

Pool Cover Value Stream From Sales Desk to Shipping Dock

Michael L. McKim

Purchasing/ Pool Cover VSL
Anchor Industries Inc.





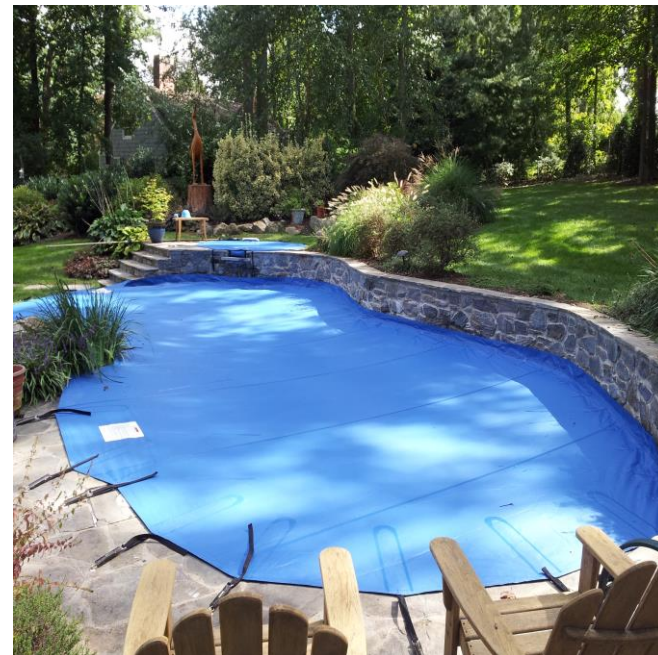
ANCHOR OVERVIEW

- Established 1892
- Corporate headquarters: Evansville, Indiana
- More than 300 employees and over 350,000 square feet of production capacity



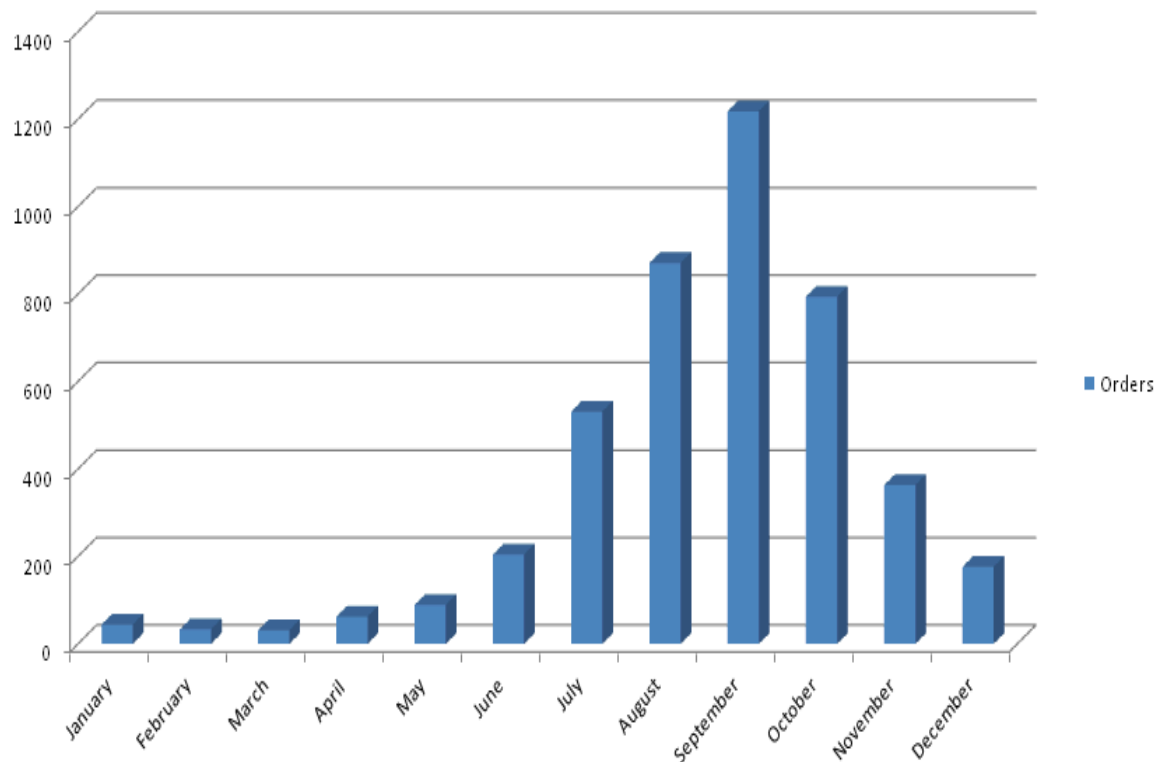
Anchor Safety Pool Covers

- Safety covers must be strong enough to hold 480 pounds
- No gaps between pool cover and pool deck can be present

