Lean Six Sigma in the Jaffrey Site of EMD Millipore.

Presenters:

John Snide -- MBB

D. Plourde – CSSBB, CQE

Agenda

- Jaffrey Lean Six Sigma System sharing - J. Snide
- Creating and Implementing a vision - J. Snide
- Drivers of team performance– D. Plourde
- Lean, safety and team performance – D. Plourde

Systems

- **Project Reviews**

(4 Slide + 1 Presentations – Template included below)

- **Score Cards**

- **5S Audit System**

- **Training**

- **Overall Equipment Effectiveness**

Charter (Mandatory Content)

Goal:

Problem Statement:

Business Case:

Team Members:

Status:

Supporting Slide #1 (You select content)

Supporting Slide #2 (You select content)

Supporting Slide #3 (You Select Content)

Road Blocks (Mandatory Content)

Time to work on project/Prioritization:

List barriers or indicate no barriers

Resources (people/money):

List barriers or indicate no barriers

Technical problems:

List barriers or indicate no barriers

Consensus:

List barriers or indicate no barriers

Note to Belts: Consider barriers you might be facing in each of these categories. If you have no issues in a particular category simply indicate “none” in that category. Don’t delete the category so everyone knows you considered it. **Delete this box before presenting**

Score Cards

- Once per month all area managers attend the site staff meeting and review a standardized score card
- Area managers are expected to understand their metrics and highlight favorable and unfavorable trends
- 22 metrics are reviewed and trended
- Metrics classes include EHS, Finance, Customer Focus and LSS
- Quality Labs and Technical services also have score cards
- Score cards are also used to communicate performance to the whole plant.

Score Cards

GO HOME

EHS	Target	Aug	Sep	Oct	Nov	Dec	Jan
(Incidents)	0	0	0	0	1	0	0
(Lost/Restricted Days)	0	39	30	7	20	31	30
EHS Team Score	75	60	85	85	60	75	65
(Overdue Incident/Near Miss Review)	0	0	0	0	0	0	1

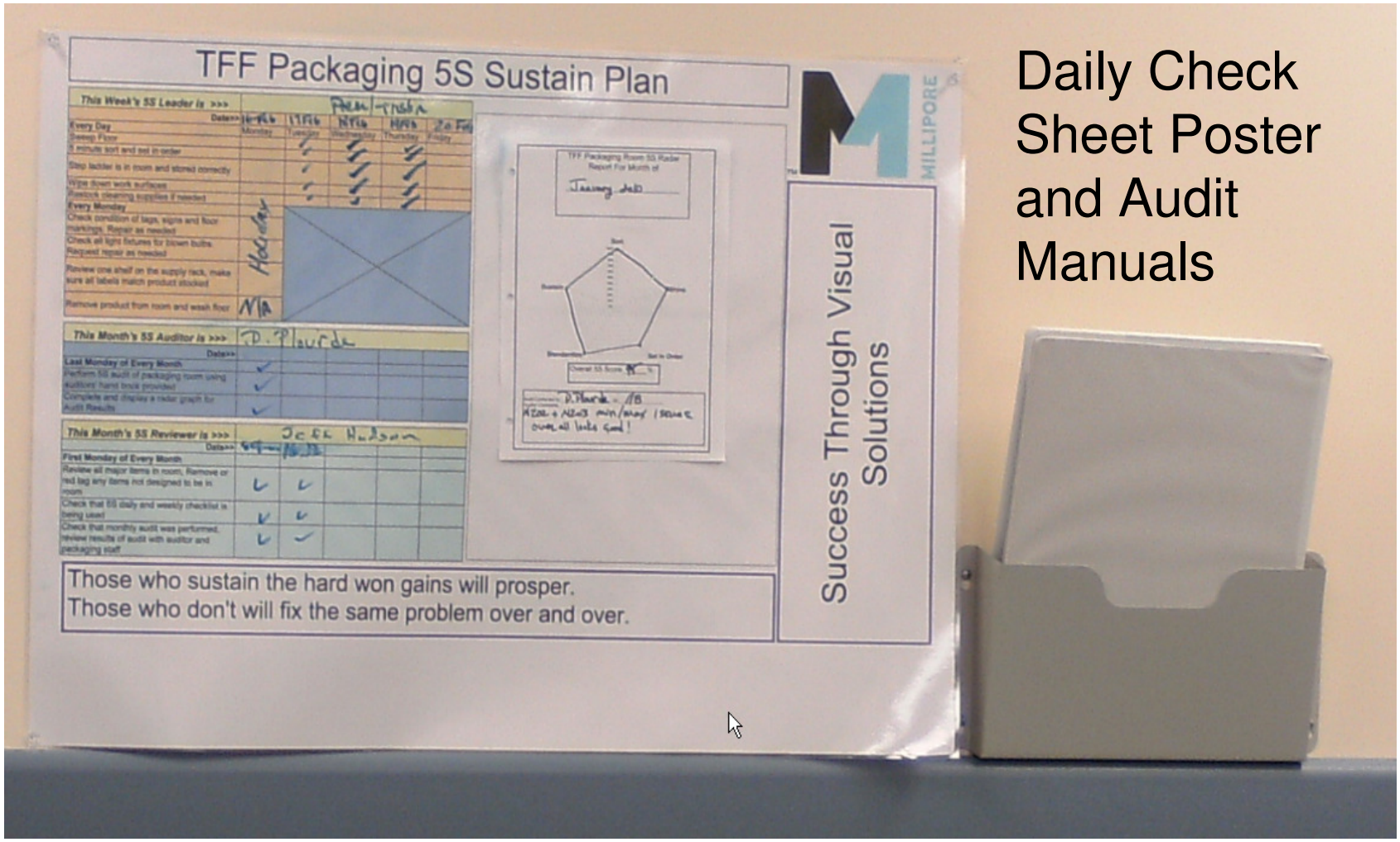
FINANCE	Target	Aug	Sep	Oct	Nov	Dec	Jan
Absorption	100%	86%	130%	83%	104%	111%	93%
(Scrap Value ($000's))*	518	412	648	295	345	582	499
(Scrap % of Matl SVOP)*	9%	9%	8%	6%	6%	20%	11%
(WIP Value ($000's))*	$1,701	$1,847	$1,252	$1,789	$1,713	$678	$1,746
(WIP % of Matl SVOP)	25%	41%	16%	35%	32%	24%	38%
(DL Labor Efficiency)	34%	32%	24%	31%	26%	26%	40%

