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Abnormality Management

Agenda

Definition



- Implementation
- A Day In the Life Exercise
- LPS Supervisor Daily Activities
- Implementation Barrier Discussion

Abnormality Management

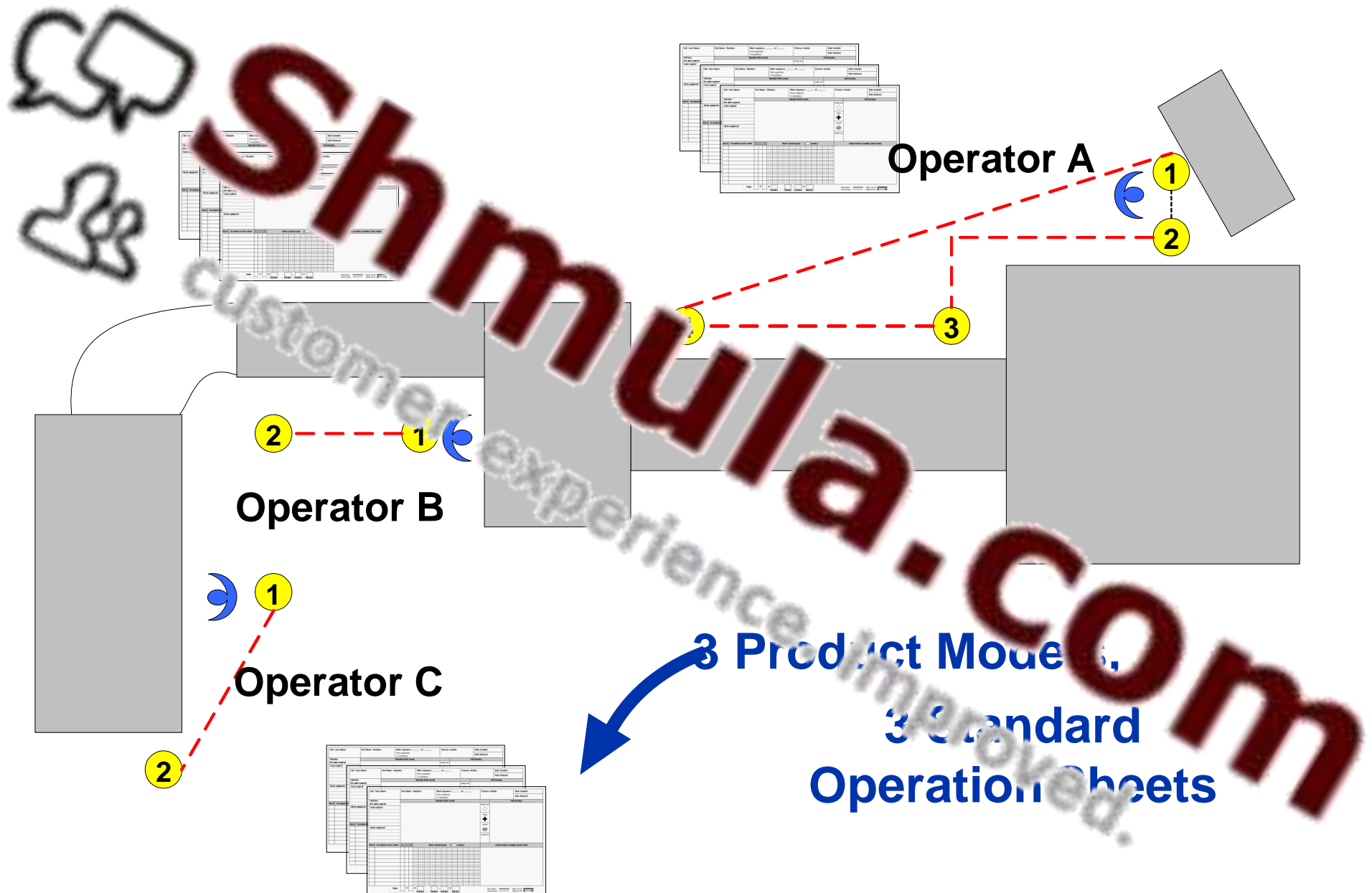
Abnormality: A violation of standard operations

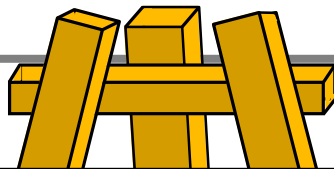
Abnormality Management: The ability to see and respond to the abnormality in a timely manner.

Steps To Implementation

- 
- 
- Establish the standard
 - Implement Lean Production System measures
 - Manage abnormality in a timely manner

Establish the Standard





Hour -By-Hour Chart

Tact Time = 2.00 min.

