

Singer Sewing Company

The word "SINGER" in a bold, red, serif font, with a registered trademark symbol (®) to the upper right of the letter "R".

Returns/Refurb Process

***Project Lead: Mike Simmons/Deborah Winfield
Sponsor (Champion): Gary Peel
Company/Department: Singer Worldwide LLC***

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Project Team

- ☐ Mike Simmons
- ☐ Deborah Winfield
- ☐ Gary Peel
- ☐ Neal Dickson
- ☐ Tim Burroughs

Singer Worldwide
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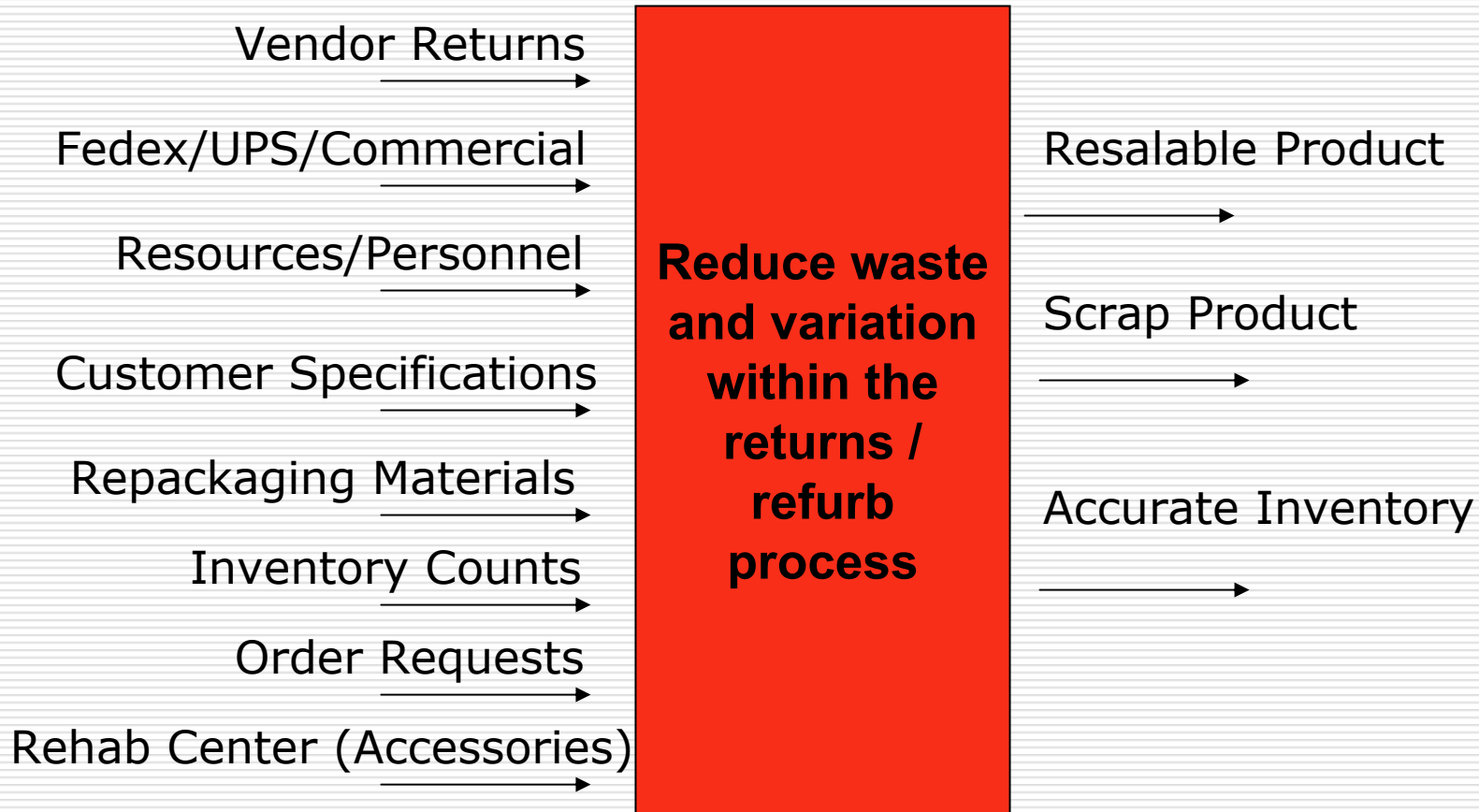
Business Case

In September 2004, the returns/refurb center was relocated from Memphis, TN to the LaVergne, TN. The returns/refurb center was put together from scratch and since that time there has been numerous changes to the operation and the overall process. There is currently a need to develop and streamline the process in order to identify process failures which result in product waste.

Goals & Objectives

- Improve flow-cycle time
- Improve inventory turn-on hand
- Standardize and document process
- Balance work
- Eliminate doubling handling/duplication of efforts
- Implement new production line for 1120's to return 71% of product from truck to new inventory

