order spare frame for roller and replace next available opportunity	P. AQUILINA	1/11/2013	
ADD PRE-OP CHECKS TO OPERATORS TASKS	P. AQUILINA	24/10/2013	22/10/2013

6. Evaluate Results - Evaluate the results of the improvements made..... (Check)

Tracking

Shifts	Weekly	Monthly
1	2	3
4	5	6
7	8	9
10	11	12

14/11 TRACKING

Closed on 26/2/14

7. List Future Actions..... (Act)

LEVELLER SHAFT BEARING FAILURE

Approved Solutions: _____ Approved A3 Summary Sheet: 158

Leader Signature: _____ Leader Signature: _____

Driving to a

Advantage.

Frontline Problem Solving A3 Summary Sheet

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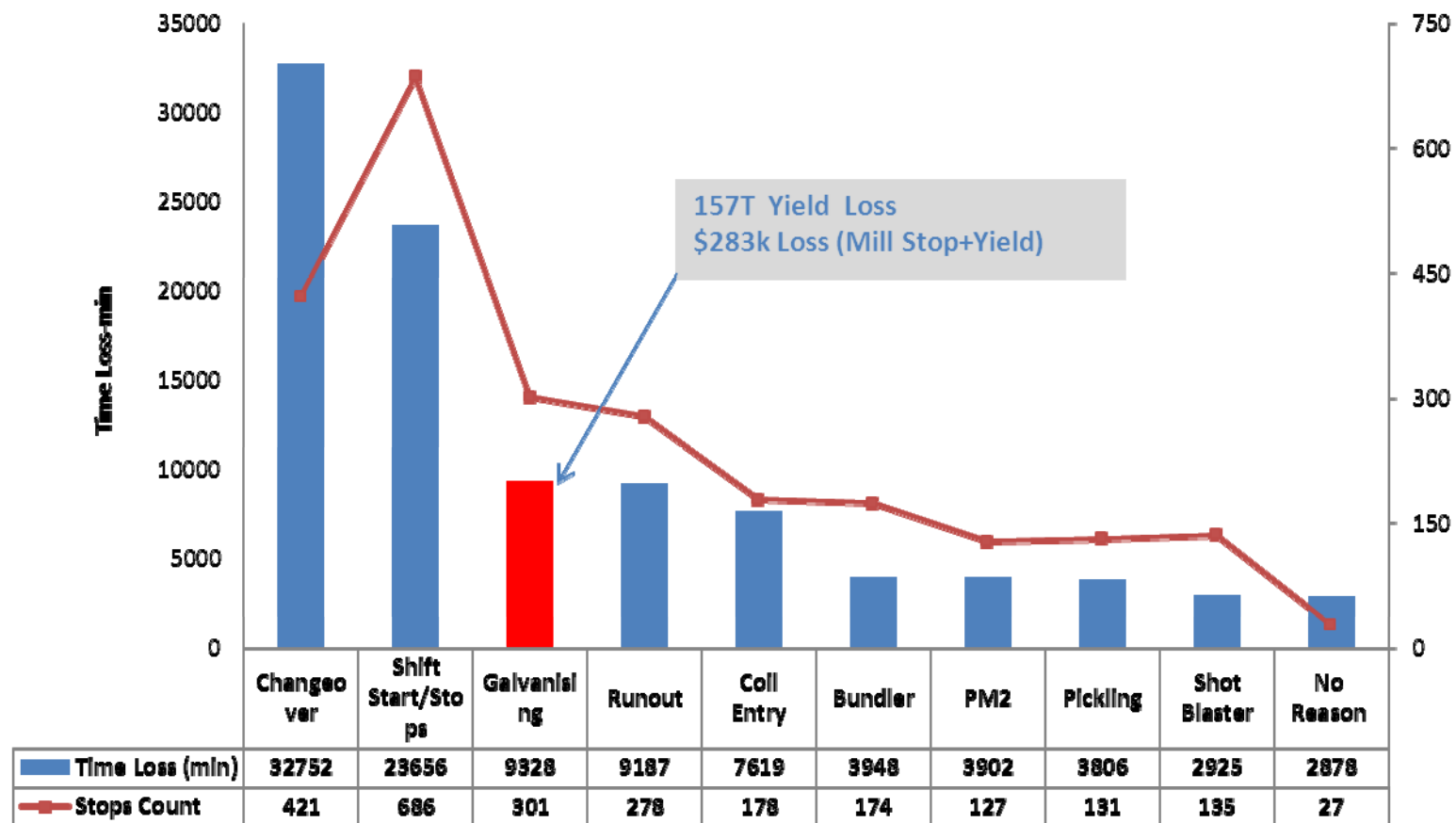
one best way

