

DMAIC Project

Project Name: TCS Billing - Missing SR Numbers

Black Belt: Cecilia Schallenberger

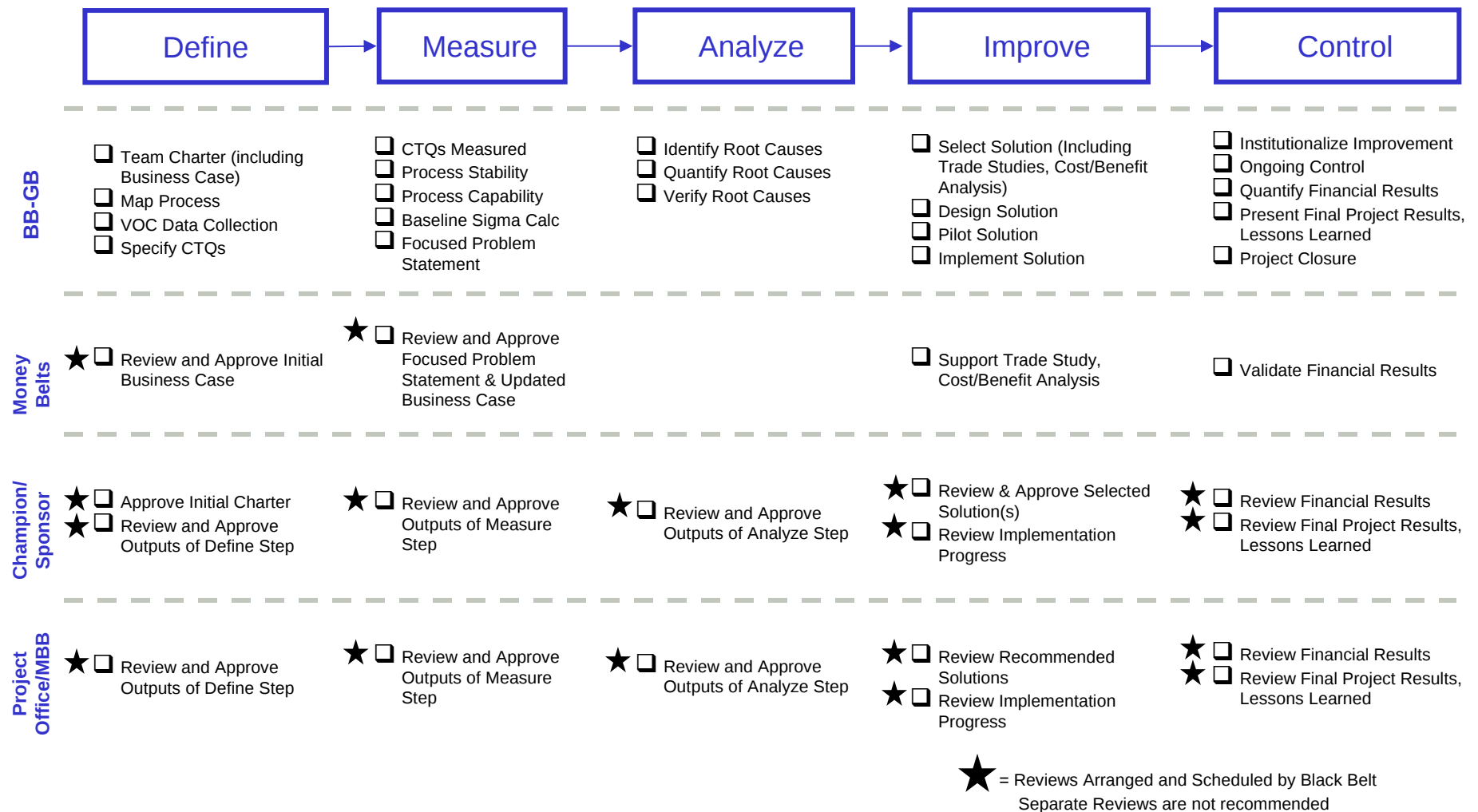
Project Sponsor: Jim Blandford

Champion: Henry Beebe

Date: November 19, 2001

DMAIC Project Flow & Reviews

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DEFINE Step

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Team Charter

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- **Project Description:** Treasury Communications System (TCS) provides network connectivity for 17 Treasury bureaus at over 6000 sites worldwide. An invoice which reflects charges for equipment, services, and circuits at these sites is prepared and sent to the bureaus every month. It is imperative that this invoice be as accurate as possible, and that line items which are billable can, indeed, be billed. Currently, there are lines on the maintenance portion of this bill that are missing the Service Request (SR) number. This error prevents TCS from billing for these line items.
- **Problem Statement:** Missing and/or invalid Service Request (SR) numbers prevent the accurate billing of monthly maintenance charges for the Treasury bureaus. This causes loss of revenue and increases customer dissatisfaction. This is reflected in lower performance scores, which negatively affects the award fee. Billing accuracy accounts for 9% of the award fee pool - which equates to a potential \$432,000 award. The number of lines on the maintenance portion of the Treasury bureaus' monthly invoice averages 77,000, with approximately 8,500 of those lines missing the SR number. These lines cannot be billed. This represents \$763,228 in lost revenue over the past 12 invoices. If not corrected, this error will continue to create a lost revenue situation on future invoices as well.
- **Scope/Goal:** This charter will focus on identifying the root causes of data loss specific to the SR field of the maintenance portion of the Treasury bureaus' invoice. Those processes and/or training issues responsible for the errors will be resolved and the data will be restored. The goal is to improve the current 2.61 sigma and have no blank SR number fields on invoice 64, which will be processed on Dec. 17, 2001.

Initial Business Case and Assumptions

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- **Business Case:** Correcting the process which is erasing or overwriting the SR number on the maintenance portion of the invoice will allow TCS to back-bill the government for \$763,228 which is currently lost revenue. It will also keep TCS from losing revenue because of this error on future invoices. This will improve the accuracy of the TCS bill which will also improve TCS' Performance Scores, Award

Fee scores, and TRW's cash flow.