Project



Project Scope

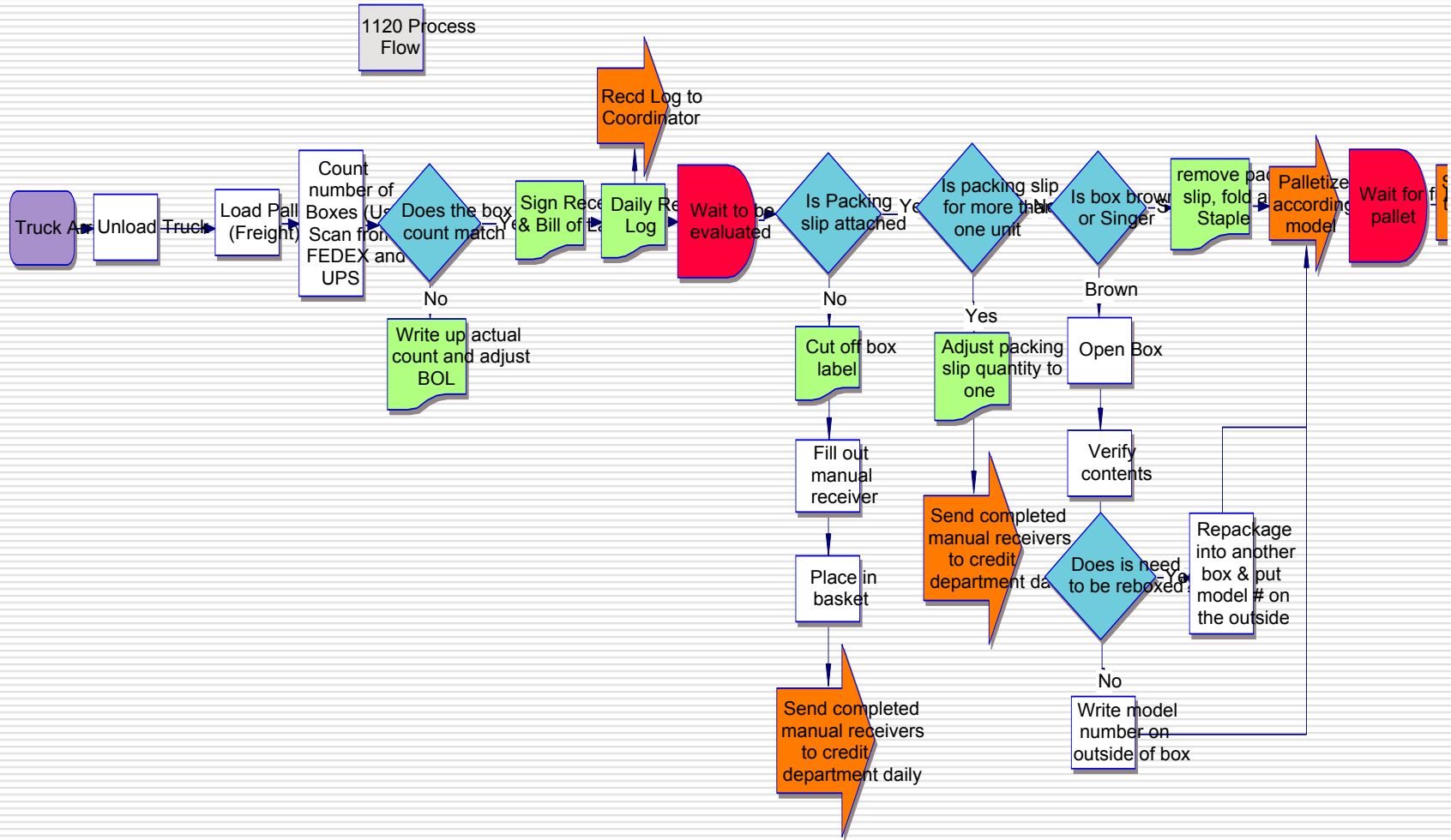
Area: Returns area

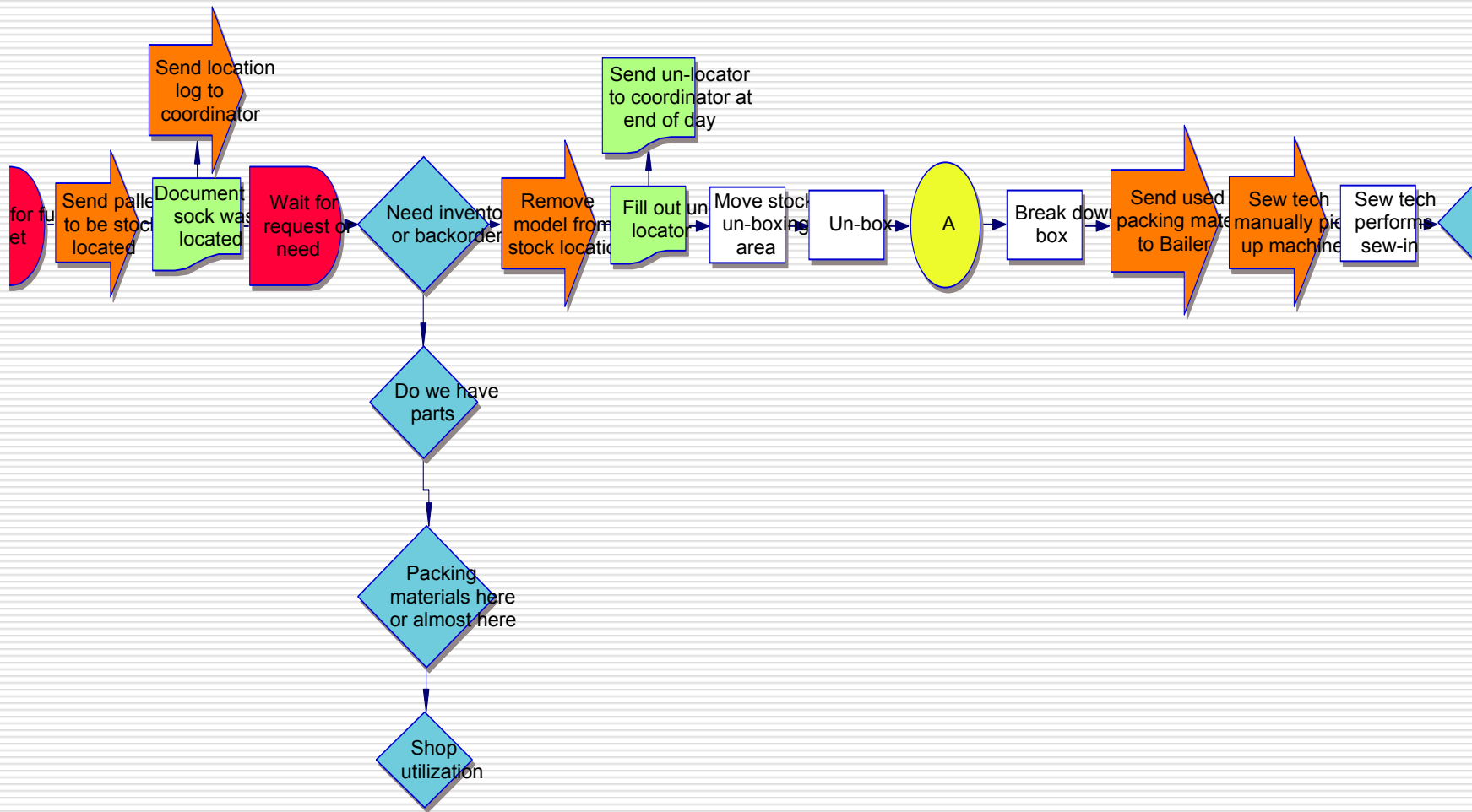
Refurb: Dock door → Rebox & Refurb → To Inventory