Resource Management



Define- Measure

Top-10 Mill Stops Jul-12 to Apr-14

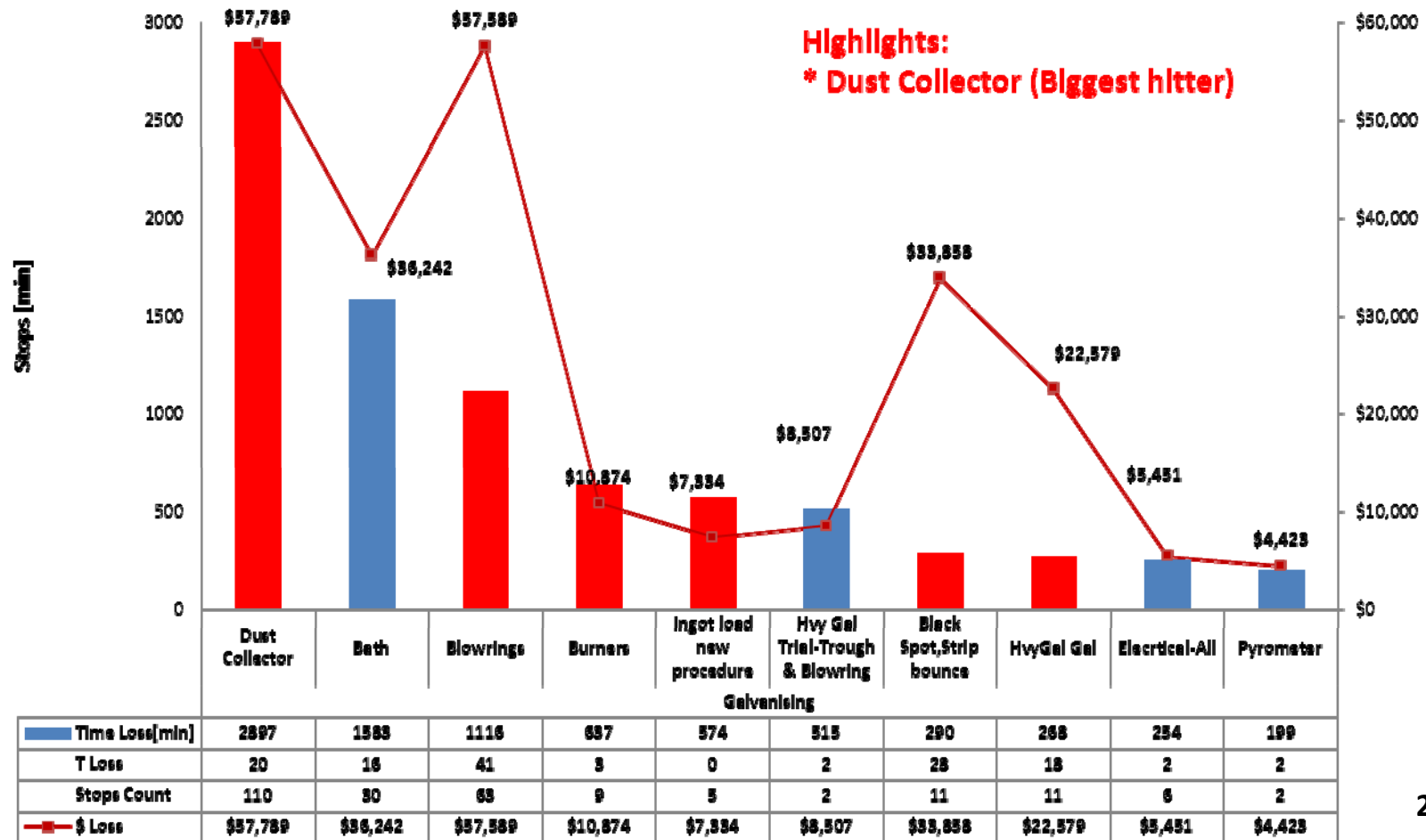


1/9



Analyse

Top-10 Galvanising Oct-13 to Apr-14



2/9



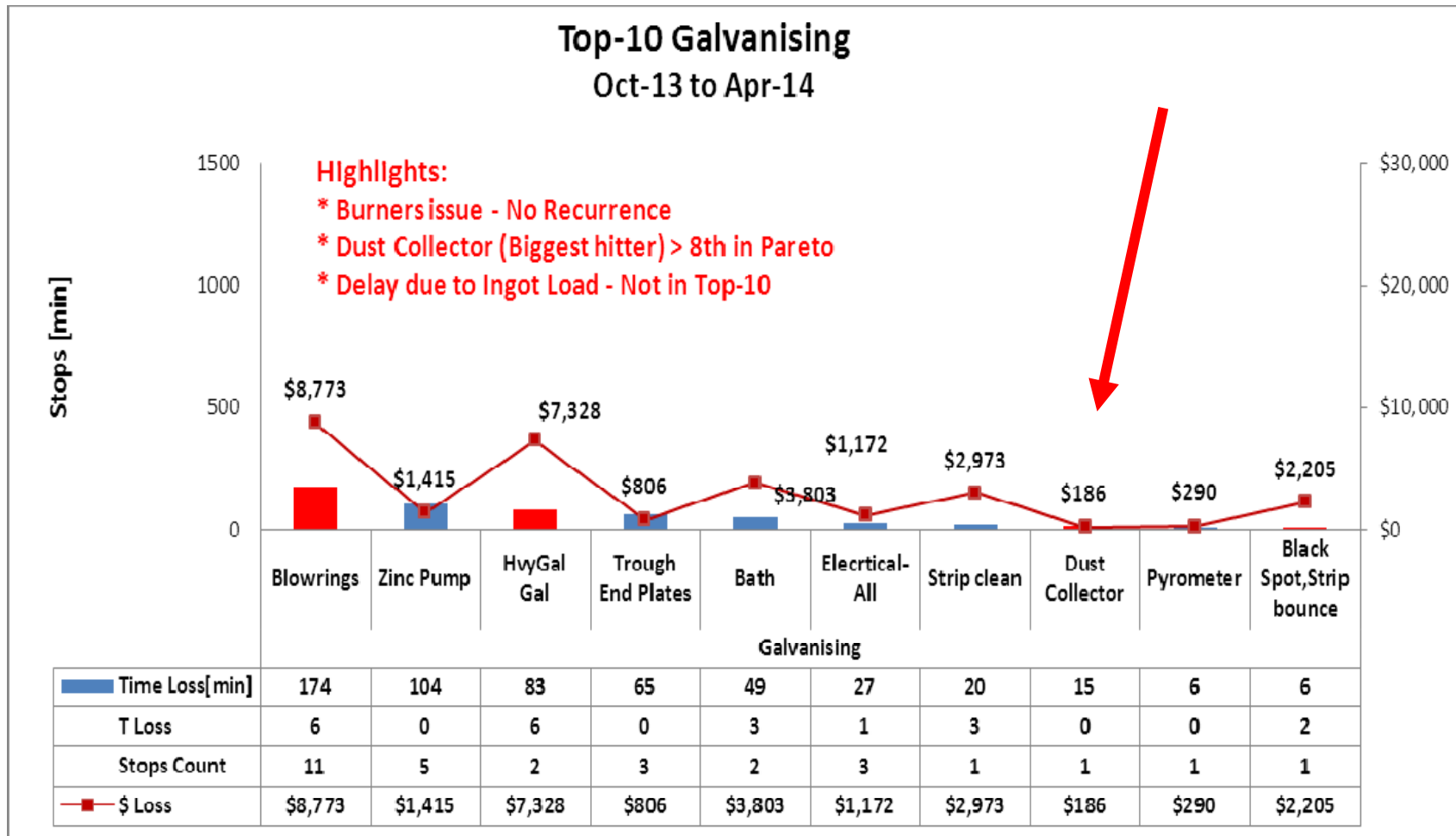
Improve Actions – Red Bar areas from previous slide

Linked Projects	Owner	Action/Activity	Comment/Reference	Status
Dust collector	G Van Arkel	Corroded GI Stack replaced with SS Stack	R&M Project Major spent \$12k. Done Jun-13	
	C Mayne	Pulsedown process rolled. Pressure gauge SCADA integration	FLPS-AR #108,140. Done Oct-13	
	J Dodd	Fan, Filter bags-replaced & PM reviewed	FLPS-AR #70. Done Nov-12	
Blowrings	C Mayne	Blowring management SPL issued	FLPS-AR #113. Done Jun-13	
Burners	S Jones	Fresh air duct	FLPS-AR #29,31,117,119. Major spent \$4.4k. Done Sept-Nov-13	
Ingot Load procedure	M Kiselewski	New Safe Procedure	Safety initiative. Done Feb-13	
HeavyGal Gal	C Mayne	PLC Code tuned	FLPS-AR #78. Done Oct-13	
Black Spot, Strip bounce	C Mayne	Trim setup (strip bounce), Strip prep-SPL issued.	FLPS-AR #125. Done Oct-13	
	C Mayne	Roll height adjusted, Nozzle setup, Vac Plate, PM1 Dryness.	FLPS-AR #172. Done Jul-13	