Items in ( ) = Decreasing trend is good

CUSTOMER FOCUS	Target	Aug	Sep	Oct	Nov	Dec	Jan
(% of lots wNon Conformances)	10	9	4	9	4	4	10
(# Back-order >21 Days)	0	10	3	1	2	3	8
($ Back-order >21 Days (000's))	$0	$119	$10	$3	$2	$3	$12
(Oldest Back-order (days))	21	43	38	66	31	63	91
FPQ	90%	56%	57%	61%	55%	50%	53%
MPS	85%	39%	63%	87%	73%	69%	69%
(EM Performance)	2.70%	4.0%	12.1%	3.1%	3.8%	1.4%	2.4%

LSSI	Target	Aug	Sep	Oct	Nov	Dec	Jan
(Element Leadtime (days))	6	9	8	7	7	9	7
(FG Leadtime (days))	2	3	3	2	3	5	4
Visual Management Score	85	75	75	80	80	80	80
Annual Belt Training (10 Target)	0%	88%	100%	100%	100%	100%	100%
Sum of Kaizens Done (10 Target)	5	7	8	10	10	11	0

5th S methods



5th S methods

TFF Packaging Room 5S Audit Manual V 1.0

11 – Set in Order) All packaging materials are to be stored on this rack and should be maintained to a min max system. Spot check 3-5 part numbers on this rack. Are the items you spot checked stocked according to the labels and within min/max? Yes/No

12 – Sort) This rack should only contain items labeled with appropriate labels. Nothing should be "pig piled" on top of something else. Does the rack look orderly, does everything look like it's stored there by design and not just piled there for lack of a better place to put it? Yes/No

13 – Shine) Are all the labels in good shape and neatly placed on the shelves? Yes/No

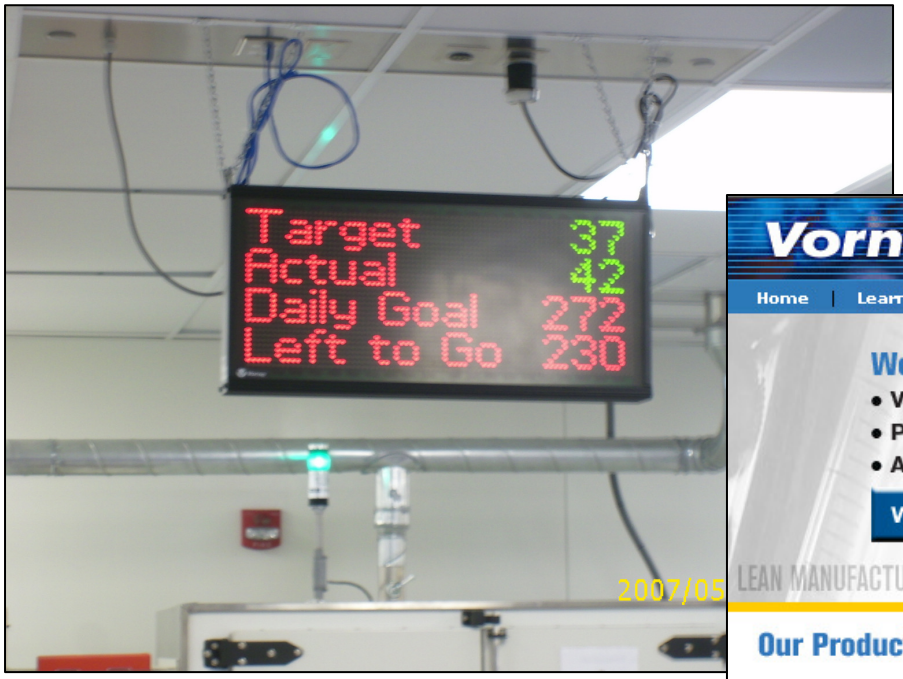
Sample from audit manual. Auditors are guided through the audit process with simple questions and "rights state" picture.

Training

- 60 plus GB and BB In Jaffrey
- Developed inside skill sets
  - –Green
  - –Black
  - –Blue
- Structured certification program
- Lean program

Overall Equipment Effectiveness

- Next system improvement



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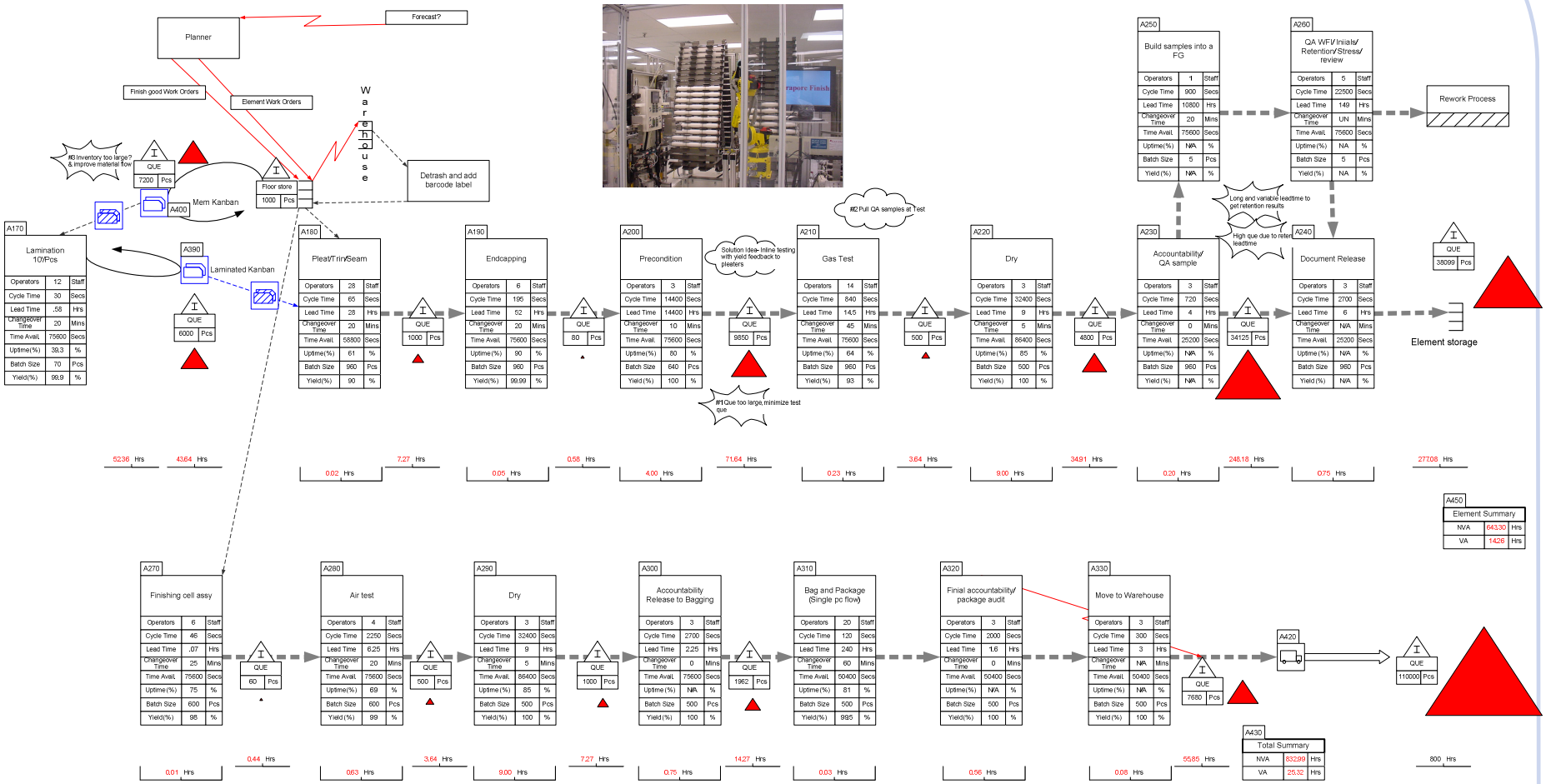
Accomplishments