Hour	Hourly		Cumulative		Comments / Downtime
	Target	Actual	Target	Actual	
8–9	30	15	30	15	Training new work sequences
9–10	30	26	60	41	Opened 2 out of product
10–11	25	20	85	51	Line change to new model (10 minutes)
11–12	30	30	115	81	
12:30–1:30	30	28	145	109	Started up late returning from lunch (4 minutes)
1:30–2:30	30	30	175	139	
2:30–3:30	25	25	200	164	
3:30–4:30	27	28	227	192	End-of-shift clean up (4 minutes)

Performance Board (SQDC)

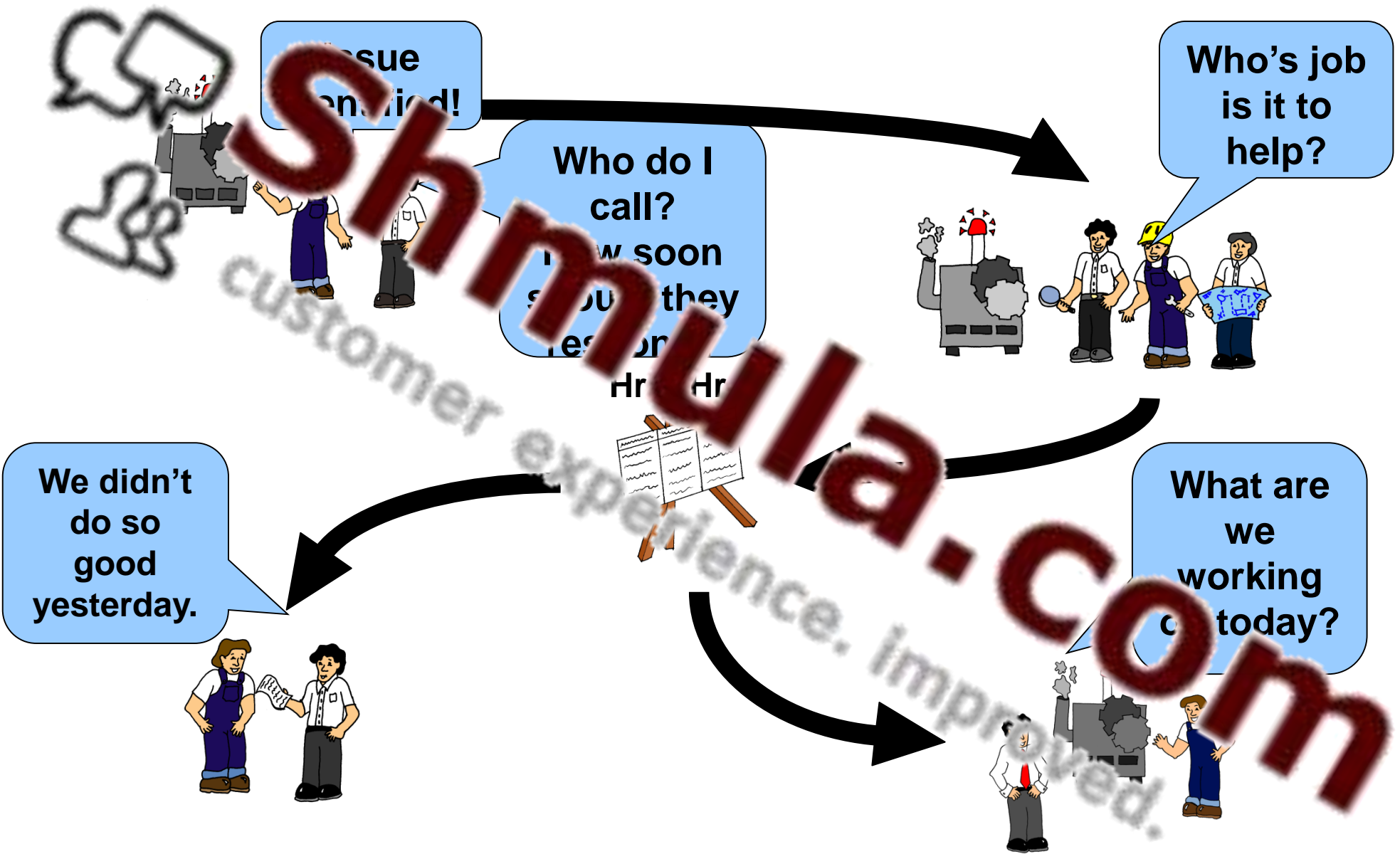
Department: _____

Line: _____ **Kaizen Newspaper**

☐ Concept Initiated
 ☐ Root Cause Determined
 ☐ Countermeasure Complete
 ☐ Countermeasure Complete
 ☐ Countermeasure Complete