- **Assumptions of error origination verified:**
 - Data Manipulation
 - Manual Data Entry
 - Screen Auto-population and Processing



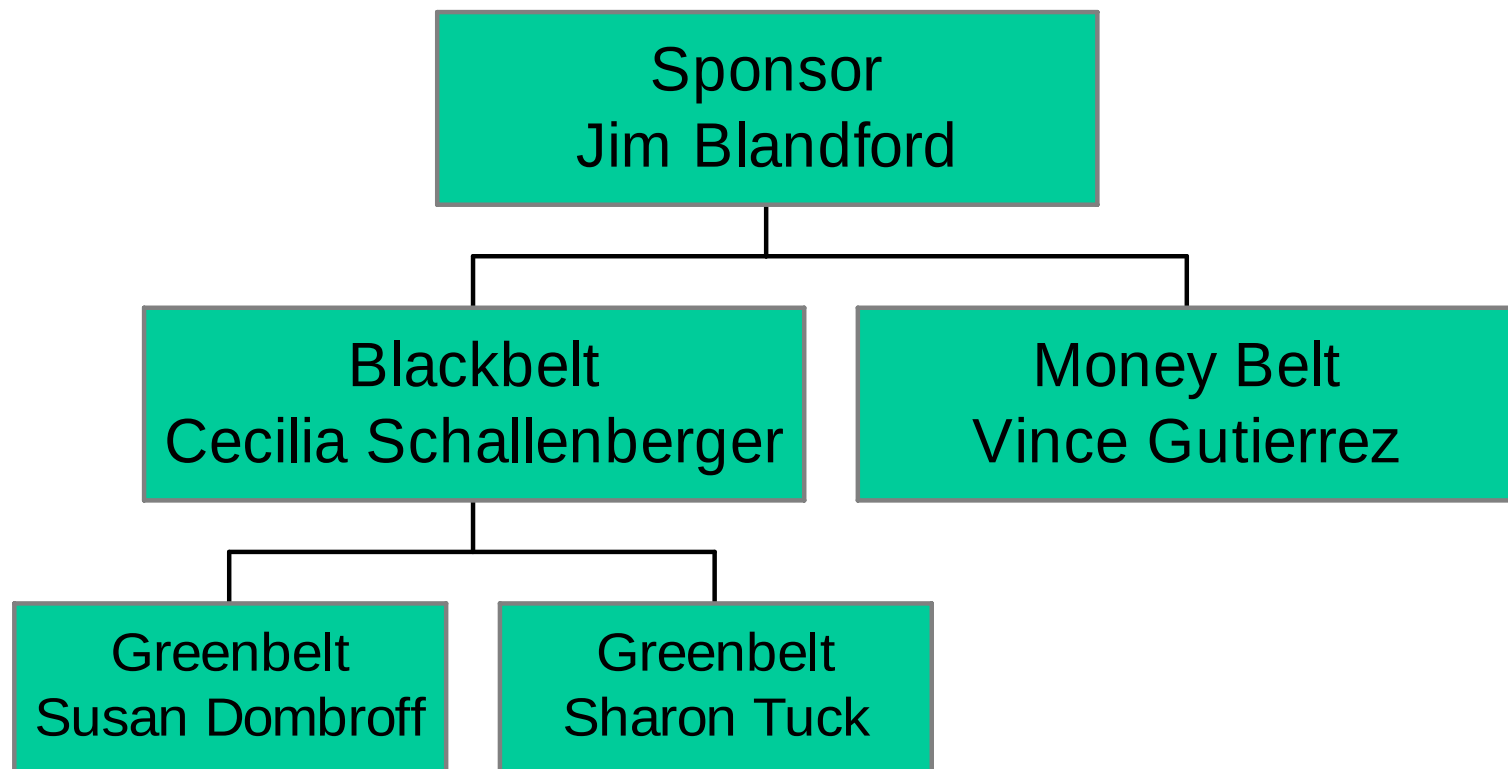
PWA - TCS Billing -
Missing SR Numbers

Team Organizational Chart

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TCS Billing - Missing SR Numbers



Project Plan/Schedule

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ID		TCS Billing - Missing SR Numbers	Duration	Start	Finish	Pre	Resource Names	2001			2002		200
								H2	H1	H2	H1	H2	H1
20		Map the Process	10 days	Mon 10/15/01	Fri 10/26/01		Team						
21		Data Collection (interviews, etc.)	10 days	Mon 10/15/01	Fri 10/26/01		Team						
22		Specify CTQs	1 day	Mon 10/15/01	Mon 10/15/01		Team						
23		Exit Define (per estab exit criteria)	1 day	Mon 10/15/01	Mon 10/15/01		BB to MBB						
24		Measure	10 days	Mon 10/15/01	Fri 10/26/01		Team						
25		CTQs Measured	10 days	Mon 10/15/01	Fri 10/26/01		Team						
26		Process Stability	10 days	Mon 10/15/01	Fri 10/26/01		Team						
27		Process Capability	10 days	Mon 10/15/01	Fri 10/26/01		Team						
28		Baseline Sigma Calculated	1 day	Mon 10/15/01	Mon 10/15/01		BB & Team						
29		Exit Measure (per estab exit criteria)	1 day	Mon 10/15/01	Mon 10/15/01		BB to MBB						
30		Analyze	15 days	Mon 10/29/01	Fri 11/16/01		Team						
31		Identify Root Causes	14 days	Mon 10/29/01	Thu 11/15/01		Team						
32		Quantity Root Causes	14 days	Mon 10/29/01	Thu 11/15/01		Team						
33		Verify Root Causes	14 days	Mon 10/29/01	Thu 11/15/01		Team						
34		Estimate Benefits	1 day	Fri 11/16/01	Fri 11/16/01		Team w/Money Belt						
35		Exit Analyze (per estab exit criteria)	1 day	Fri 11/16/01	Fri 11/16/01		BB to MBB						
36		Improve	50 days	Mon 10/15/01	Fri 12/21/01		Team						
37		Select Solution	26 days	Fri 11/16/01	Fri 12/21/01		Team						
38		Design Solution	26 days	Fri 11/16/01	Fri 12/21/01		Team						
39		Implement Solution	1 day	Mon 10/15/01	Mon 10/15/01		Process Owner, BB, GB						
40		Exit Improve (per estab exit criteria)	1 day	Mon 10/15/01	Mon 10/15/01		BB to MBB						
41		Control	56 days	Wed 1/2/02	Wed 3/20/02		Team						
42		Institutionalize Improvement	30 days	Wed 1/2/02	Tue 2/12/02		Team						
43		Exit Control (per estab exit criteria)	1 day	Wed 2/13/02	Wed 2/13/02		BB to MBB						
44		Ongoing Control	45 days	Thu 1/17/02	Wed 3/20/02		Process Owner, GB						

Map Process

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Suppliers

SRE BOM
(original SR BOM)