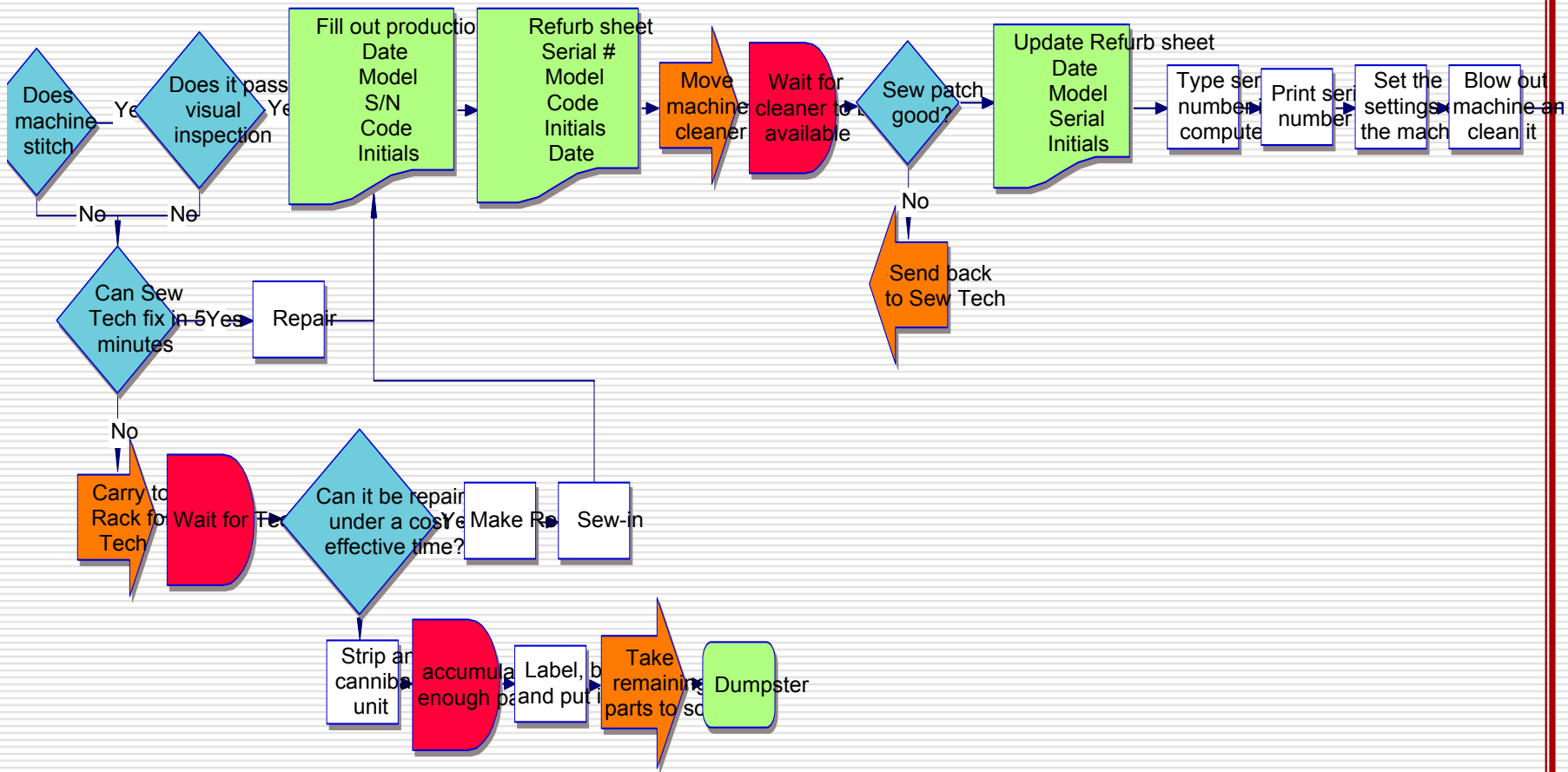
Problem Statement

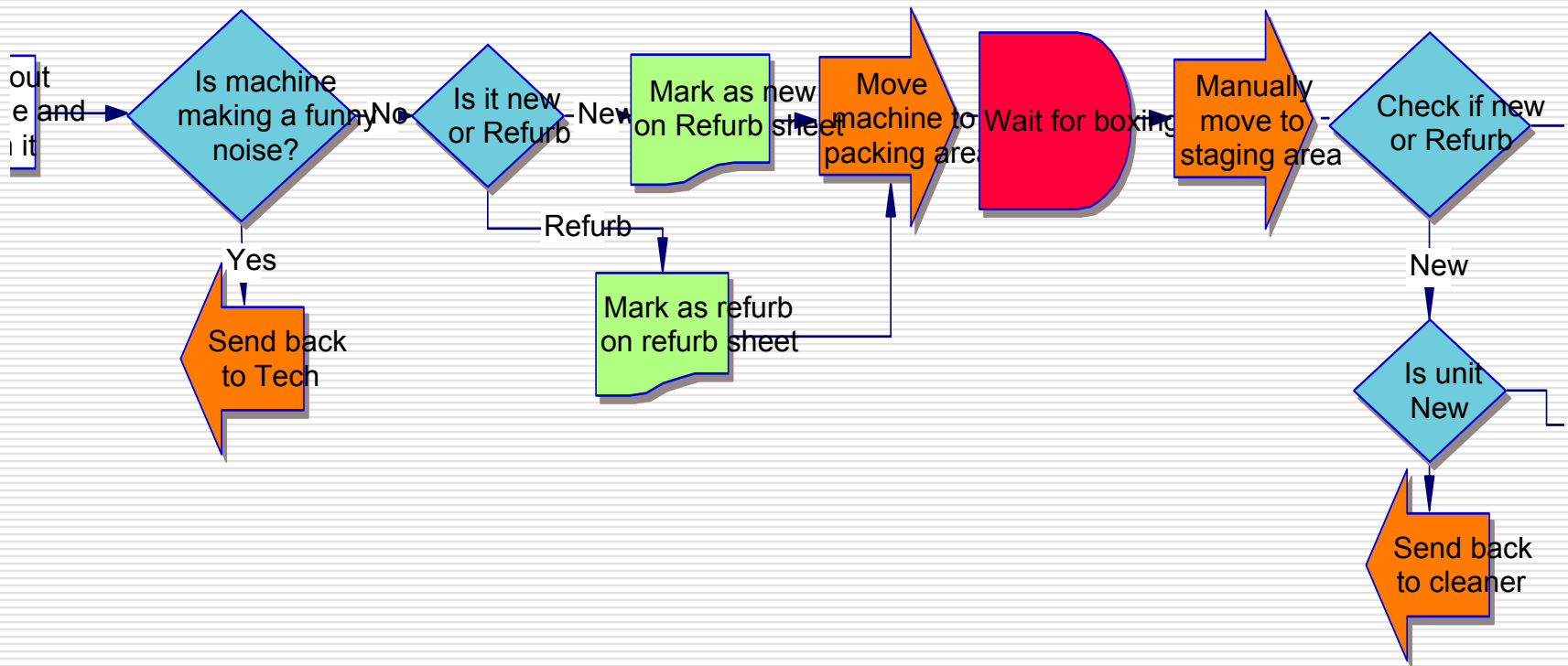
Currently the process for handling/processing returns through the Singer Returns Center is not well documented. There have been numerous changes and/or additions to the existing process which causes a substantial amount of variation and waste. When changes or modifications are made, they are not documented. Additionally the scrap rate and the quality of reburished machines has improved, but there is still a substantial amount of improvement needed.