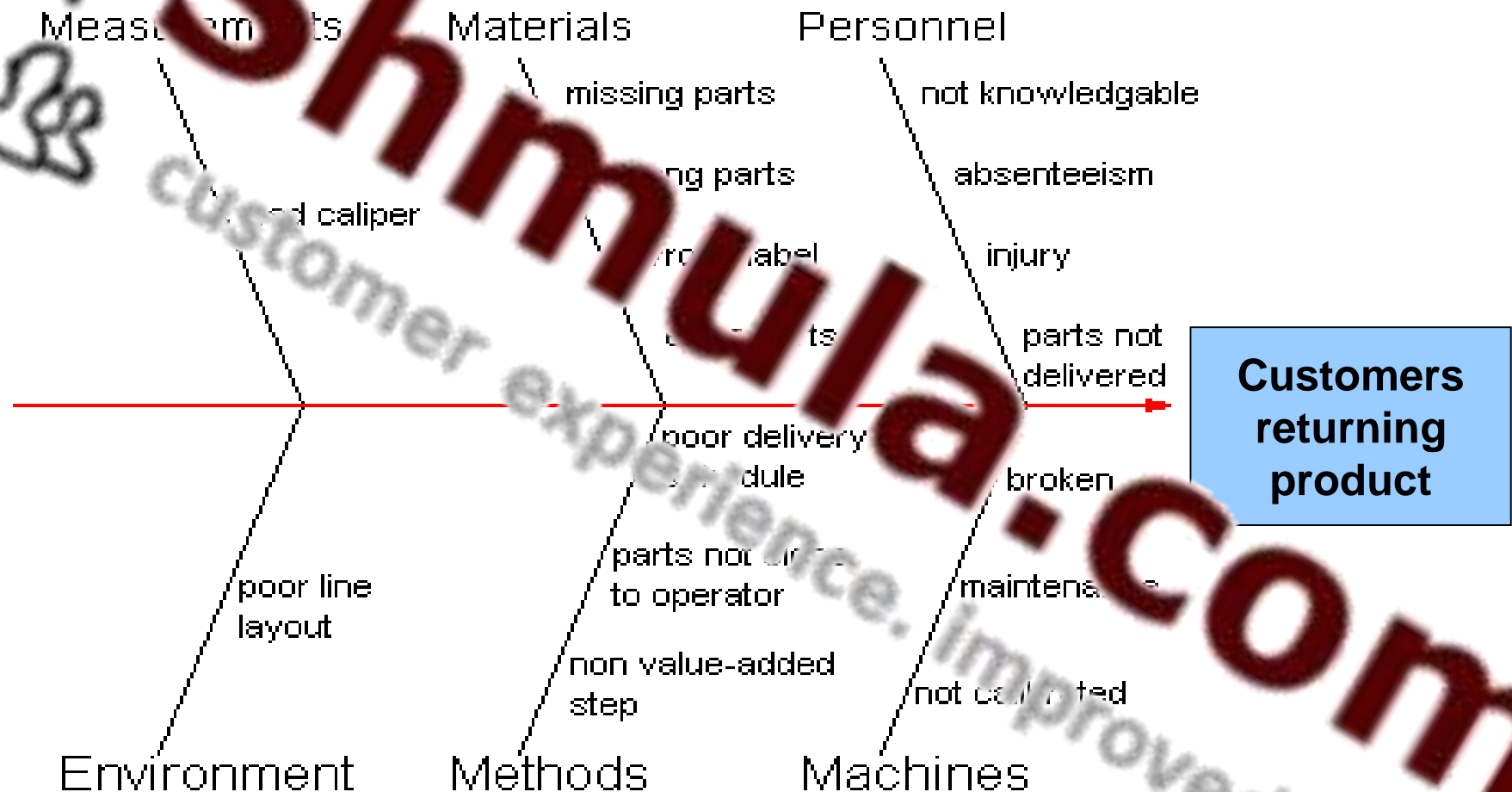
Issues			Priority	Improvement Tracking		
Date	Originator	Issue/Kaizen Opportunity	Countermeasure	Est. Date of Completion	Status	Actual Completion Date
					⊕	
					⊕	
					⊕	

Rapid Response



Cause & Effect Fish Bone Diagram

Identify possible causes for a particular effect



Used in conjunction with Brainstorming

Cause & Effect Categories

Manufacturing (5M's & E)