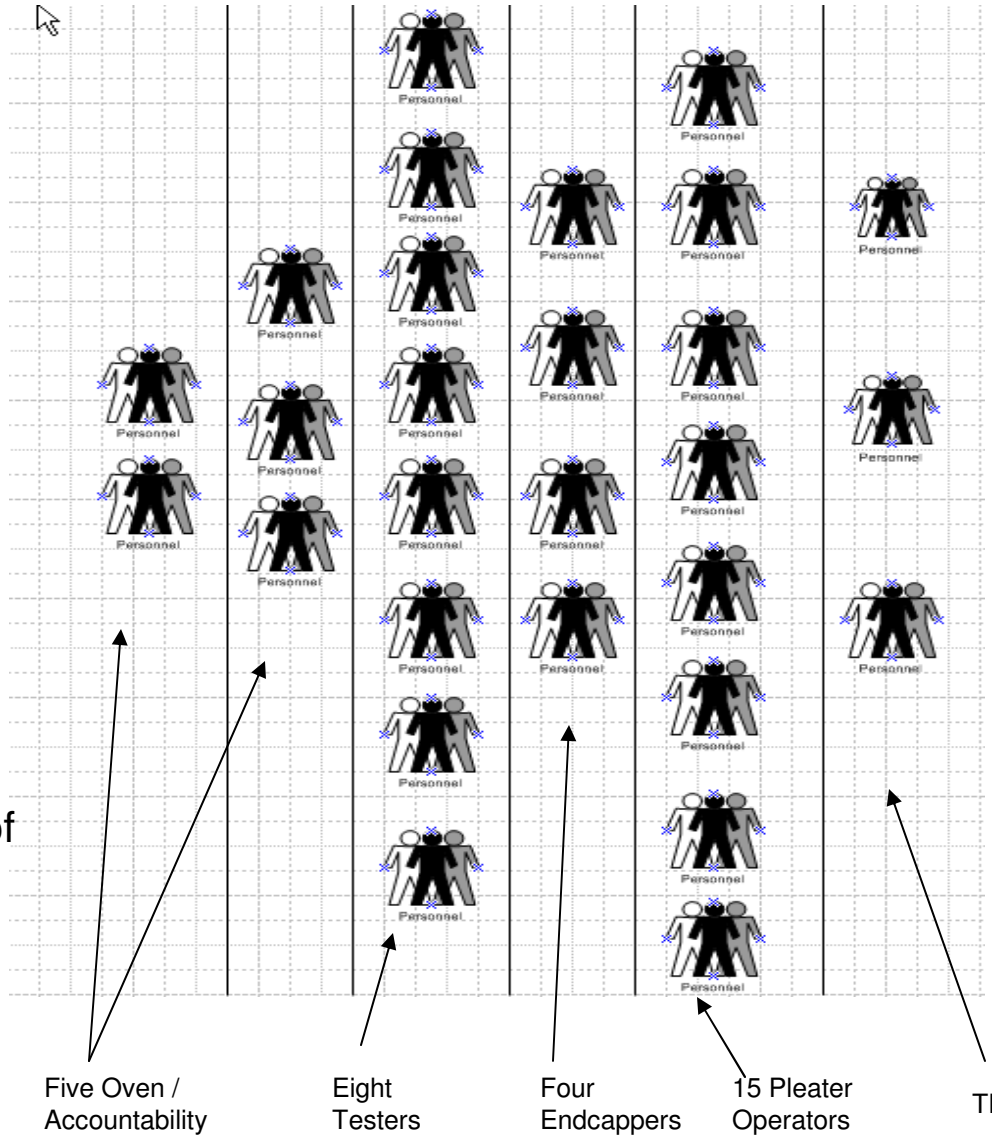
DURAPORE

It all starts with Understanding and Vision



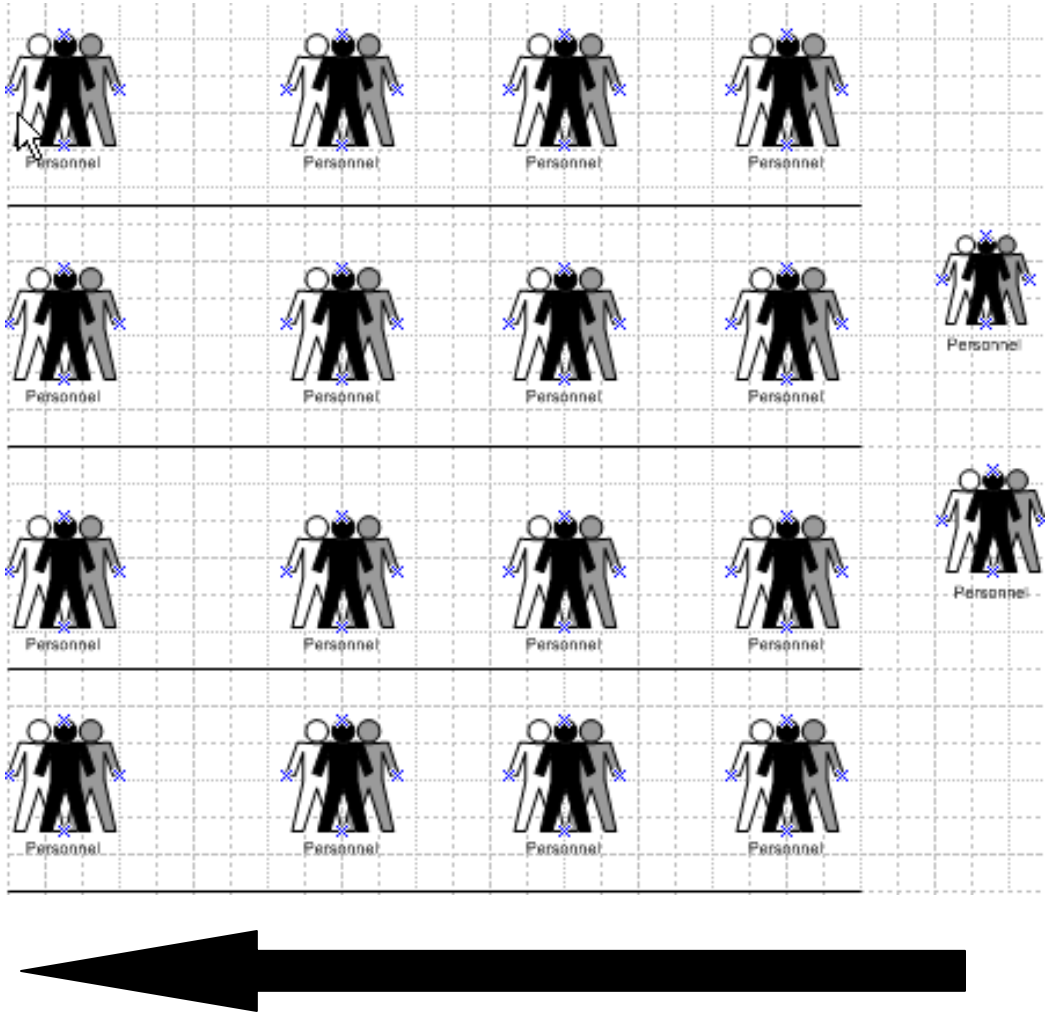
Current Durapore Front -End Structure

- Lines are not balanced
- Constant re-prioritization
- Supervisors/ clerks own all of the metrics
- WIP in several places which increases lead-time to customer
- Pleater Operators have no idea of how their lots yield in testing

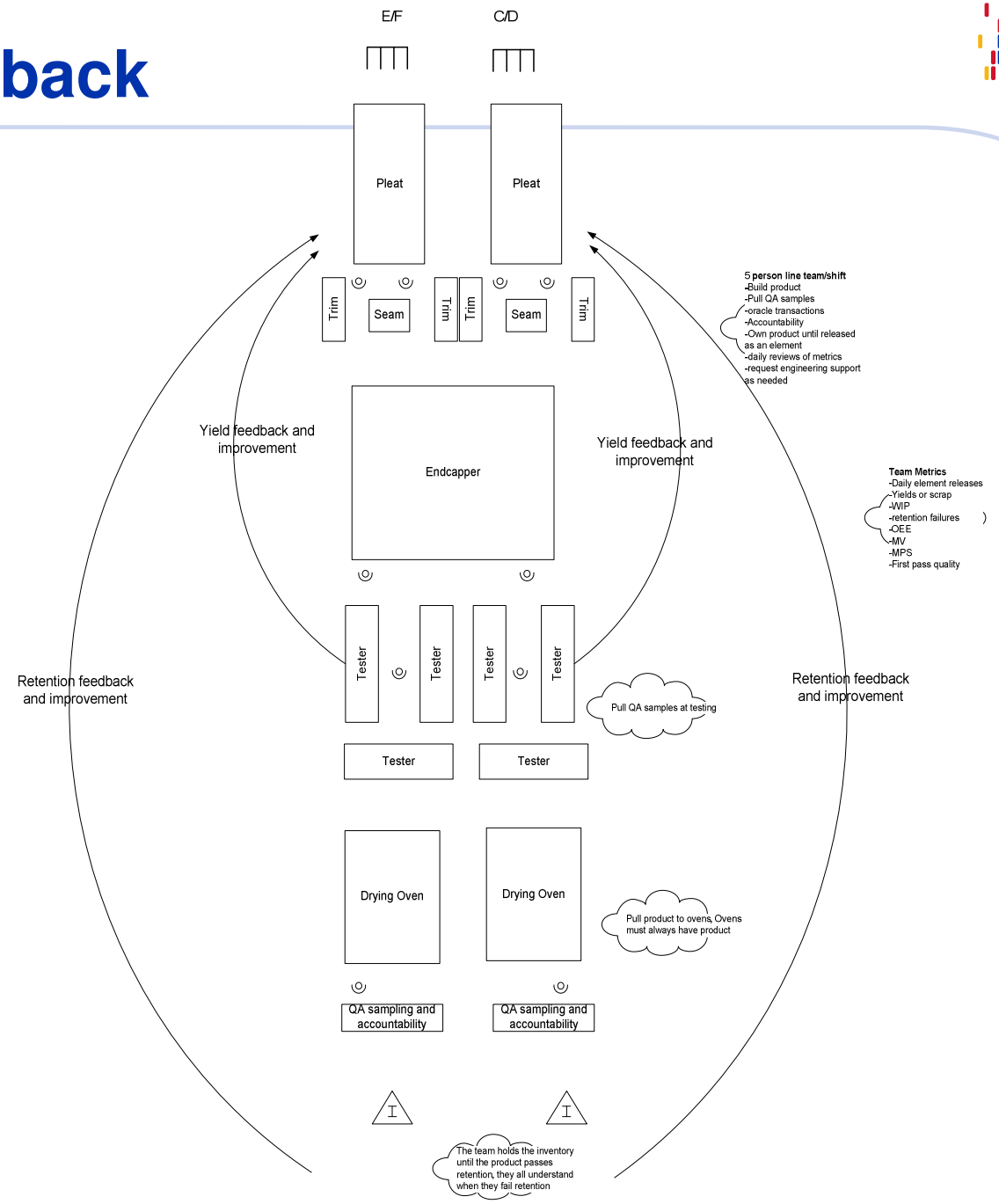


Durapore's new Structure

- Self-directed teams of six responsible for Pleating through Release
- Teams responsible for the success of their own lots
- Teams own their own yields, lead-times, FPQ,MPS ,QC pass rate,etc



Process feedback



Durapore Line Team Flow

Define

Team Members -

John Snide – Master Black Belt
Clay Creamer – Operations Manager
Grant Foise – Supervisor
Tim Allen – Production Manager
Joe Haswell – Engineering Manager