3/9



Measurable Improvements

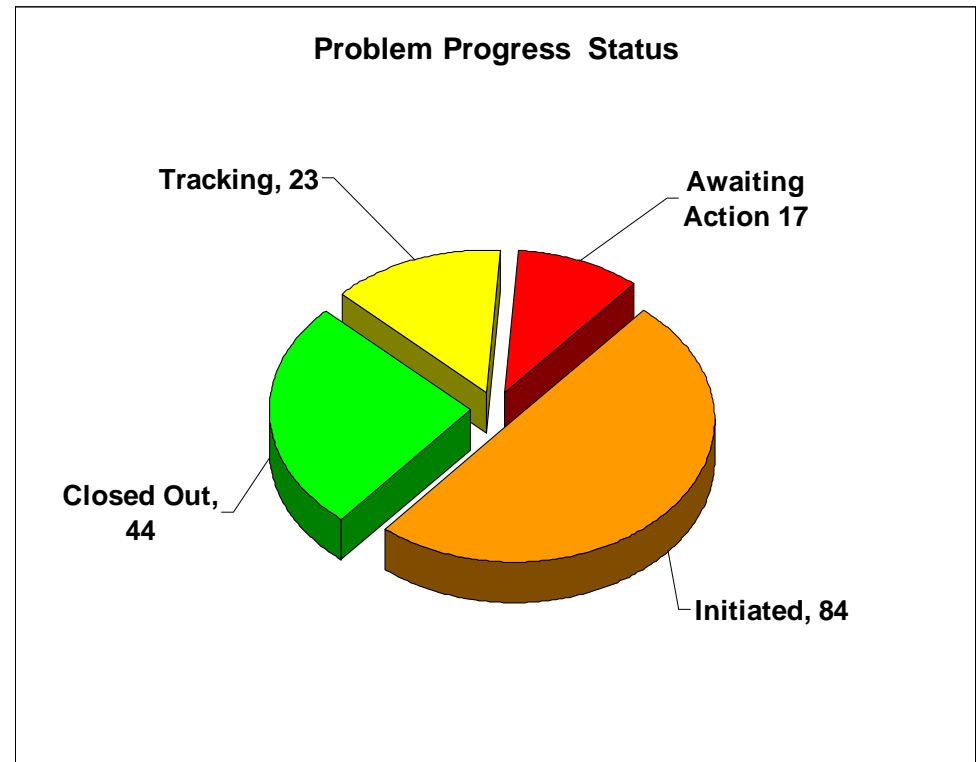


4/9

Problems Addressed



- **Quality**
 - Bent product , Cracking product , Surface Coating
- **Safety**
 - Fuming , Manual handling
- **Manufacturing**
 - Mechanical and electrical problems ,
 - Process sequence





Benefits

FY 14

- Mill 7
- Availability – 6% improvement
- Yield – 2%

Bottom line \$307,667.00

- Mill 8
- Availability – 6.1% improvement
- Yield – 1.8% improvement
- Rate – 1.2%

Bottom line \$554,033.00

Achievements



- 75 % of personnel have trained in front line problem solving method
- Supports and is complimentary to The sites “VIBE” Culture
- Won the Austube Mills core value awards 2014 Quality category

Good recognition from wider business



Making it part of the way we operate daily



- Clear triggers defined
- Reviewed daily at info centre
- Prioritisation of resources
- Use visual management systems to track progress