- **Measurements**

- Measurement devices
- Data acquisition systems
- Calibration
- Discrimination

- **Materials**

- Raw materials
- Parts/components

- **Manpower**

- Training
- Personnel issues

- **Machines**

- Equipment
 - Maintenance
- OEE

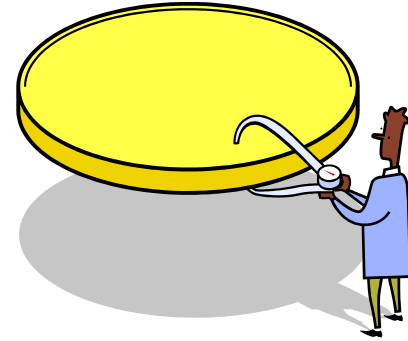
- **Methods**

- Standard operations
- Non-value added activities
- Scheduling

- **Environment**

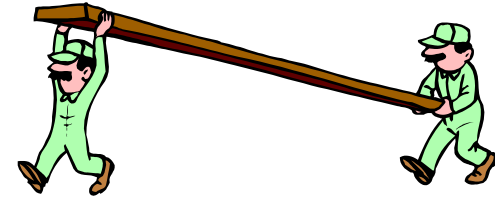
- Temperature
- Humidity
- Buildings
- Space

Measurements



- **Availability** – Is the required gauging available?
- **Operational definition** – Are the characteristics to be measured operationally defined?
- **Sample size** – Are a sufficient number of parts being measured?
- **Repeatability** – Are gage measurements consistently repeatable?
- **Bias** – Does any gage bias exist?

Materials



Variability - Is the variability of critical characteristics known?

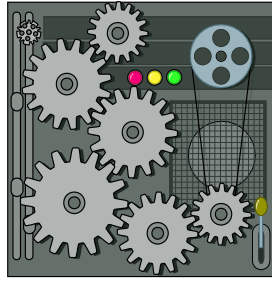
- **Changes** – Have any process changes occurred?
- **Suppliers** – What is the influence of multiple suppliers?

Personnel



- **Knowledge** - Do workers have the information they need to perform at their best?
- **Proficiency** - Have workers practiced enough to become proficient?
- **Accountability** - Does management hold workers accountable for their performance?
- **Staffing** - Do you have the right number of workers in the right places at the right time?
- **Ownership** - Do workers take ownership for their part in the business/production process?

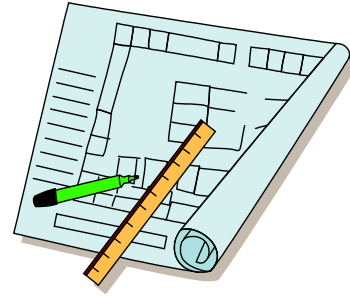
Machines



Capability – Do all machines demonstrate process capability?

- **Differences** – Have comparisons between machines, spindles, stations, fixtures, etc. identified meaningful differences?
- **Tooling** – Are tool change intervals well defined and adequate?
- **Adjustments** – Are the criteria for machine adjustments clear?
- **Maintenance** – Is a preventative maintenance program in place, and is it adequate?

Methods



- **Standardization** – Are job procedures defined clearly?
- **Expectations** – Is the recovery procedure clear if the standard procedure cannot be used?
- **Operational definitions** – Are operational definitions stated in the procedures?

Environment



- **Cycles** – Do problem cycles or patterns exist?
- **Temperature** – Does temperature influence operations?
- **Testing** – Has operational performance been evaluated?

Root Cause Analysis and Countermeasures

Ask Why 5 Times

- For each cause of an issue ask why until the root cause is determined

The ROOT Cause

- Rarely obvious
- You often cannot implement a permanent countermeasure on the spot
- Temporary Countermeasure or Band Aid :
 - Implemented on the spot to get production up and running
 - It is important **NOT** to let the band aid become the finale solution!
- Permanent Countermeasure:
 - A permanent countermeasure must be developed, using all resources, to prevent the issue from ever happening again.
 - Permanent countermeasures assure continuous improvement.



5 “Why’s” Example

Problem: Machine stops operating

1st Why: Why did it stop?

The fuse melted

2nd Why: Why did the fuse melt?

It overloaded

3rd Why: Why did it overload?

Inadequate lubrication

4th Why: Why was the lubrication inadequate?

The oil pump was not drawing enough oil

5th Why: Why was the oil pump not drawing enough oil?

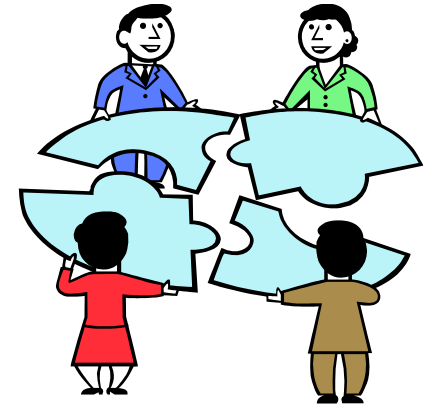
The pump shaft was worn

6th Why: Why was the pump shaft worn?

The oil was contaminated

7th Why: Why was the oil contaminated?

No filter on the intake pump



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