I&T BOM
(Trouble Ticket BOMs)

BIR
(Billing Invoice Resolution)

Warehouse Spreadsheet
(Manually adjusts data)

Inputs

Shipout Screens

Shipout Screens

BIRT

BIRT

Process

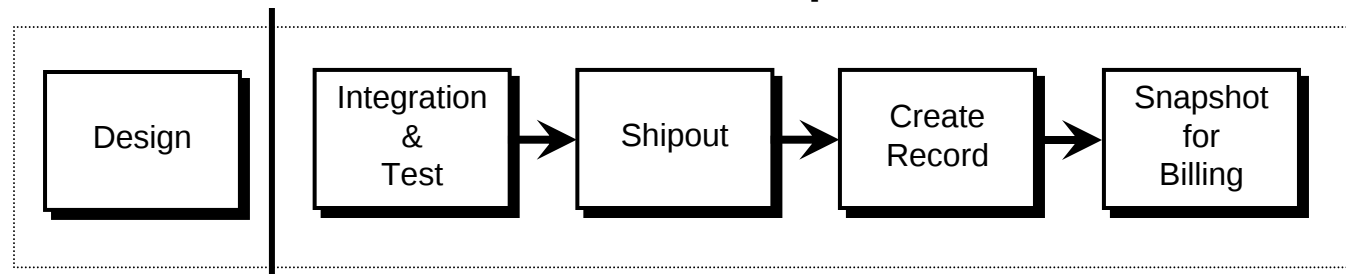
**Creation
of
Records
in JIT**

Outputs

Snapshot of equipment
to be billed
(Taken from JIT)

Treasury Bureau
(Invoice)

Process Steps

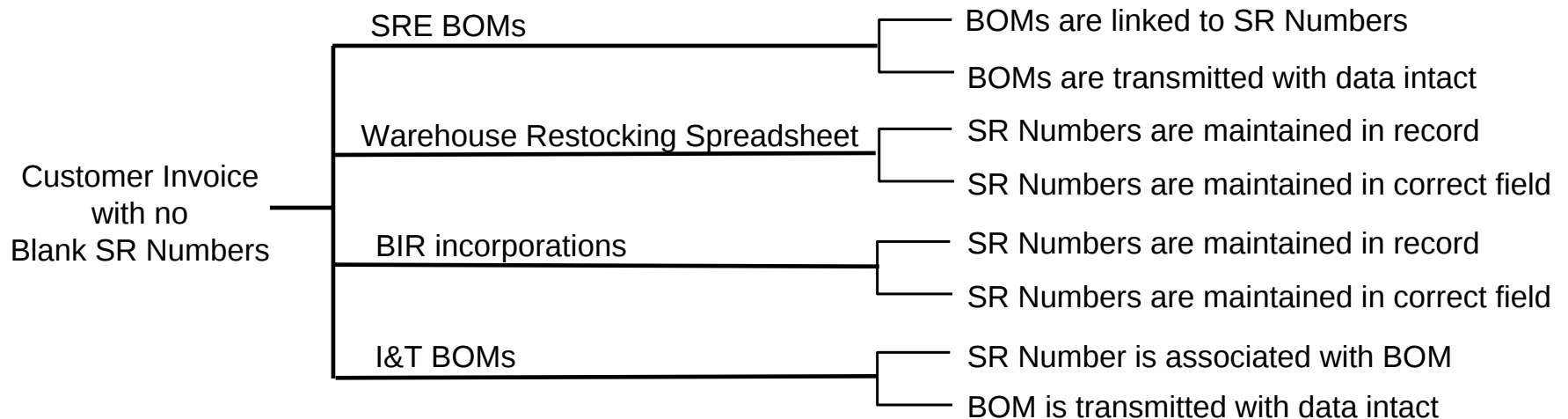


VOC Data Collection/Specify CTQs

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Need → Drivers → CTQs



MEASURE Step

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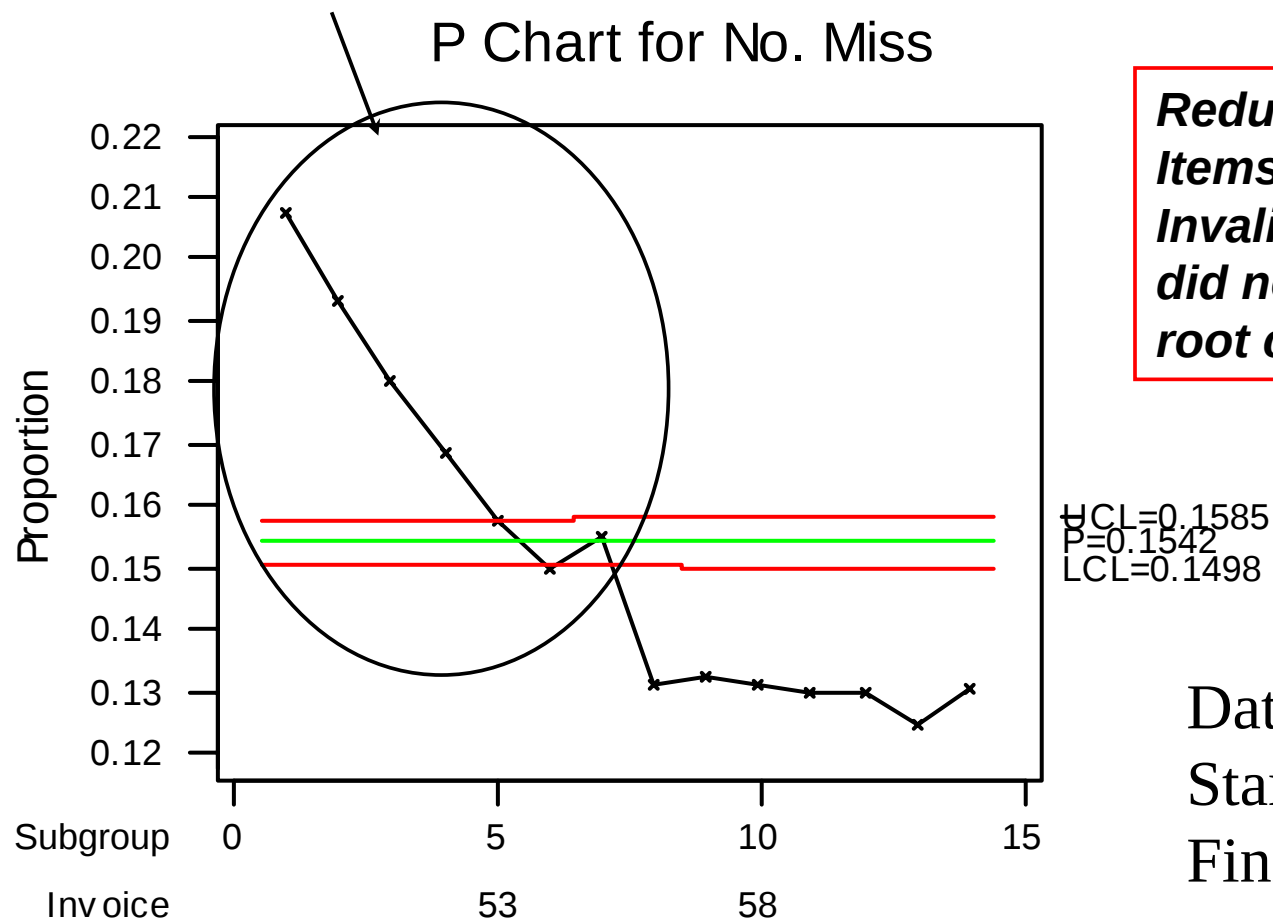