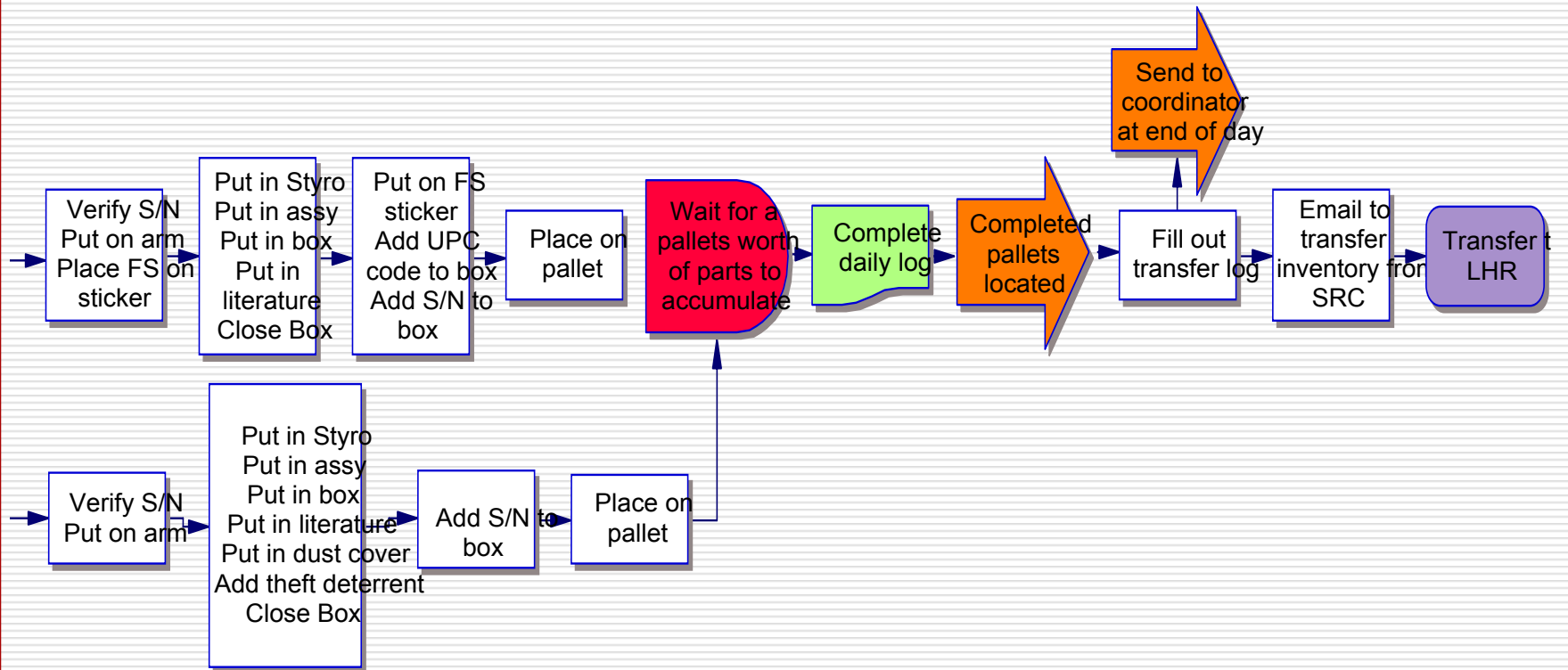
Current Process Flow

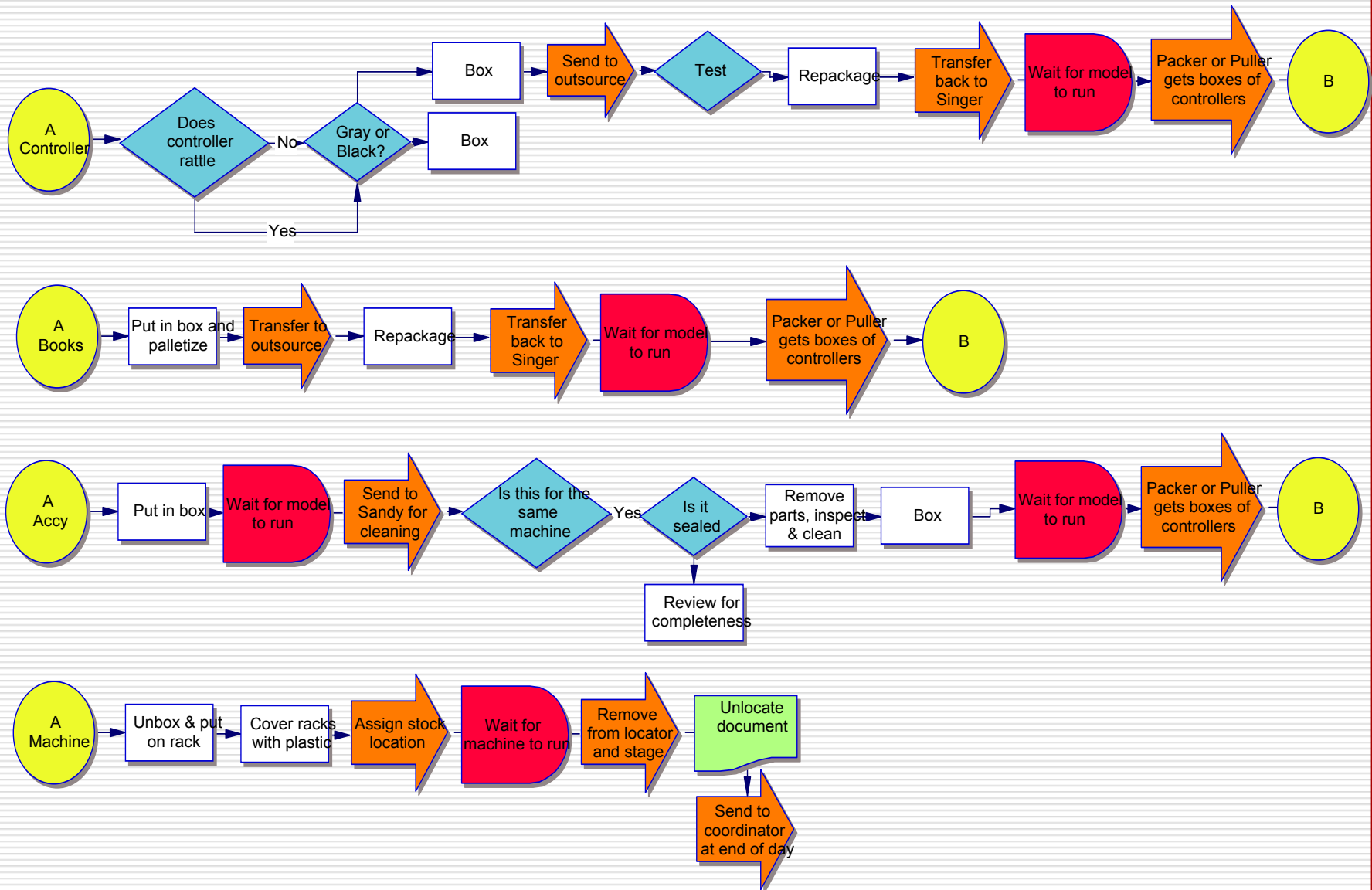








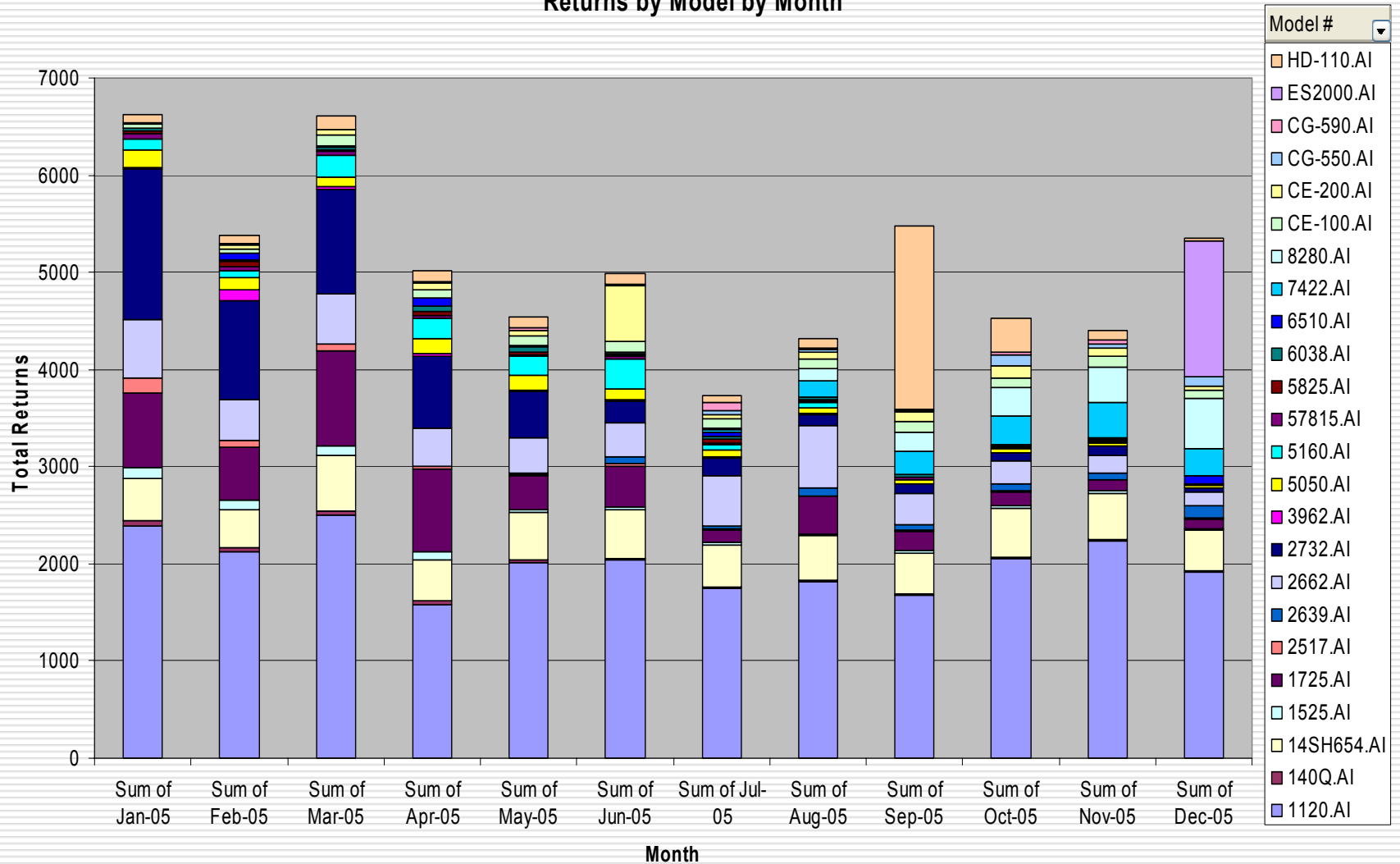




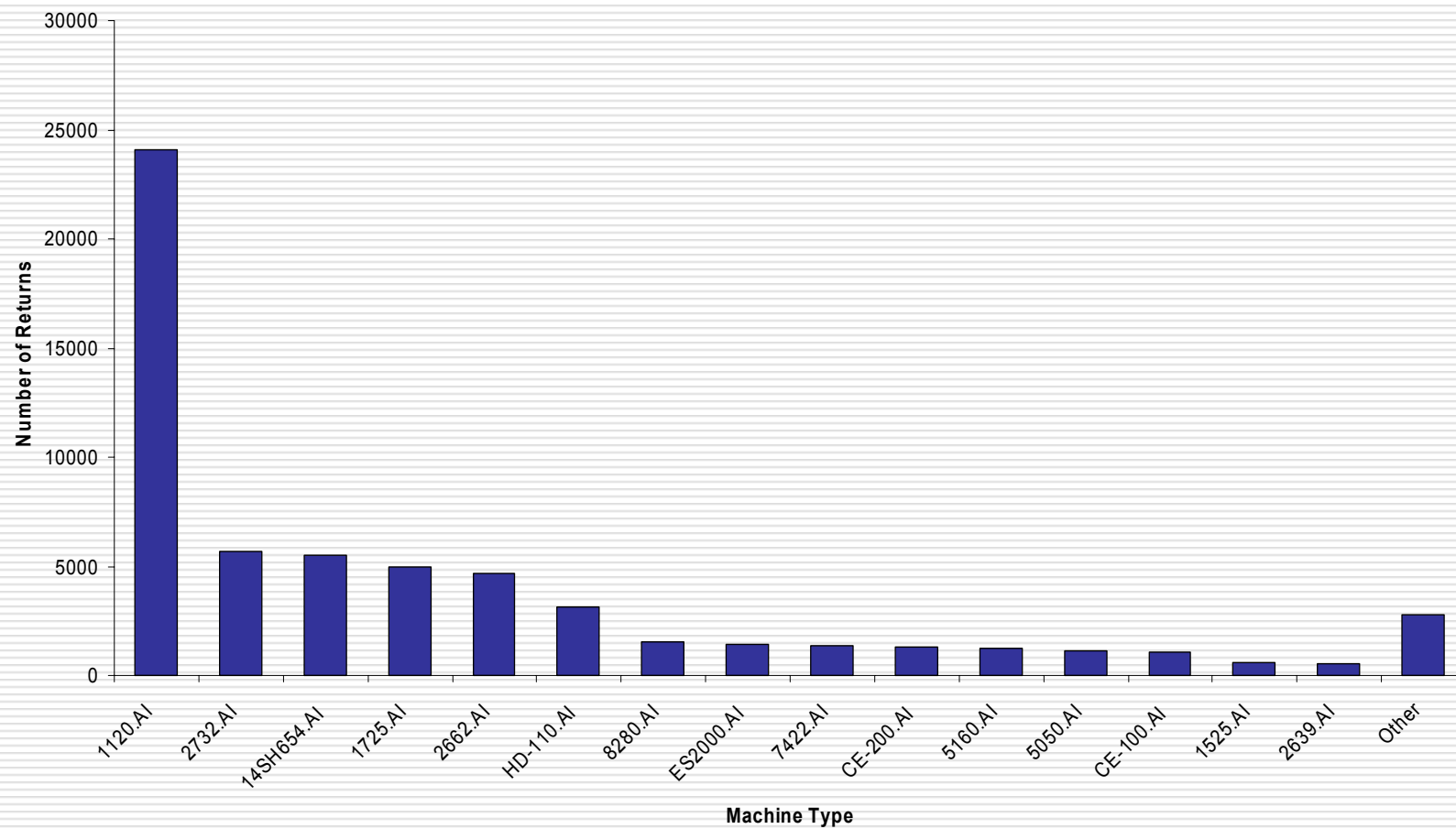
Returns for 2005

- ❑ Prior to Kaizen session, data regarding all 2005 returns was analyzed
- ❑ Determined that the 1120 model was ranked #1 for returns in 2005