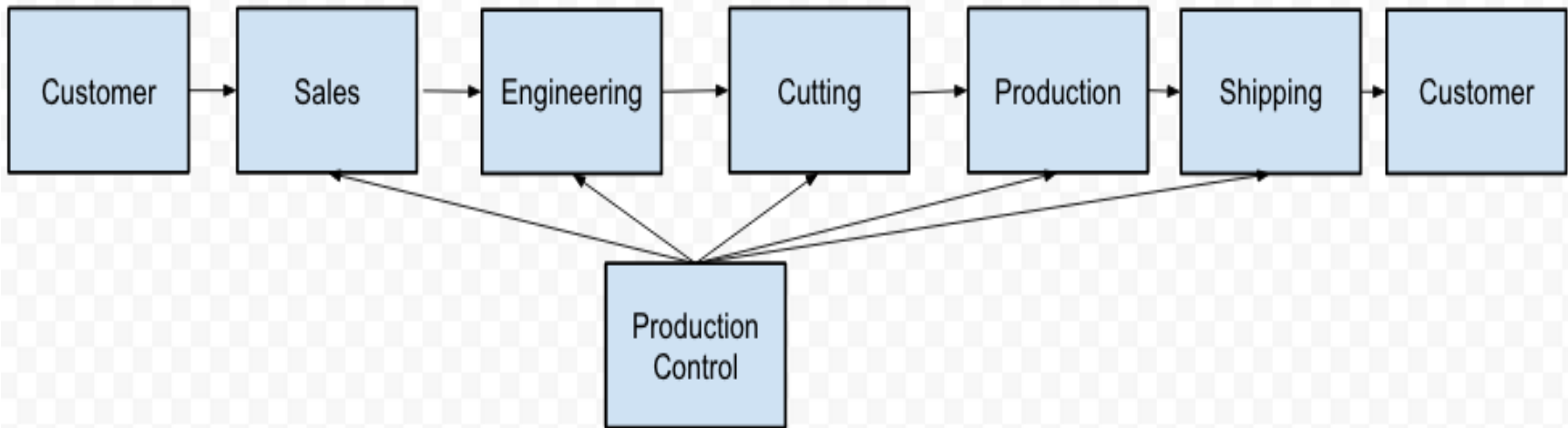


Pool Cover High Mix / High Volume

- 4,500 Covers/year
 - 3,500 from July through November



The Process End to End



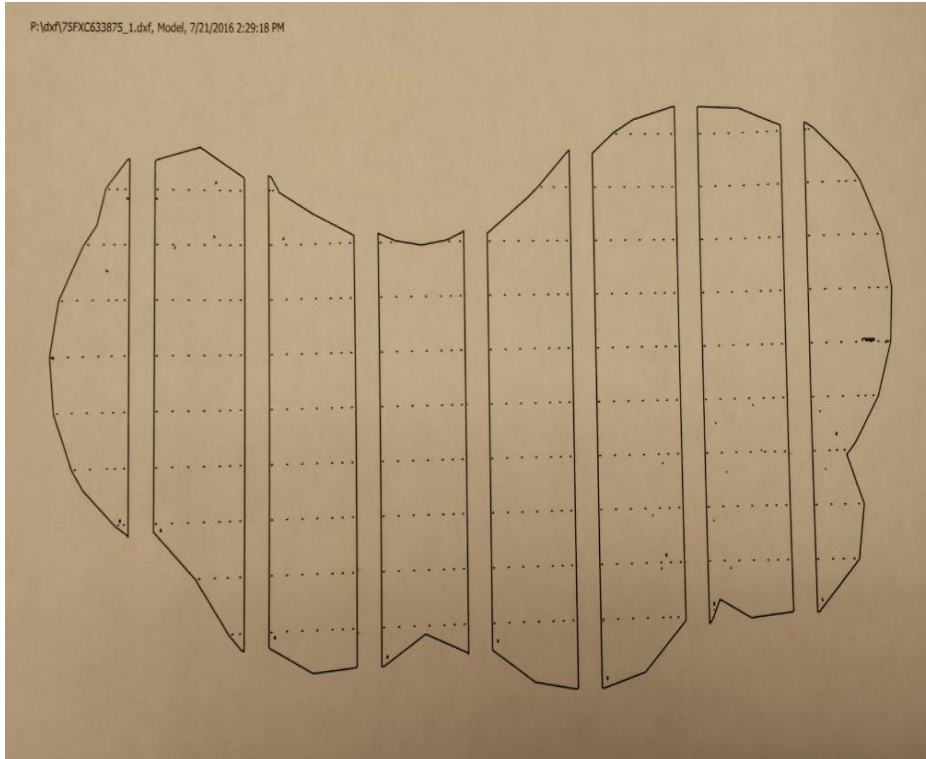
The Process: Engineering

| SEALER NAME: BLUE HAVEN POOLS | MATERIAL TYPE: DEFENDER | SALES ORDER #: 635098 | DESCRIPTION | RATE | QUANTITY | TOTAL | DESCRIPTION | RATE | QUANTITY | TOTAL | DESCRIPTION | RATE | QUANTITY | TOTAL | DESCRIPTION | TOTAL |
|------------------------------------|-----------------------------|-------------------------------|------------------------------|--------------------------|----------|-------------------------------|-------------|------|---------------------------|---------------------------|-------------|---------------------------|----------|---------|---------------------------|-------|
| CUSTOMER NAME: LOLLAR | COVER STYLE: IRREGULAR | SQUARE FEET: 779 | 580 TIPS: 0.3 | 41 | 12.3 | 5770NLS WEB&ROUND: 0.33 | 115,19 | 38.0 | 5360 SN STAY STITCH: 0.14 | 115,19 | 16.1 | 5365 OUTSIDE CORNERS: 0 | | | 5390 OUTSIDE CORNERS: 0 | |
| DRAWING DATE: 06/12/2016 | CONSTRUCTION: SPRING | COVER COLOR: GREEN D-MESH | 5300 SN W/A CA. FLAP: 1.5 | 14.67 | 22.0 | 5338 WAVE/ING CABLE PKT: 1.17 | | | 578 DNCS WEB&CROSS: 0.22 | 509,16 | 112.0 | 5390 DIAGONAL WEBS: 0 | | | 5390 DIAGONAL WEBS: 0 | |
| DRAWING NUMBER: 635098_1 LINE #: 1 | CROSS WEB: 36 | DRY FILE: YES | 5308 SN CA. VIL. STRIPS: 0.8 | 10.00 | 8.0 | 5375 SN P. RENF. ENDS: 4.0 | | | 575 DNCS JN WEETHS: 0.16 | 125,42 | 20.1 | 5113 GROMMETS: 0 | | | 5113 GROMMETS: 0 | |
| DRAWING SCALE: 3/16"=1'-0" | OVERLAP: 18 | LABELS INCLUDED: NYNEX STRIPS | 5310 DNLS W/A CA. FLAP: 0.33 | 14.67 | 4.8 | 5305 INS. WEDGE LOOP: 0.2 | | | 5345 WELD JOIN RENF: 75 | 2,25 | 1.7 | 554 STAKES: 0 | | | 554 STAKES: 0 | |
| DRAWN BY: BKS | RSAP: NA | MATERIAL WIDTH: 75 | LAYOUT HAS BEEN ADDED | 5370 SN SFA RENF: 1.0 | | 5325 CUTOUT PATCH: 3.0 | | | DESCRIPTION | QTY | UNIT PRICE | 553 GROUNDANCHORS: 6 | | | 553 GROUNDANCHORS: 6 | |