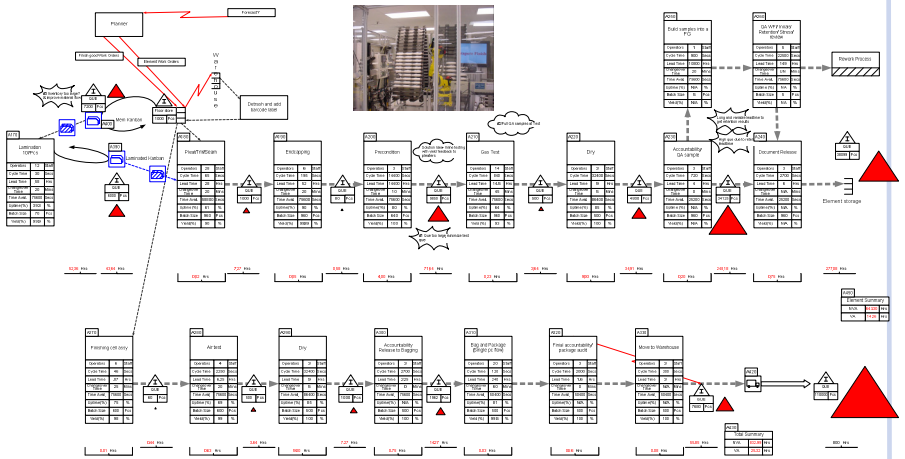
Problem Statement – *Current Durapore Leadtime ranges from 12-15 days while actual touch time Is around five days. This is a result of all the WIP at each work step.*

Benefit – *Less WIP, better process feedback, less labor required per output, faster response to customers and in the future less FG inventory.*

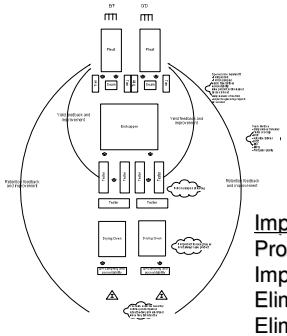
Customer Impact – *Improved execution to yearly plant production plan. Customer satisfaction and confidence in Millipore.*

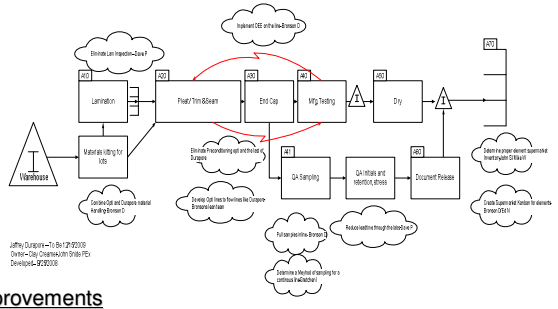
Goal – Improve the Durapore Pleating – test from 12.5 days to 7 days.

Measure



Analyze

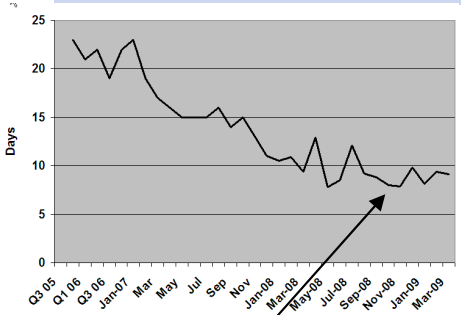


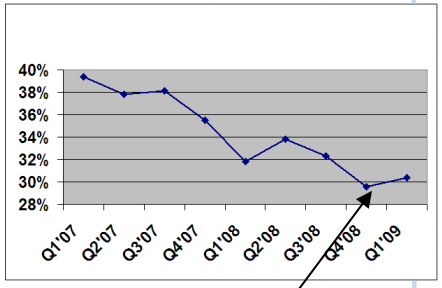


Improvements

Product flow lines thru testing
Improved leadtime through retention
Eliminated lamination Inspection
Eliminated preconditioning
Improved QA sampling process
Determined proper element /FG Inventory