- ❑ Of the 26,262 1120's that were returned, 12,256 were returned to inventory as "new" and 6,642 as "refurbed"

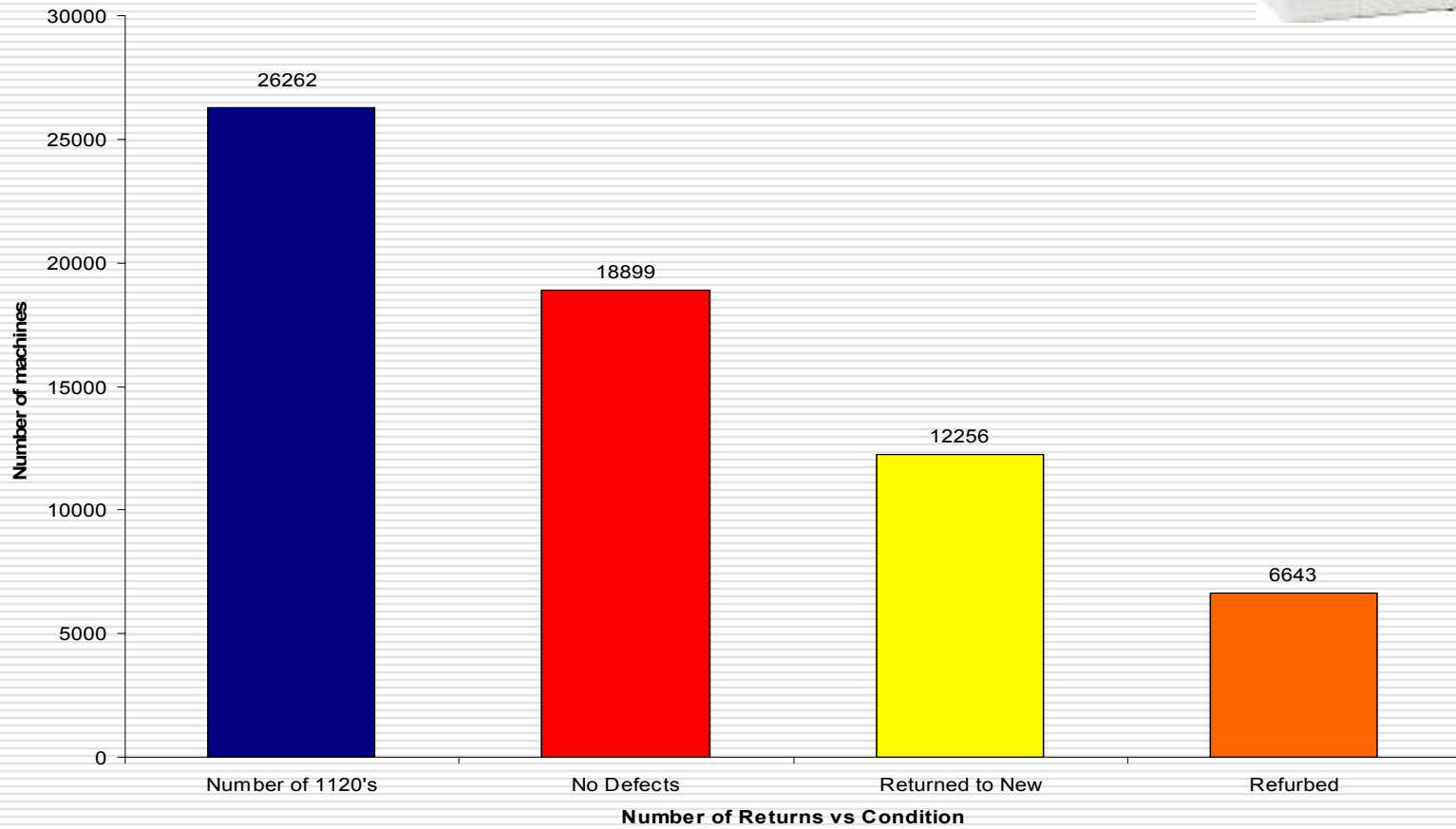
Returns by Model by Month



Top 25 Returns for 2005



1120 Repaired in 2005



Time Study

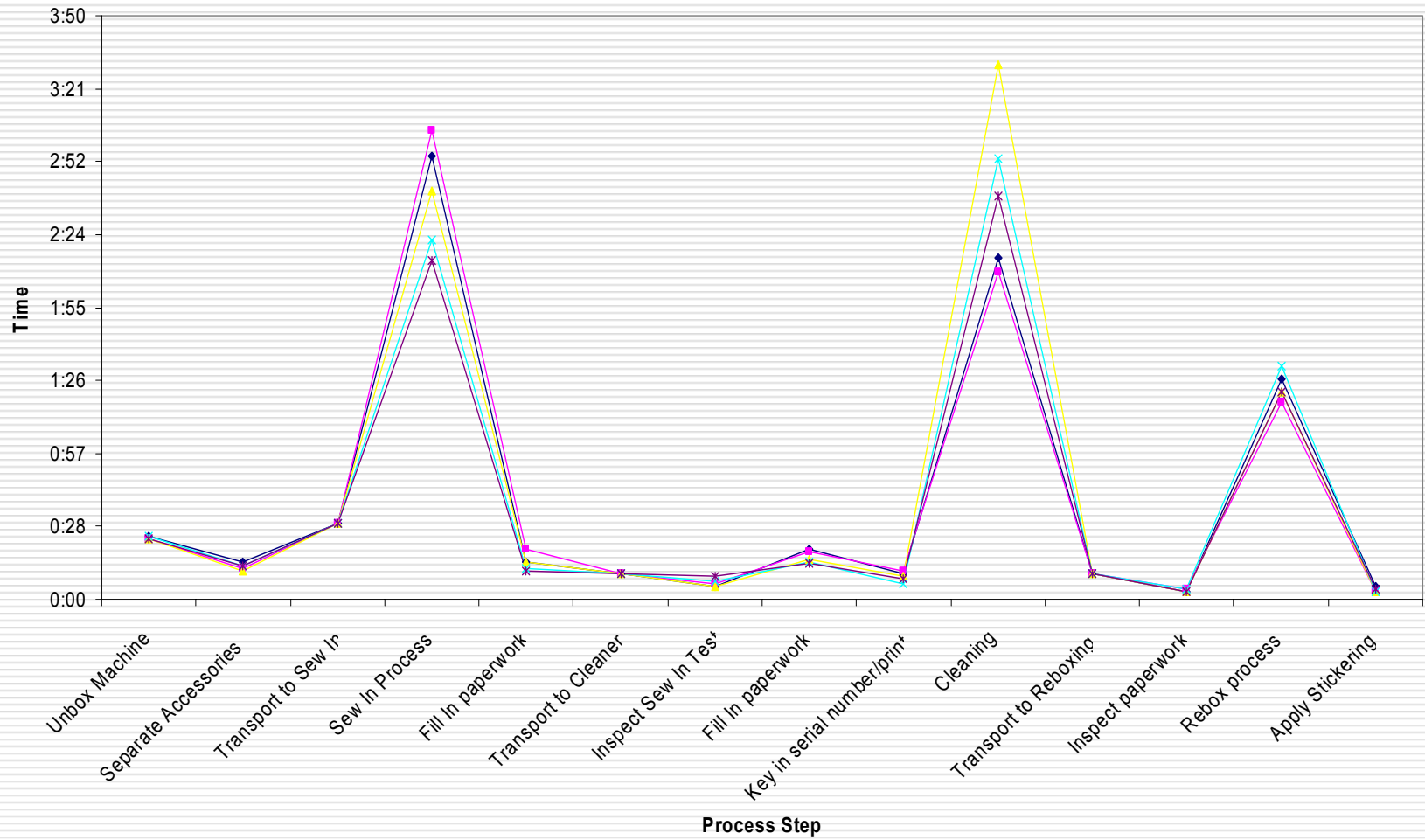
- Prior to Kaizen, a time study was done to evaluate each individual part of the repair process “current state”
- Process included:
 - Unboxing area
 - Sew Tech
 - Cleaner
 - Reboxer