Process Stability – Part 1

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Billing Resolution Effort - Summer/Fall '00



Reduced Number of Items with Missing/Invalid SR#s, but did not address root causes!

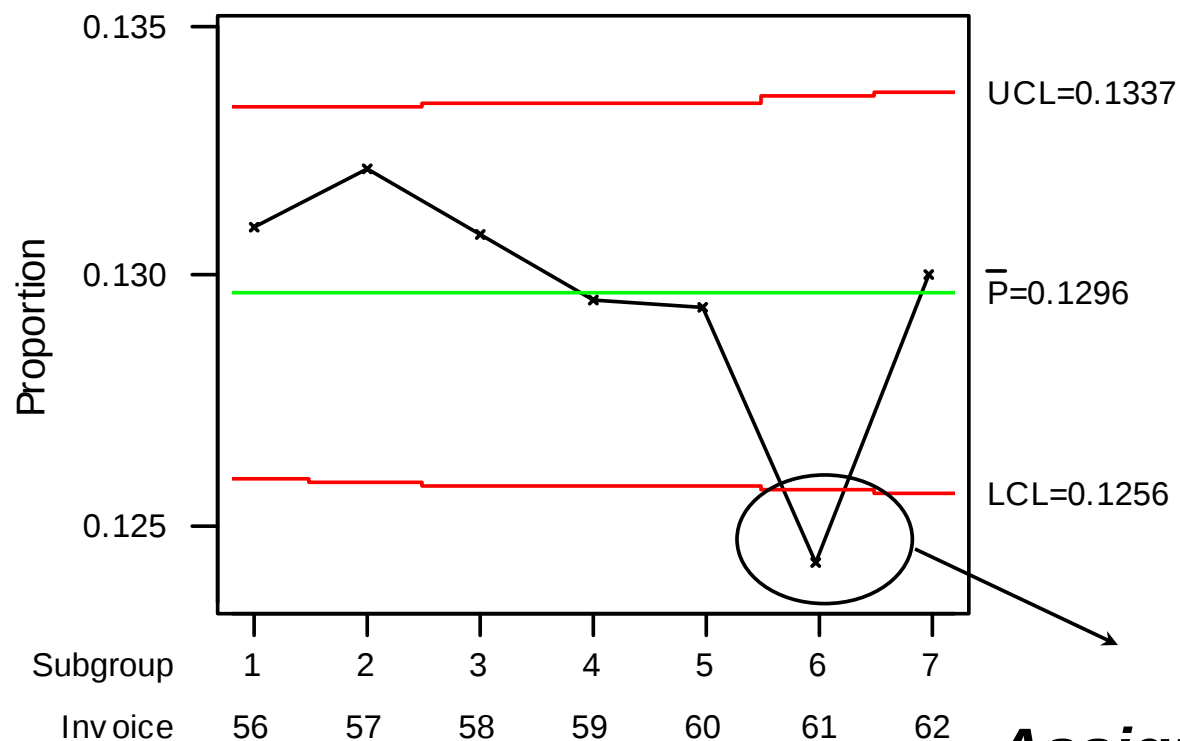
Data Dates:
Start: 9/00
Finish: 10/01

Process Stability - Post Billing Resolution Effort

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P Chart for Miss/Inv



***Assignable Cause, But
Too Late to Ask Why!***

Process Capability & Baseline Sigma

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DPMO	129,640
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Defects (%)	12.96
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Yield (%)	87.04
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Process Sigma	2.63
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Calculated Using Sigma
Excel Spreadsheet

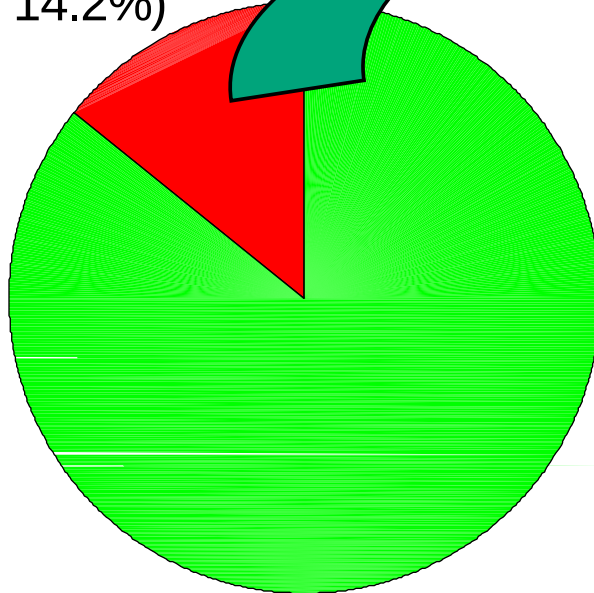
Stratification - Missing/Invalid SR#s

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Missing/Invalid SR#s - Oct '01