| GLD#: NA | YEAR: NA | MESH DRAIN: NONE | GROSS SF: 1087.90 | 581 SN STD. PATCHES: 7.0 | | 5340 SMALL CUTOUTS: 3.0 | | | LACED CUTOUTS: | | | 5365 JN LC B&K IN RATE: 1 | | | 5365 JN LC B&K IN RATE: 1 | |
| S86 #1 W/CA PKT (LF): | S82 #1 CABLE LG (LF): 10.83 | NUMBER OF SNAPS: 6 | 579 VINYL STRIPS: 1.15 | 40 | 46.4 | 5345 BIG CUTOUTS: 3.0 | | | F RWE | NO B&K | 100% | CUT WEB ENDS: 1 | | | CUT WEB ENDS: 1 | |
| S87 #2 W/CA PKT (LF): | S83 #2 CABLE LG (LF): | 550 #50 BRASS ANCHOR: 41 | 5315 B&K CABLE SNAPS: 0.5 | 40.00 | 20.0 | 5330 INS. CABLE RENF: 0.67 | 16,34 | 10.9 | DNLS WEB ARND. LC: 9.6 | 0,041 | | | | | CUT EDGE: 38'-11" | |
| S88 #3 W/CA PKT (LF): | S84 #3 CABLE LG (LF): | 551 WOOD DECK ANCHOR: 0 | 5320 BOTTICLOS: 0.5 | 80 | 42.5 | 5338 INS. FORM. RENF: 0.67 | | | SN LACED CUTOUT: 2.5 | 0,219 | | | | | FINISH COVER: 38'-3" | |
| S89 #4 W/CA PKT (LF): | S85 #4 CABLE LG (LF): | 555 SPRING W/O RING: 41 | 557 SS TAB L/D: | | | 558 BRASS DECK FLANGE: 0 | | | 559 SPRING COVER: 41 | | | | | | | |
| EXTRA HARDWARE | | | | | | | | | | CABLE LENGTH (LF): 10.83 | | 435PR(F): | | 455H: | | |
| BRASS ANCHORS: | | | | | | | | | | W/CA PKT. (LF): | | 4405WR(F): | | 455H: | | |
| 1" RUBBER TIES: | | | | | | | | | | 430R(QP): | | 445H: | | 455H: | | |
| 12" RUBBER TIES: | | | | | | | | | | A & B DISTANCES AS LISTED | | A | | B | | |
| SPRINGS: | | | | | | | | | | # | | A | | B | | |
| WOOD DECK ANCHORS: | | | | | | | | | | 1 | | 15'-0" | | 18'-0" | | |
| SS TABS: | | | | | | | | | | 2 | | 15'-0" | | 18'-0" | | |
| STAKES: | | | | | | | | | | 3 | | 12'-0" | | 15'-0" | | |
| GROUND TUBES: | | | | | | | | | | 4 | | 10'-0" | | 15'-0" | | |
| SPRING SHED: | | | | | | | | | | 5 | | 8'-0" | | 12'-0" | | |
| FLANGES: | | | | | | | | | | 6 | | 7'-0" | | 11'-0" | | |
| RATCHET: | | | | | | | | | | 7 | | 6'-0" | | 10'-0" | | |