Process Time 1120



#	Step	V/NVA	Time	Time	Time	Time	Time	Average	Distance
1	Unboxing Machine	nva	0:25	0:24	0:24	0:25	0:24	0:24	
2	Separate Accessories	nva	0:15	0:12	0:11	0:13	0:13	0:12	
3	Transport to Sew In	nva	0:30	0:30	0:30	0:30	0:30	0:30	35 ft
4	Sew In Process	va	2:55	3:05	2:41	2:22	2:14	2:39	
5	Fill In paperwork	nva	0:15	0:20	0:15	0:12	0:11	0:14	
6	Transport to Cleaner	nva	0:10	0:10	0:10	0:10	0:10	0:10	10 ft
7	Inspect Sew In Test	nva	0:05	0:06	0:05	0:07	0:09	0:06	
8	Fill In paperwork	nva	0:20	0:19	0:16	0:15	0:14	0:16	
9	Key in serial number/print	nva	0:10	0:11	0:09	0:06	0:08	0:08	
10	Cleaning	va	2:15	2:09	3:31	2:54	2:39	2:41	
11	Transport to Reboxing	nva	0:10	0:10	0:10	0:10	0:10	0:10	10 ft
12	Inspect paperwork	nva	0:03	0:04	0:03	0:04	0:03	0:03	
13	Rebox process	va	1:27	1:18	1:22	1:32	1:22	1:24	
14	Apply Sticker	nva	0:05	0:03	0:03	0:03	0:04	0:03	
	Total Time		9:05	9:01	9:50	9:03	8:31	9:06	

1120 Process Run Chart



Kaizen Event

- ❑ A Kaizen event was held in LaVergne on February 7-10
- ❑ Project team consisted of several members of the SRC (Singer Returns Center) and other key personnel
- ❑ Kaizen started with current state process map and continued with several trial runs for the implementation of 1120 line

Trial 1

Actions:

- Team went to returns area of warehouse and moved/relocated workstations to include:
 - Unboxing
 - Sew Tech
 - Cleaner
 - Boxer

- Time each area upon completion of set up and run load chart for trial

Unboxing

- Team determined we would need the following items to set up the unboxing area:
 - Containers/boxes to hold:
 - Controllers/black & grey
 - Accessories
 - Books & other literature
 - Covers
 - Arms

Unboxing

- Controllers (foot pedals):
 - Determined that we did not need to separate the black and grey controllers.
 - Shake each controller- rattle
- Accessories:
 - Accessories in bag could be left in bag- others tossed in box- to be sent to accessories cleaner
- Books (literature/documentation):
 - Toss all but the book unless book appears visually bad

Unboxing

- Covers:
 - All covers in plastic keep-other toss
- Arms:
 - Create carton with separators for easy transport to accessory cleaner
- Boxes & Styro:
 - Palletize bad styro and send good styro down line with machine
 - Place machine on box and send down line for disposal in boxing area
 - Styro first, bottom on top then one machine send down line

Sew Tech

- Discussed paperwork – necessary?
- Troubleshooting guidelines- what repairs should the sew tech be responsible for if any?
- Workstation set up – visuals & baskets for accessories
- Different chair

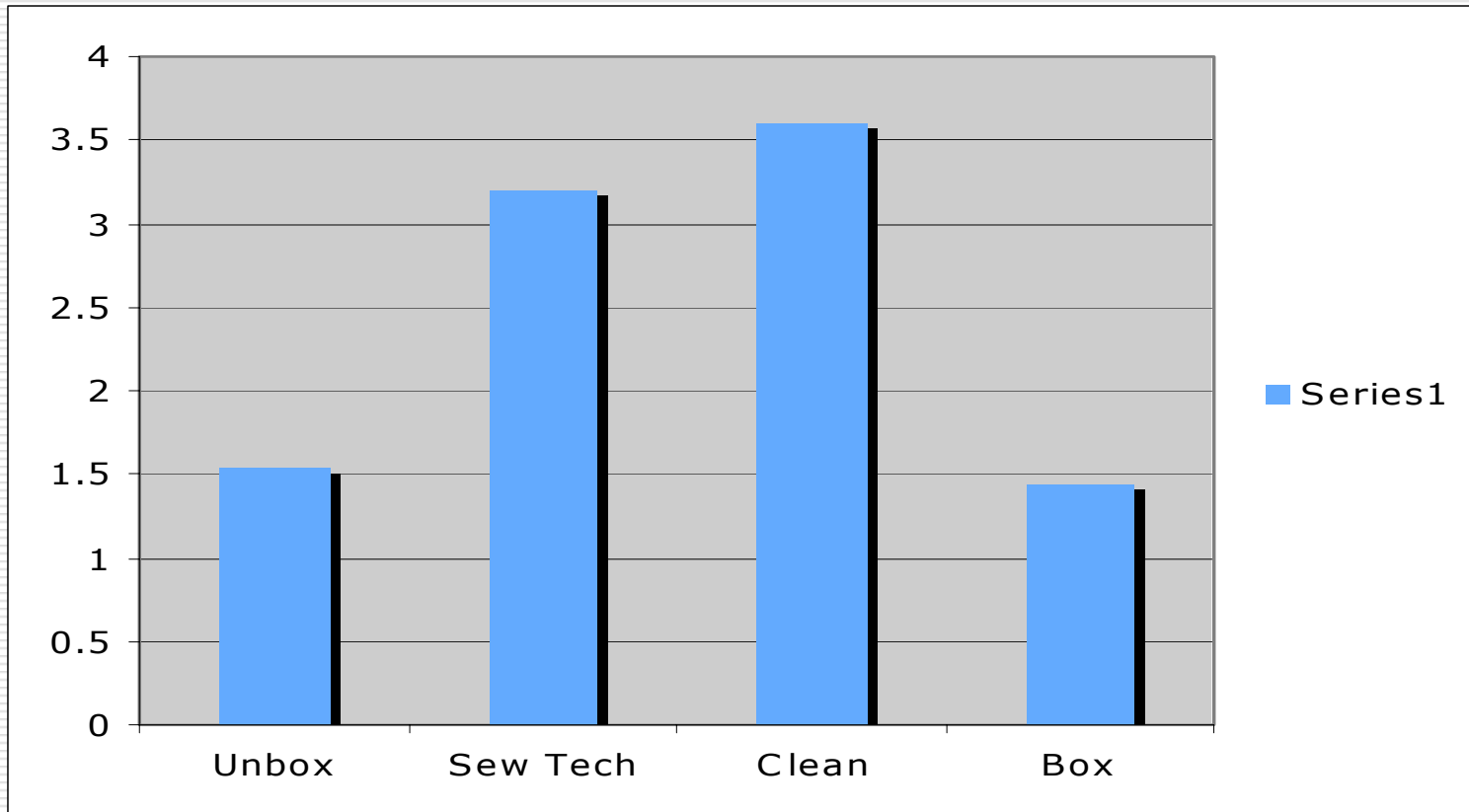
Cleaner

- Placement of workstation
- Computer placement- for serial number input/printing
- Cleaning items and lighting
- Safety items
- Discussed possibility of using a scanning pen to scan serial number rather than manual keying-ordered pen to test option