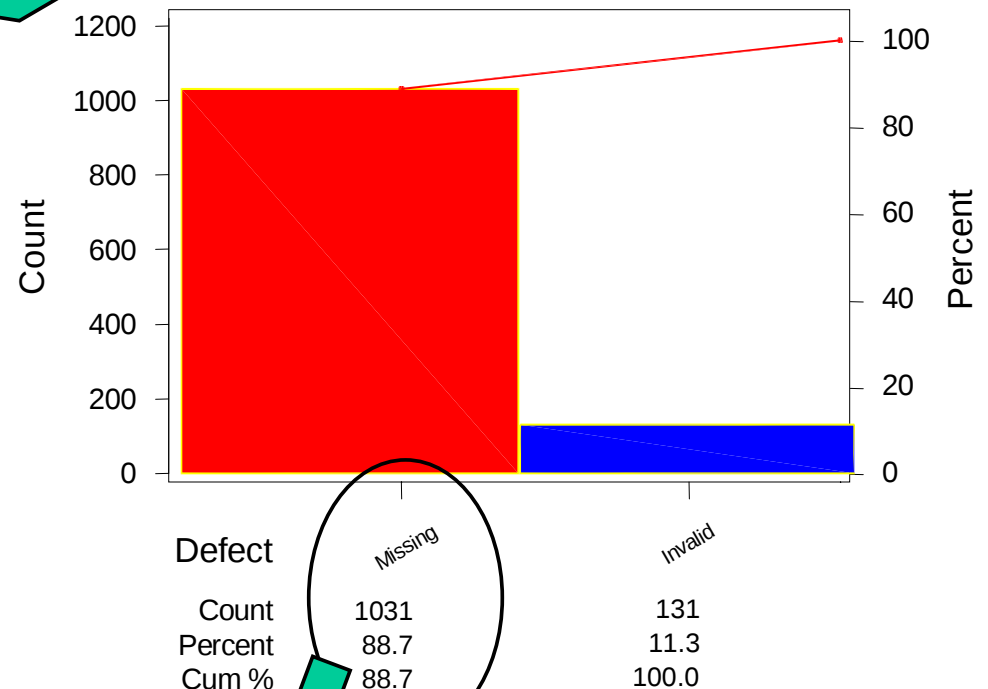
With \$
(1162, 14.2%)



Without \$ (6994, 85.8%)

**Larger Number, But
No \$ Impact to TRW**

Missing/Invalid SR#s – With \$



To Focused Problem
Statement, page 15

Focused Problem Statement

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- Of the Missing/Invalid SR#s with a dollar value (\$), 89% are associated with missing SR#s, resulting in \$763,228 in unbillable services to Treasury.

ANALYZE Step

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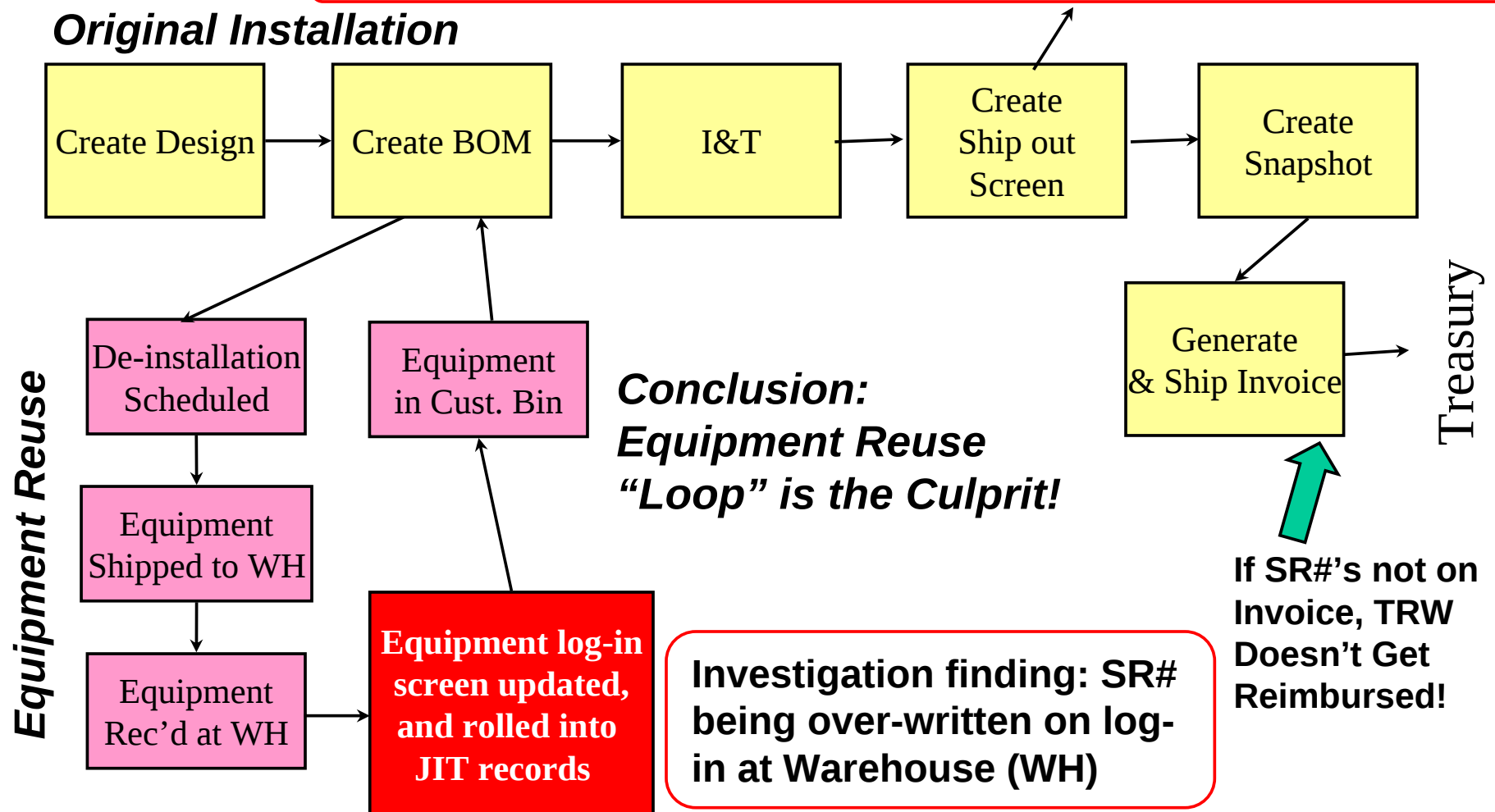
Process Analysis

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On Reuse, No SR#, Equip. on Bill, but No Maint. Charge for Equipment!