Improve/Control





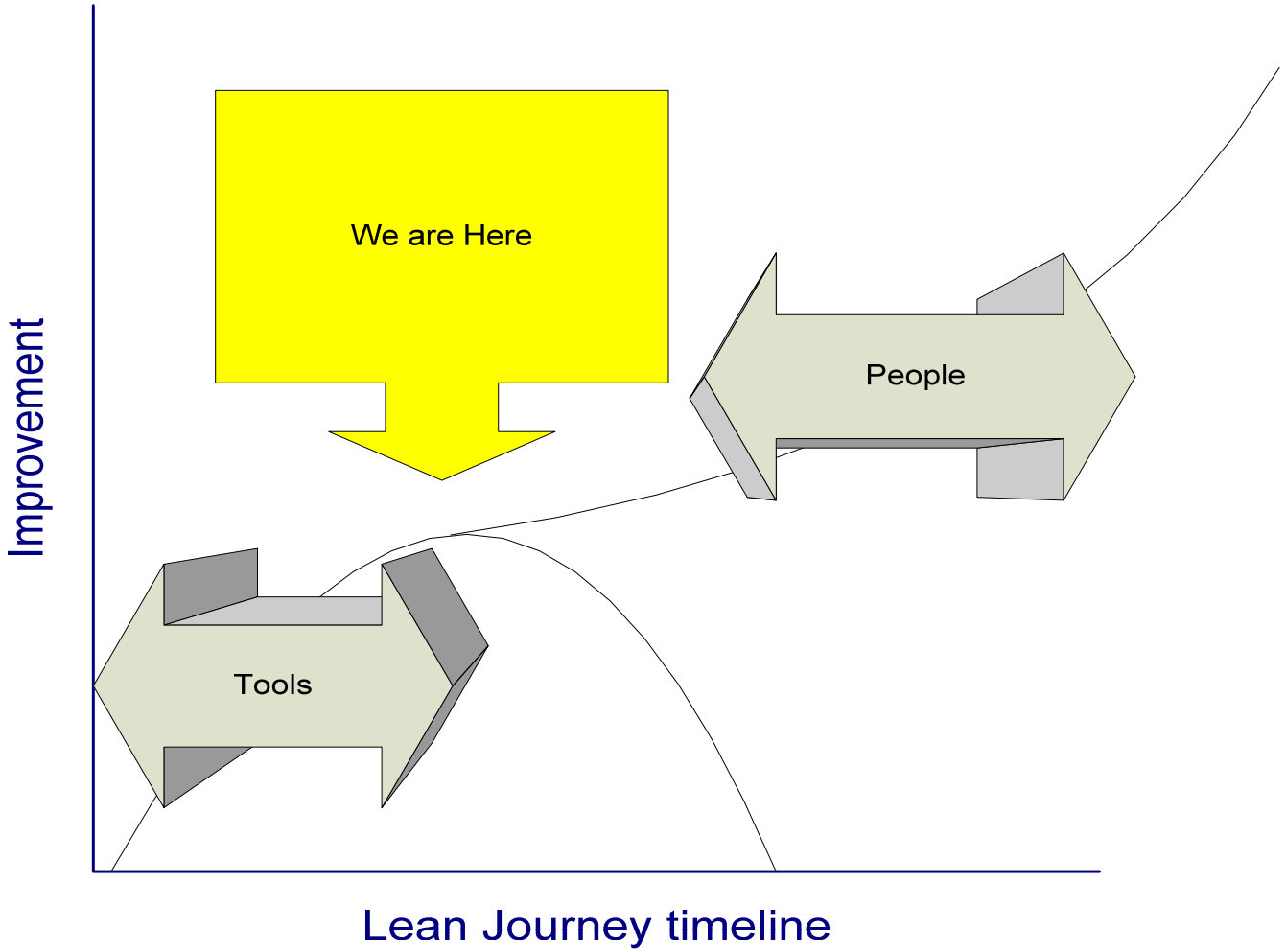
Leadtime

Labor cost / unit output

Durapore 2009 Results

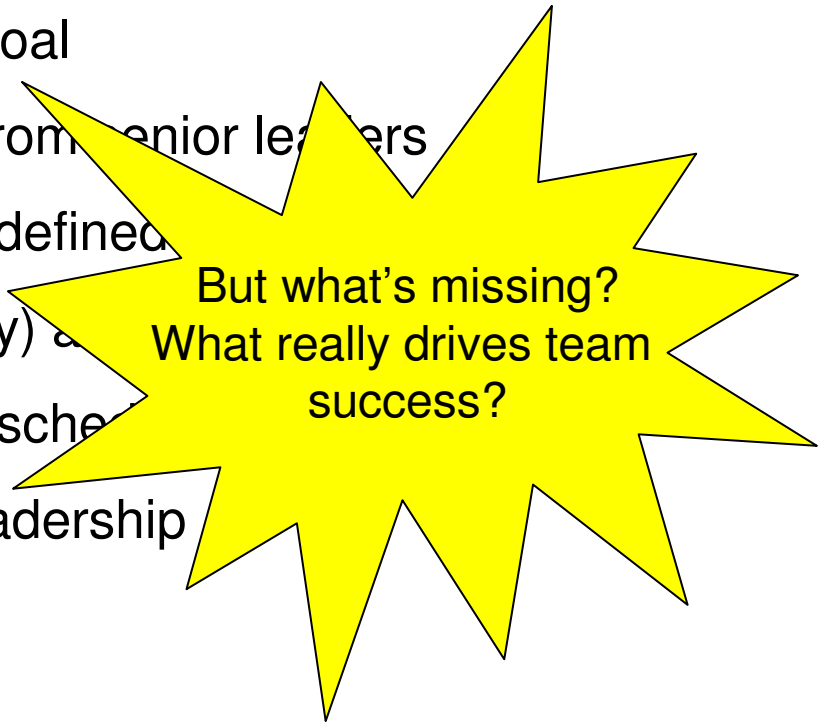
- Durapore Element Leadtime improved from 13 days to 8 days
- Durapore FG Leadtime improved from 8 days to 3 days
- Capsule Leadtime improved from 5 days to 2 days
- Reduced WIP at Testing by $120,000
- Reduction in leadtime allowed us to reduce FG inventory and raise element inventory for a net inventory savings of $2,000,000

It is all about people



What are the necessary ingredients to a successful project?

- Clear definition of the problem and goal
- Strong and consistent sponsorship from senior leaders
- Well balanced team with clear roles defined
- Sufficient resources (time and money) a
- Good project management support (sche
- Experienced team facilitation and leadership



The human factor

- Creativity
- Passion, energy, drive
- Vision
- Empowerment and ownership

Lean meets Safety

- Problem: Pellicon 2 Maxi process received a 40 (high risk) on a Brief and Best ergonomic assessment.

- Goal: Eliminate ergonomic hazards from the Pellicon 2 Maxi process.

The hazards – high force required

The hazards – Heavy Lifting

Lean, Safety and Team Performance

Video removed for confidentiality reasons.

Measured Success

- Ergonomic risks eliminated
- Controlled work pace allows more time for quality
- Lean workflow created
- Simple, solution, like Velcro Sneakers
- Easier to adjust to Takt rate
- Reduced labor content to build product

We had all the basics…but

- Clear definition of the problem and goal
- Strong and consistent sponsorship from senior
- Well balanced team with clear roles defined
- Sufficient resources (time and mon reach goals
- Good project management support (sched WBS, etc.)
- Experienced team facilitation and leadership

The human factor drove performance

- **Creativity** – four completely different solutions were developed and scrapped for better ideas. *(Sometimes creativity should trump timeline)*
- **Drive** – The team seized the opportunity to not only fix the problem but **change the paradigm**. Success was never in question.
- **Vision** -- through our brainstorming and discussions we could see the next evolution of our thinking and we strove for it. “What if….” “Why can’t we…”
- **Feelings of ownership** – all the necessary process owners were involved, active team members.

How do we systematically create more teams like this one?

- Recognize the human factor. Managers can't actually motivate employees, they can only create opportunities for employees to motivate themselves.
- Recognize that people are the creative engine. Know your people, talk to them, listen to them.
- Allow people to have ownership for their ideas and implement their ideas themselves.
- Establish a positive attitude for yourself and in your team. Respecting others is important in creating a positive environment for your team.
- Celebrate success

Thank you for your attention.

We’d like your feedback and questions!