Boxer

- Boxes for components-accessories
- New boxes at staging area
- Stickers –holder for rolls
- Table set up and discuss how many machines should be in que

Load Chart for Round 1



Trial 2

➤ Actions

➤ Unboxing:

- Move air hose from sew tech to unboxing area
- Tilt boxes for accessories-easier to manage
- Pictures & words of components on boxes
- Leave accessories in arm and place in carton
- Provide guidelines for visual checks on machines-identify "scrap" early on-immediately rack
- Raise table

Trail 2 cont

➤ Sew tech:

- Determined paperwork not necessary-production sheet only requirement
- Add additional sew tech
- Sew techs use different color thread for identification purposes
- Add lighting
- Sew tech to fix minor repairs?
- Change out table and bring out workstation from inside line

Trial 2 cont

➤ Cleaner:

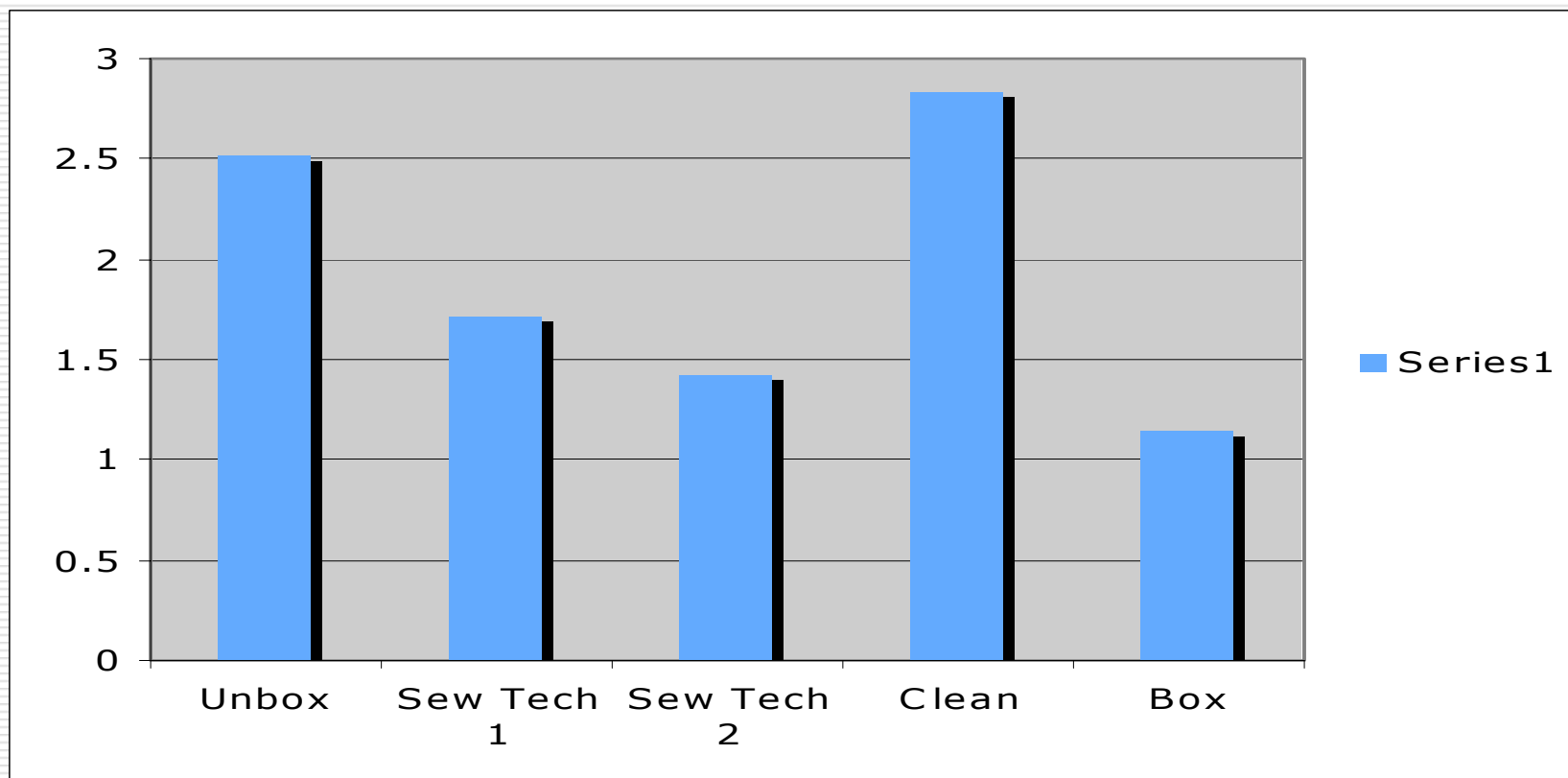
- Moved laptop to reboxing station
- Create holder for air hose
- Provided eye wash and MSDS at workstation
- Eliminated paperwork
- Remove table and bring out workstation from inside line

Trial 2 cont

➤ **Boxing**

- Place table level & flush to conveyor
- Tilted boxes and redesigned shelves for materials
- Tried scanning pen for serial number-didn't work
- Determined serial number not necessary for 1120's
- Redesign line to hold 10 machines
- Styro moved to boxing area-held up line when machine needed rework
- Holster for tape gun or hanger & box height

Load Chart for Round 2



Trial 3

➤ Unboxing

- Move air hose back to sew tech
- Scrap units to rack

Trial 3

➤ Sew tech

- Determine what to do with bad machines-holding up the line-rack for tech
- Make tags to identify “refurb” place under foot for cleaner
- Sew tech to fix minor repairs (don’t remove covers)