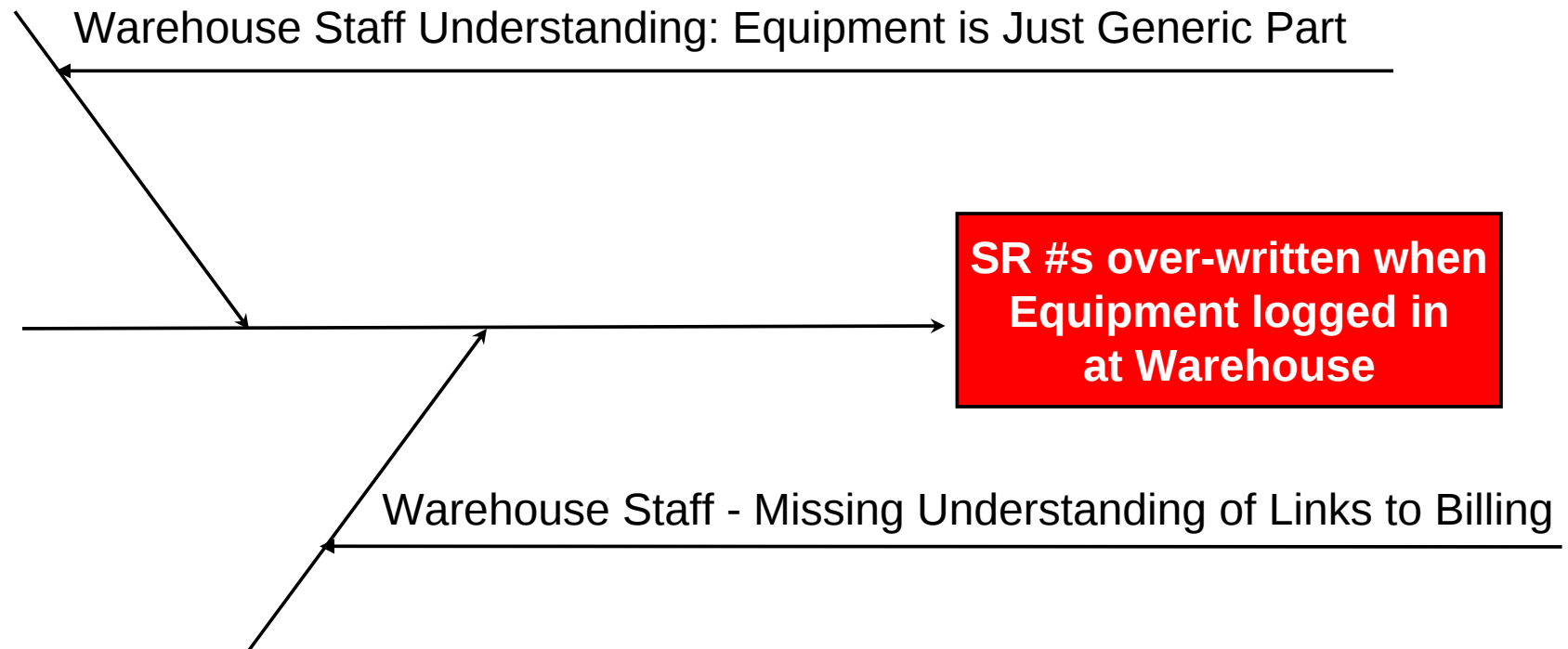
Original Installation



Why SR# Being Deleted?

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IMPROVE Step

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Select Solutions

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Problem → Verified Root Cause(s) → Solutions

Quick Fix

Tell WH Staff to Retain SR# for Equipment

Changed Warehouse Process of Receiving Materials from Field – Remove Spreadsheet; Log into JIT using updated process

Back Bill & Prevent Defects in Future Invoices

Engineers Research to Find Original SR# & Re-entered SR#s in JIT

Recurrence Prevention

“Fixed” Software Transaction Process - Prevent SR# from Being Obliterated

Missing SR #s on Invoices result in approx. \$40K in unbillable services to Treasury each month

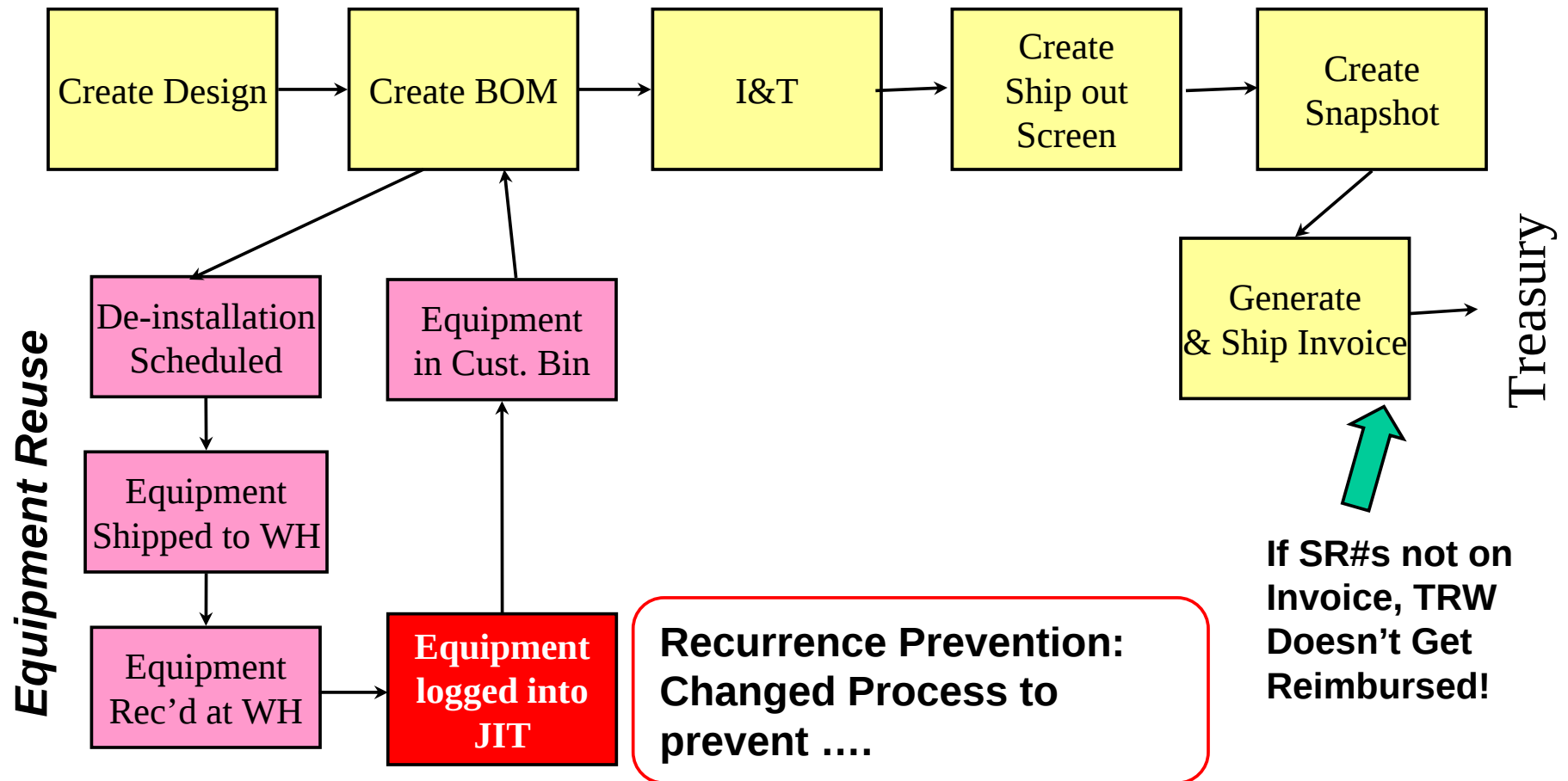
Warehouse Staff deleting SR #s when returned customer equipment logged in as received – no understanding of link to billing