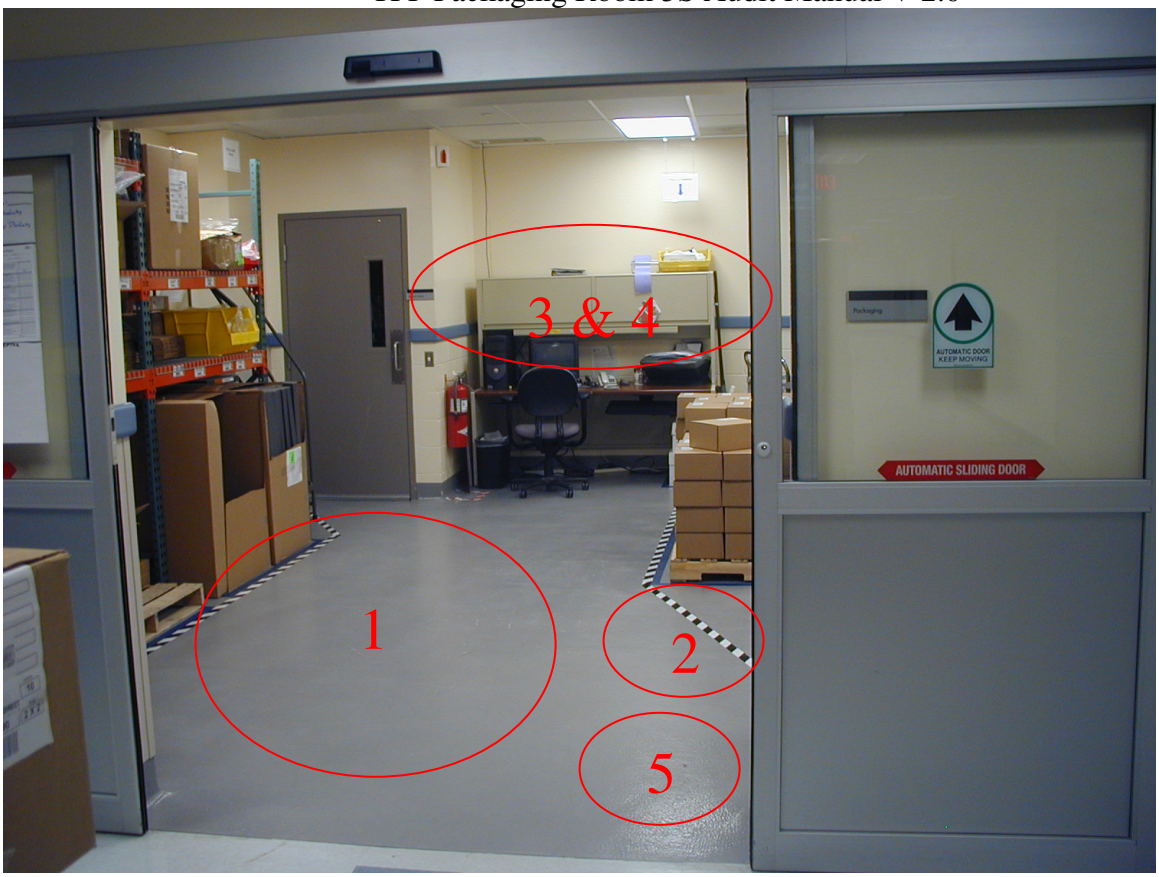
Packaging Room 5S Auditor's Manual.

A word to our auditors:
First off, the TFF packaging room team would like to thank you for taking a few minutes to complete this independent audit of our work area. We know your time is valuable and we appreciate your help. Thank you!

What you're being asked to do:
As one of our 5S auditors you are being asked to give an unbiased review of our performance on each of the 5S areas of Sort, Set in order, Shine, Standardize and Sustain. You are being asked to use the procedure outlined in this document so that we get consistent and standard feedback on the same audit questions every time. There is also a section in the audit where you can give free-form commentary on what you see. We welcome your feedback. This process should take you no longer than 10 minutes to complete the basic audit but feel free to spend more time if you can, again, we appreciate any feedback you can provide.

Procedure:

- The procedure is simple. Each of the pages that follow show you a "best state" picture of the work area. Each picture has audit points identified and categorized by each of the 5Ss.
- Compare the "best state" in the picture with what you see in the "current state" and answer the questions yes or no.
- Use the check sheet to keep track of your responses.
- At the end, tally up the points for each of the 5S categories
- Fill out a radar diagram and post on the 5S Sustainment board. Add your comments on the radar chart if you wish.
- File your check sheet and *last month's* radar chart in the archive section of this manual.
- Send an email or voice mail to the person listed as this months 5S reviewer letting them know this months audit results are ready for them to review with the team.



1 - Sort) This is an aisle way. It should not be clogged with product, packaging materials or racks with the exception of supplies being stocked. Is the aisle way clear? Yes/No

2 – Shine) The black and white tape indicates an aisle. Is the tape in place, in good condition and the right color? Yes/No

3 – Sort) The top of this desk should not be used to store anything except the cleaning materials tote. Is this area clear of all items except the cleaning supplies? Yes/No

4 – Shine) Cleaning supplies should be available at all times. Is the yellow tote in place and are the cleaning supplies stocked (IPA Spray, Wipes etc.) and are the broom and dust pan stored on the side of the desk? Yes/No

5 – Shine) The floor in the entire packaging room is to be swept (including under benches and desks) once a day and washed once a week. Does the floor look like these things are happening? Yes/No

6 – Set in Order) There are 4 designated pallet loading areas outlined with blue tape, two near the middle of the room and two to the right of the door when entering the room. These should be the only four pallets in the room with finished product and they should be in the designated area. Are there only four pallets and are they where they should be? Yes/No

7 – Sort) The space under the work benches is not to be used for storage because it makes it hard to sweep the floor. Is the area under the benches clear of all items? Yes/No

8 – Shine) The work bench surfaces are supposed to be wiped down once a day. Do they look like they were cleaned yesterday? Yes/No

9 – Set in Order) The green marking shows where racks of product should be positioned during the packaging process or waiting for packaging. Are green squares on the floor and is the tape in good condition? Yes/No