Trial 3

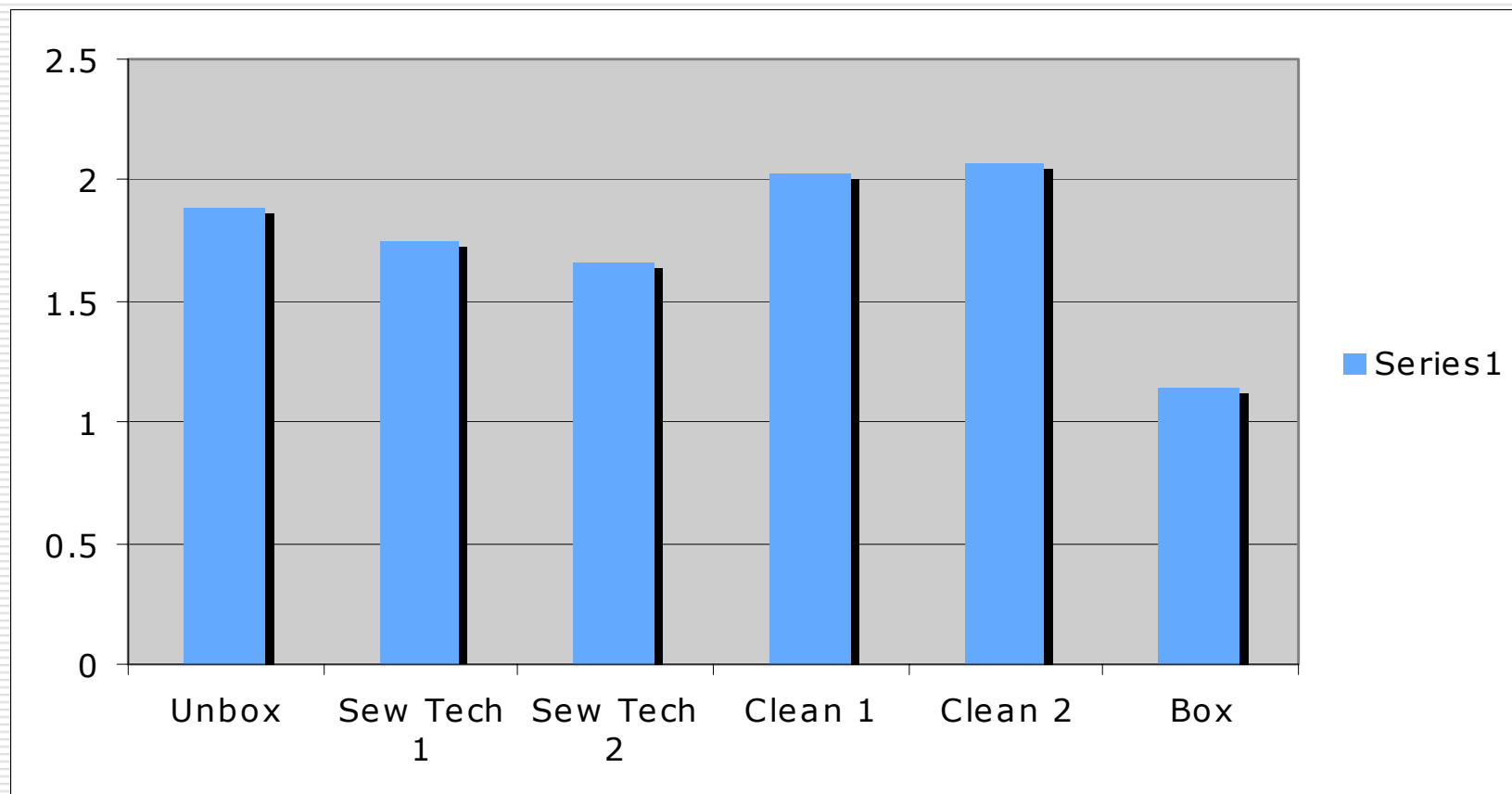
➤ **Cleaner**

- No changes for 3rd trial

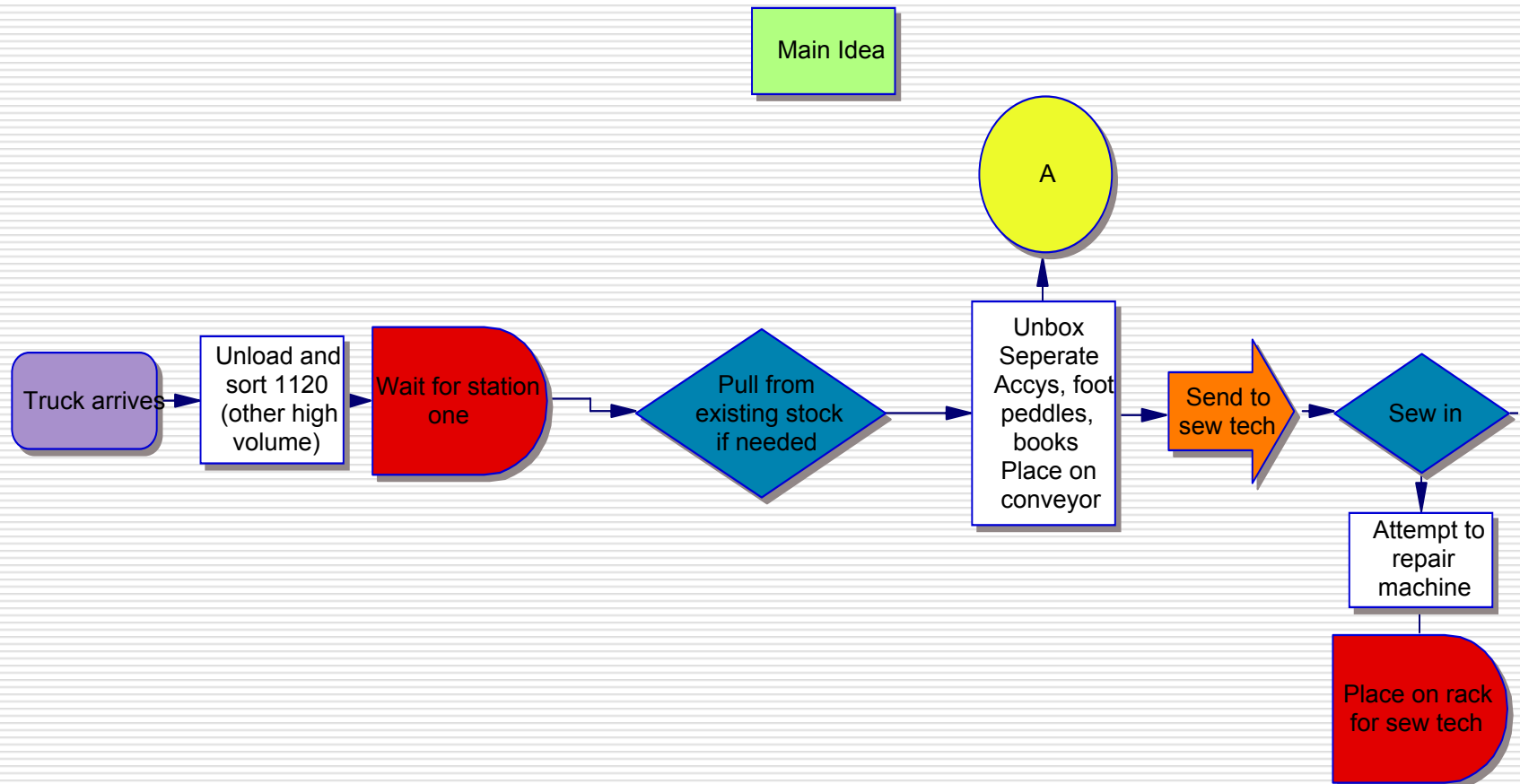
➤ **Boxer**

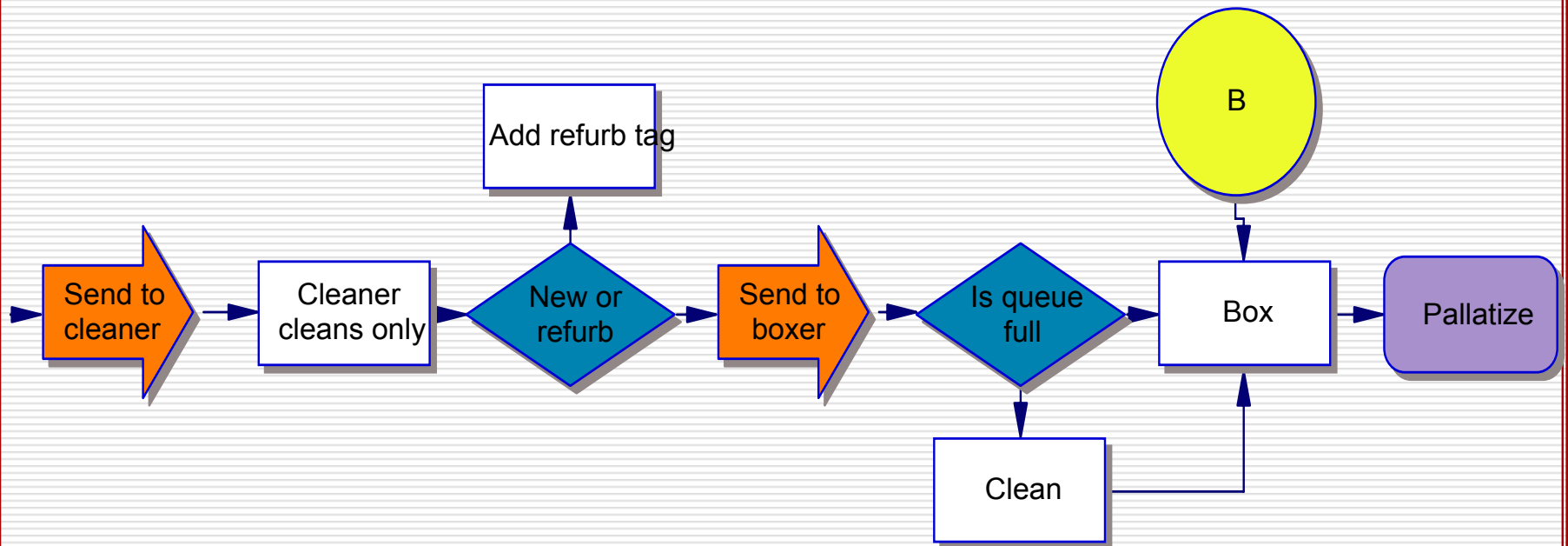
- Boxer will assist with cleaning process
- Removed computer from workstation
- All styro and boxes in boxing area

Load Chart Trial 3



New Process





Results

Before

After

- | | | |
|----------------------------|--|--------------------------------------|
| ➤ Distance Traveled | 1/2 mile | 100 yrds |
| ➤ Cycle Time | 120 days | 1/2 day (new)
1 day (tech) |
| ➤ Thru put | 100/day max
(per sew tech)
100/day | 120/day
(per sew tech)
240/day |
| ➤ Improved balance | | |
| ➤ Handoffs eliminated: 80% | | |