Process Change

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Original Installation



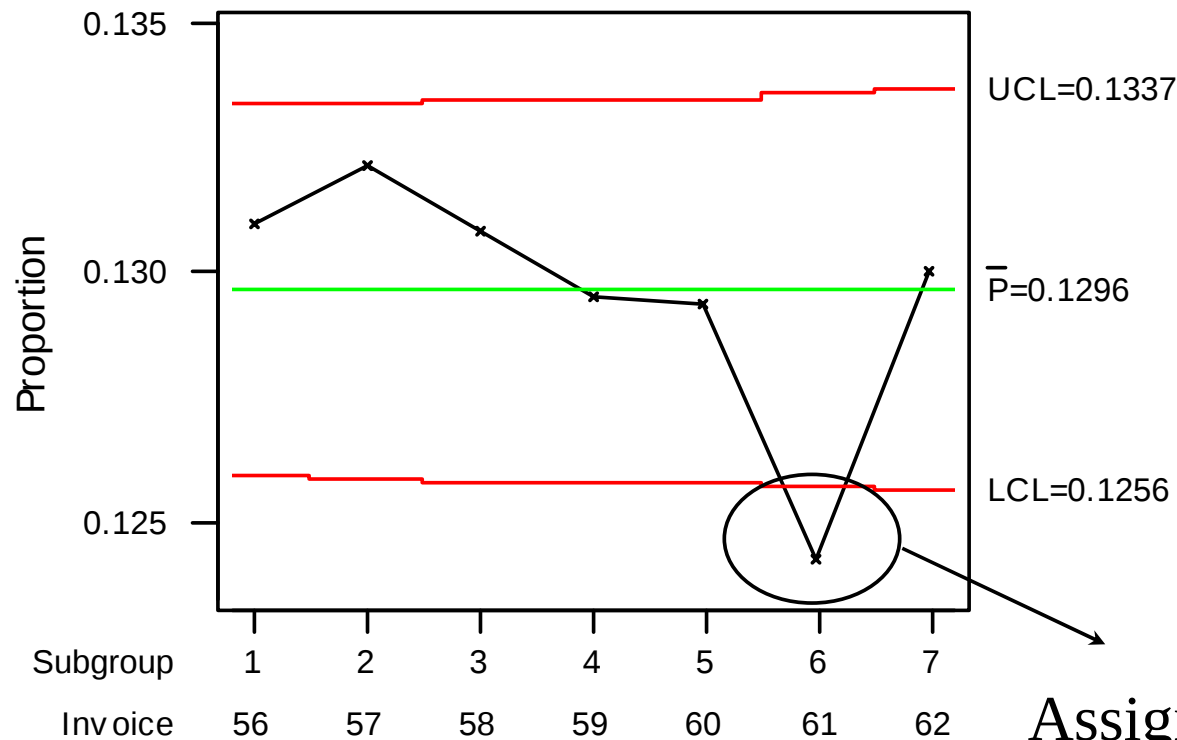
Process Stability - Post Process Change

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Include Results from Invoice 64

P Chart for Miss/Inv



Assignable Cause, But
Too Late to Ask Why!

Process Capability & New Sigma

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Include Results from Invoice 64

DPMO	16,508
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Defects (%)	1.65
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Yield (%)	98.35
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Process Sigma	3.63
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Update Business Case and Final ROI Analysis

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- Value of Project = \$763,228 + potential \$423,000 award fee
- Type of Benefit - Attainable Revenue