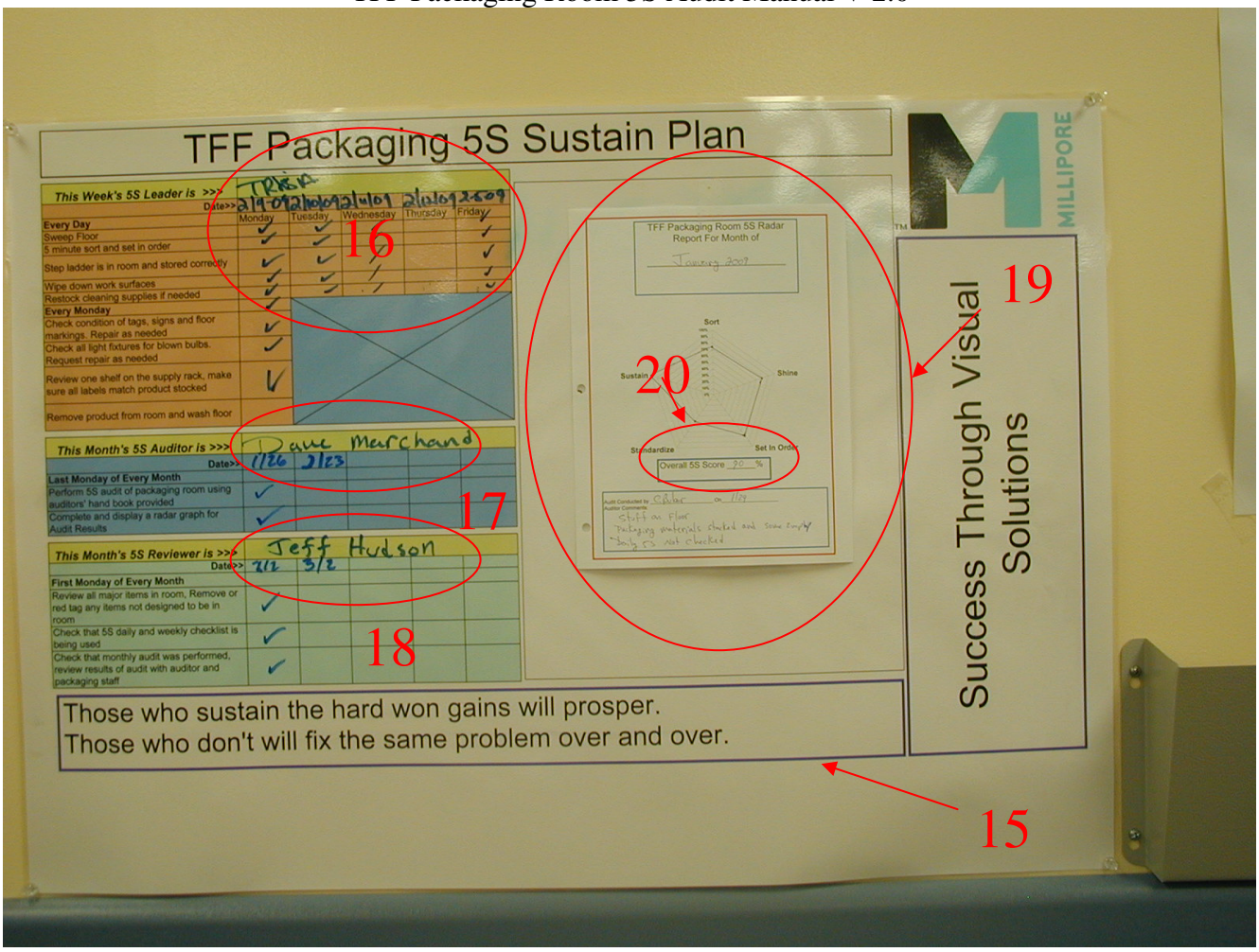
10 – Set in Order) Proper lighting is important in this room. Are all the bulbs in the light fixtures working? Yes/No

11 – Set in Order) All packaging materials are to be stored on this rack and should be maintained to a min max system. Spot check 3-5 part numbers on this rack. Are the items you spot checked stocked according to the labels and within min/max? Yes/No

12 – Sort) This rack should only contain items labeled with appropriate labels. Nothing should be “pig piled” on top of something else. Does the rack look orderly, does everything look like it’s stored there by design and not just piled there for lack of a better place to put it? Yes/No

13 – Shine) Are all the labels in good shape and neatly placed on the shelves? Yes/No

14 – Set in Order) The rack system in this room has some high shelves. In order to get there safely a ladder is needed. Is a ladder stored next to the rack and is the “return address” sign on the ladder? Yes/No



15 – Sustain) This poster is the main tool used to standardize and sustain the gains made in the TFF packaging room. Is this poster hanging in the room where it can be seen and accessed on a daily basis? Yes/No

16 – Standardize) The left side of this poster shows the 5S job cycle chart. Each week and month the job cycles change. Has a 5S leader been identified for this week and are the tasks being completed according to the chart? Yes/No

17 – Standardize) Has this months 5S reviewer been identified? Yes/No

18 – Sustain) Based on the history on the poster and the archive in the audit binder, have audits been completed on a regular bases? Yes/No

19 – Sustain) A radar chart is a simple visual way of displaying the 5S audit results. You, the auditor, are supposed to post your audit results here at the end of your audit. Is a radar chart posted from last month? Yes/No

20 – Sustain) The TFF packaging room has set a goal to maintain the overall 5S Score at 80%. Was **LAST Months <u>Overall</u>** 5S Score at 80% or better? Yes/No

Question #	Sort	Set in Order	Shine	Standardize	Sustain
1	Yes/No				
2			Yes/No		
3	Yes/No				
4			Yes/No		
5			Yes/No		
6		Yes/No			
7	Yes/No				
8			Yes/No		
9		Yes/No			
10		Yes/No			
11		Yes/No			
12	Yes/No				
13			Yes/No		
14		Yes/No			
15					Yes/No
16				Yes/No	
17				Yes/No	
18					Yes/No
19					Yes/No
20					Yes/No
Totals	**of 4**	**of 5**	**of 5**	**of 2**	**of 4**
Percentages	**%**	**%**	**%**	**%**	**%**
Overall 5S Score - Subtract 5% for each No response				**%**	

SPMM Master Rolling 5S Sustain Plan

This Week's 5S Leader is >>>					
Date>>					
Every Day	Monday	Tuesday	Wednesday	Thursday	Friday
Sweep/Mop Floor in Rolling Room and WiP Room					
5 minute sort and set in order					
Change Tacky Mats					
Wipe down work surfaces					
Make sure all racks in holding room are marked with correct sign and in correct lane					
Check Consumables (Foam Donuts, Gloves, Bags etc.)					
Check gowning room for sufficient supply of clean smocks, hair nets and beard covers.					
Every Monday					
Wash all transfer carts					
Thoroughly wipe down all equipment					
Check all storage locations and make sure all are properly labeled and all labels are in good condition and accurate					

This Month's 5S Auditor is >>>					
Date>>					
Last Monday of Every Month					
Perform 5S audit of the master rolling room using auditors' hand book provided					
Complete and display a radar graph for Audit Results					

This Month's 5S Reviewer is >>>					
Date>>					
First Monday of Every Month					
Check that 5S daily and weekly checklist is being used					
Check that monthly audit was performed, review results of audit with auditor operators					

Post Latest 5S audit radar chart here

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Those who sustain the hard won gains will prosper.
Those who don't will fix the same problem over and over.