| RATCHET ASSY: | | | | | | | | | | 8 | | 5'-0" | | 9'-0" | | |
| MULTI HARDWARE: | | | | | | | | | | 9 | | 4'-0" | | 8'-0" | | |
| HEAT SETTING TOOL: | | | | | | | | | | 10 | | 3'-0" | | 7'-0" | | |
| 1" RATCHET: | | | | | | | | | | 11 | | 2'-0" | | 6'-0" | | |
| WEB: | | | | | | | | | | 12 | | 1'-0" | | 5'-0" | | |
| 1" WEB: | | | | | | | | | | 13 | | 14'-11" | | 20'-0" | | |
| 1" DRING: | | | | | | | | | | 14 | | 16'-4" | | 22'-0" | | |
| | | | | | | | | | | 15 | | 17'-8" | | 23'-0" | | |
| | | | | | | | | | | 16 | | 18'-0" | | 23'-0" | | |
| | | | | | | | | | | 17 | | 18'-0" | | 23'-0" | | |
| | | | | | | | | | | 18 | | 22'-0" | | 30'-0" | | |
| | | | | | | | | | | 19 | | 24'-0" | | 31'-0" | | |
| | | | | | | | | | | 20 | | 26'-0" | | 33'-0" | | |
| | | | | | | | | | | 21 | | 28'-0" | | 35'-0" | | |
| | | | | | | | | | | 22 | | 29'-0" | | 37'-0" | | |
| | | | | | | | | | | 23 | | 30'-0" | | 38'-0" | | |
| | | | | | | | | | | 24 | | 30'-0" | | 38'-0" | | |
| | | | | | | | | | | 25 | | 30' | | 38'-0" | | |
| | | | | | | | | | | 26 | | 30'-4" | | 38'-11" | | |
| | | | | | | | | | | 27 | | 30'-5" | | 38'-2" | | |
| | | | | | | | | | | 28 | | 30'-5" | | 38'-2" | | |
| | | | | | | | | | | 29 | | 30'-5" | | 38'-0" | | |
| | | | | | | | | | | 30 | | 31'-0" | | 38'-0" | | |
| | | | | | | | | | | 31 | | 32'-4" | | 38'-7" | | |
| | | | | | | | | | | 32 | | 32'-0" | | 38'-10" | | |
| | | | | | | | | | | 33 | | 32'-0" | | 38'-0" | | |
| | | | | | | | | | | 34 | | 32'-1" | | 38'-0" | | |
| | | | | | | | | | | 35 | | 32'-1" | | 38'-0" | | |
| | | | | | | | | | | 36 | | 34'-0" | | 38'-4" | | |
| | | | | | | | | | | 37 | | 35'-0" | | 38'-10" | | |
| | | | | | | | | | | 38 | | 35'-0" | | 38'-0" | | |
| | | | | | | | | | | 39 | | 37'-0" | | 38'-11" | | |
| | | | | | | | | | | 40 | | 37'-0" | | 38'-4" | | |
| | | | | | | | | | | 41 | | 37'-0" | | 37'-0" | | |
| | | | | | | | | | | 42 | | 38'-11" | | 38'-0" | | |