CONTROL Step

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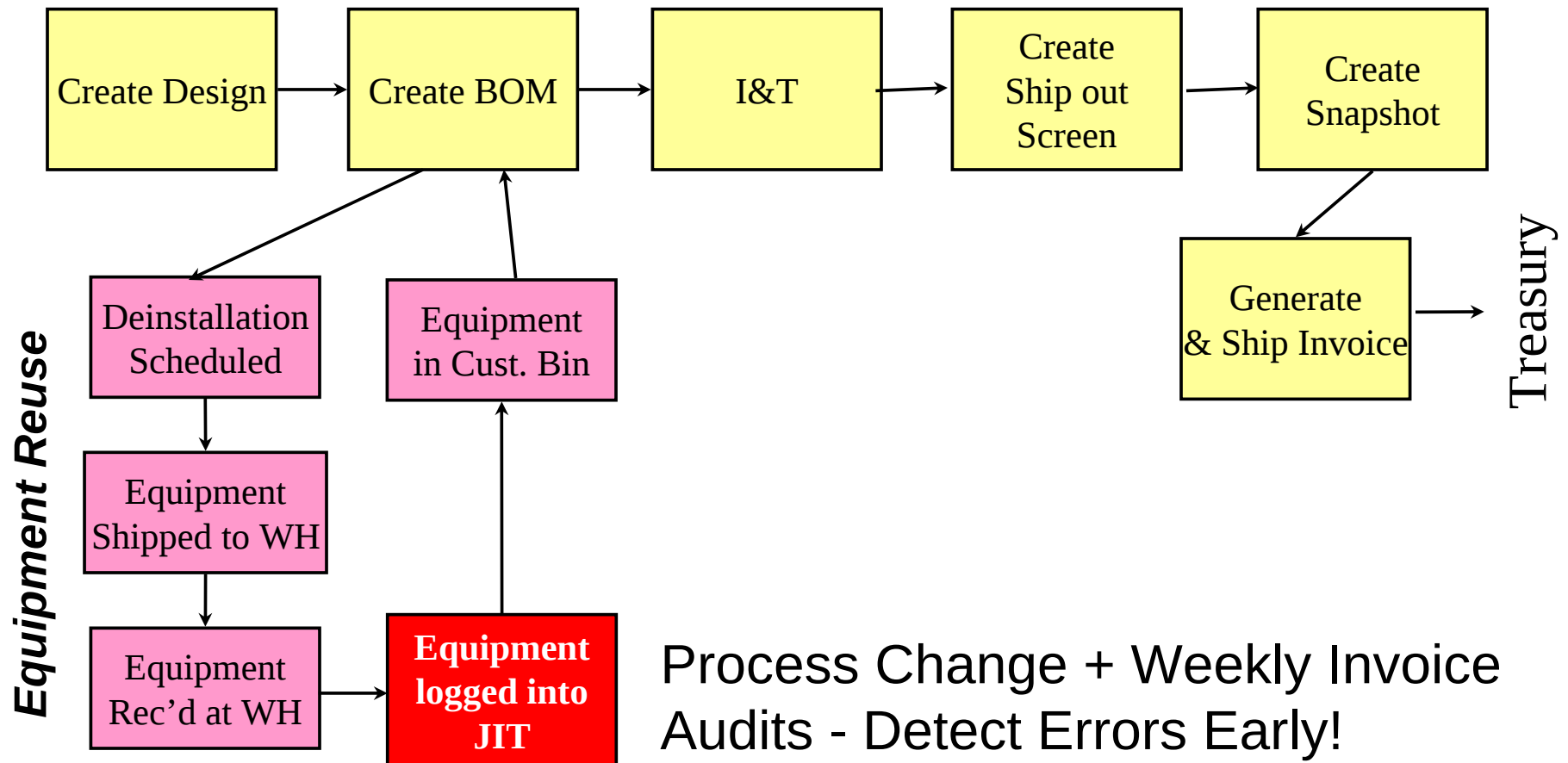
- Complete this section after enough data has been collected to get a valid comparison of before and after

Change Institutionalized

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Original Installation



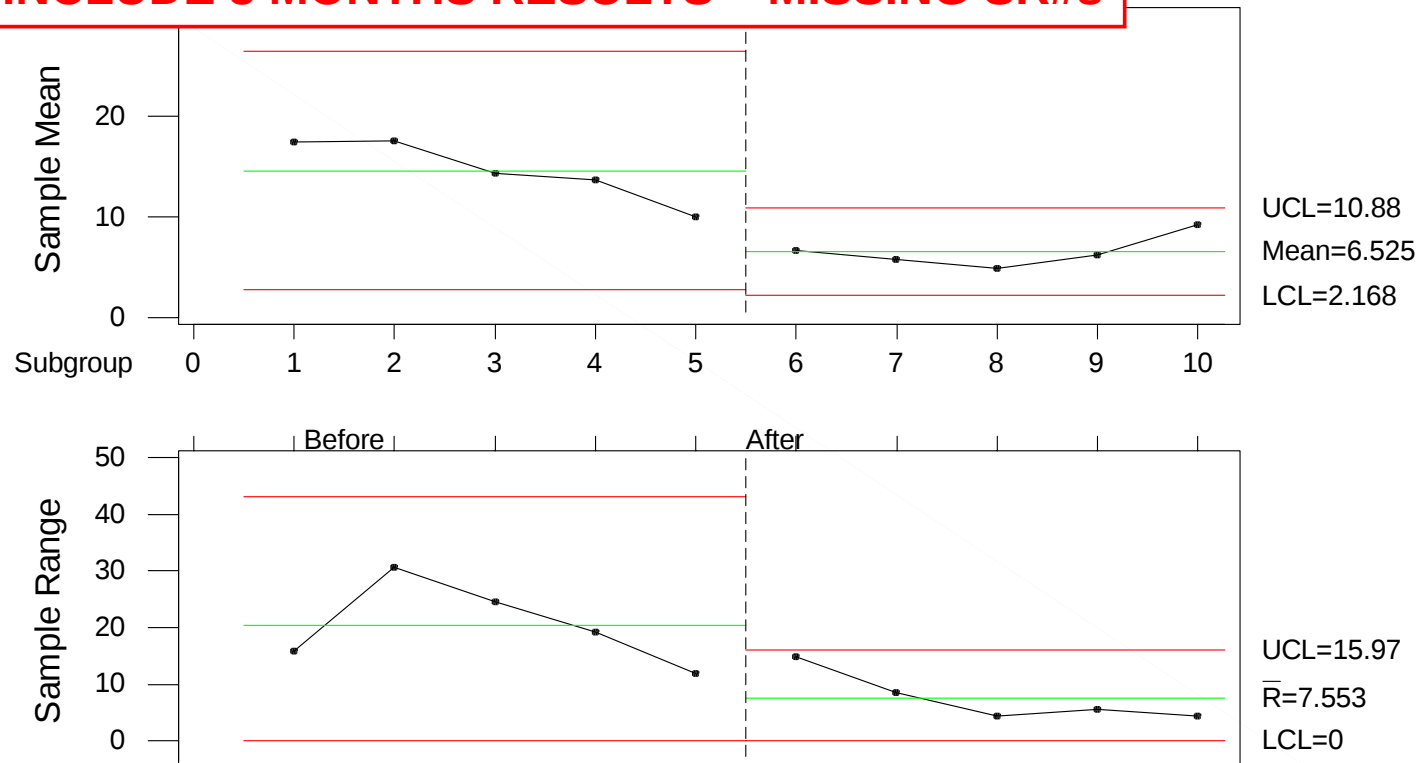
Project Results - 3 Months

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Xbar/R Chart for Cycle Time by Time

INCLUDE 3 MONTHS RESULTS – MISSING SR#s



Project Closure

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1. Finalize documentation on improvements
2. Summarize future plans and recommendations
3. Communicate the ending

Lessons Learned

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Summarize learnings

- About the work process
- About the team's process
- About project results

Replication Opportunities

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- Will share solution with all JIT users