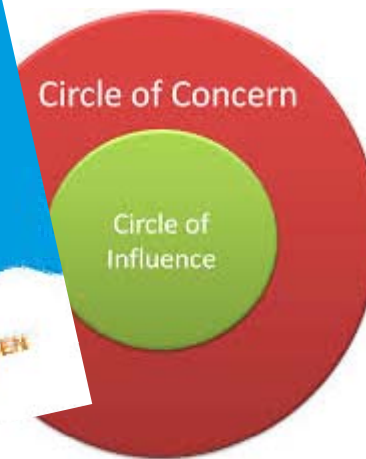
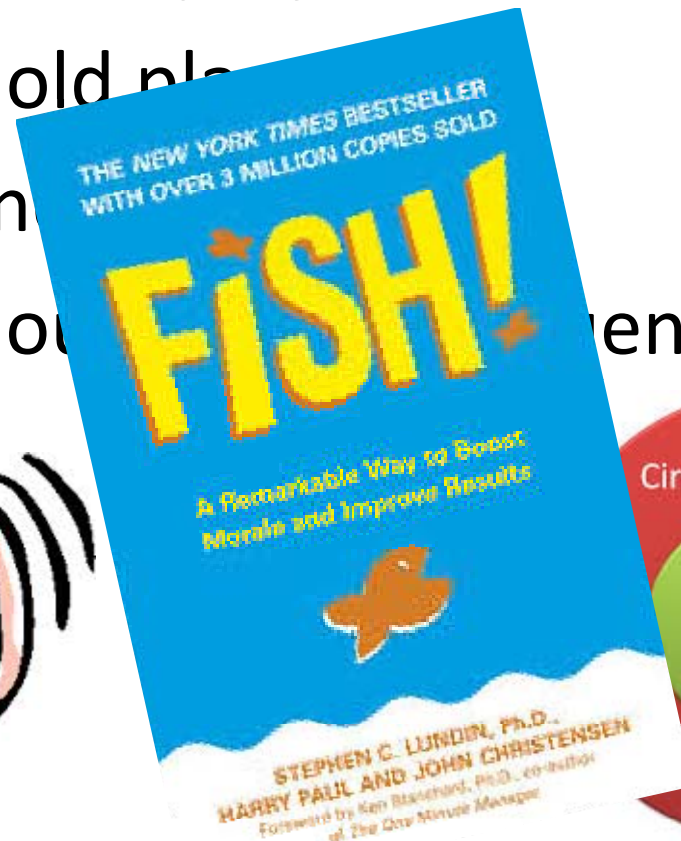


- People
- Process
- Product

The Vibe Sessions



- Business Plan Deployment.
- Tore up the old plan
- Listen to customer
- Focused on outcome



Blue Crew Vibe Day



Choose Your Attitude



Play



Make their day

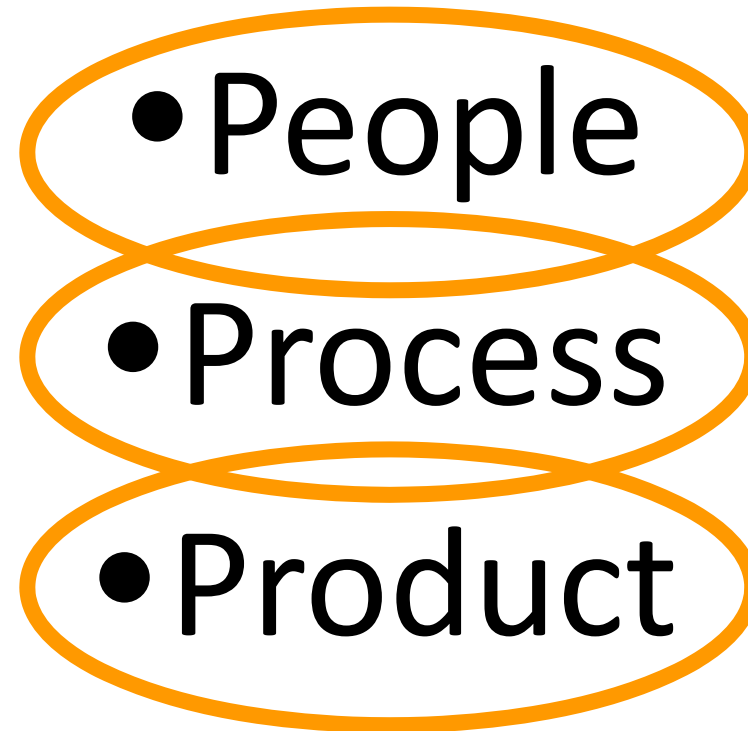


Be Present



So how do You describe a good day ?





DuraGal **Plus**

DuraGal **Ultra**

DuraPrimed

DuraGal **Clear**

Summing up

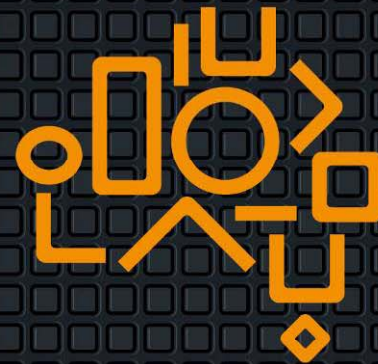


Engage with your frontline to solve problems

Be Tenacious

Don't be afraid to adjust your triggers

Make a start !!!!!



AustubeMills
SHAPING POSSIBILITIES

Thank You