| | | | | | | | | | | 43 | | 38'-11" | | 38'-0" | | |
| | | | | | | | | | | 44 | | 38' | | 37'-10" | | |
| | | | | | | | | | | 45 | | 32'-0" | | 27'-2" | | |
| | | | | | | | | | | 46 | | 32'-4" | | 28'-0" | | |
| | | | | | | | | | | 47 | | 32'-0" | | 28'-0" | | |
| | | | | | | | | | | 48 | | 32'-0" | | 28'-0" | | |
| | | | | | | | | | | 49 | | 32'-0" | | 28'-0" | | |
| | | | | | | | | | | 50 | | 32'-0" | | 28'-0" | | |
| | | | | | | | | | | 51 | | 32'-0" | | 28'-0" | | |
| | | | | | | | | | | 52 | | 32'-0" | | 28'-0" | | |
| | | | | | | | | | | 53 | | 32'-0" | | 28'-0" | | |
| | | | | | | | | | | 54 | | 32'-0" | | 28'-0" | | |
| | | | | | | | | | | 55 | | 32'-0" | | 28'-0" | | |
| | | | | | | | | | | 56 | | 32'-0" | | 28'-0" | | |
| | | | | | | | | | | 57 | | 17' | | 14'-11" | | |
| | | | | | | | | | | 58 | | 18'-4" | | 14'-10" | | |

The diagram illustrates the layout of a pool cover. It features a central area labeled 'CABLE AREA' and an outer boundary labeled 'CUT WEB OFF'. The cover is supported by 'GROUND ANCHORS' around its perimeter. Labels 'A' and 'B' are placed at the bottom corners of the cover, with a dimension line between them indicating a distance of 15 feet. The cover is divided into sections by cables and patches, with various components like 'WEDGE LOOP', 'VINYL STRIPS', and 'GROMMETS' indicated in the table above.

| Item | Quantity | Unit | Notes |
|-------------------|----------|-------------|-------|
| Fabric Lot | | | |
| Cutter | | Hem | |
| Mark up | | Tack | |
| Taple Needle/Weld | | Vinyl Strap | |
| Cross Web | | Tip/Grommet | |
| Stay Stitch | | Inspect | |

The Process: Cutting



The Process: Production



The Process: Production/ Hardware



The Process: Shipping



POOL COVER VALUE STREAM JOURNEY

Today's presentation will cover:

- 2010 – Current State: Four (4) distinct Kaizen phases at Anchor
- 150 safety pool covers as the sample size

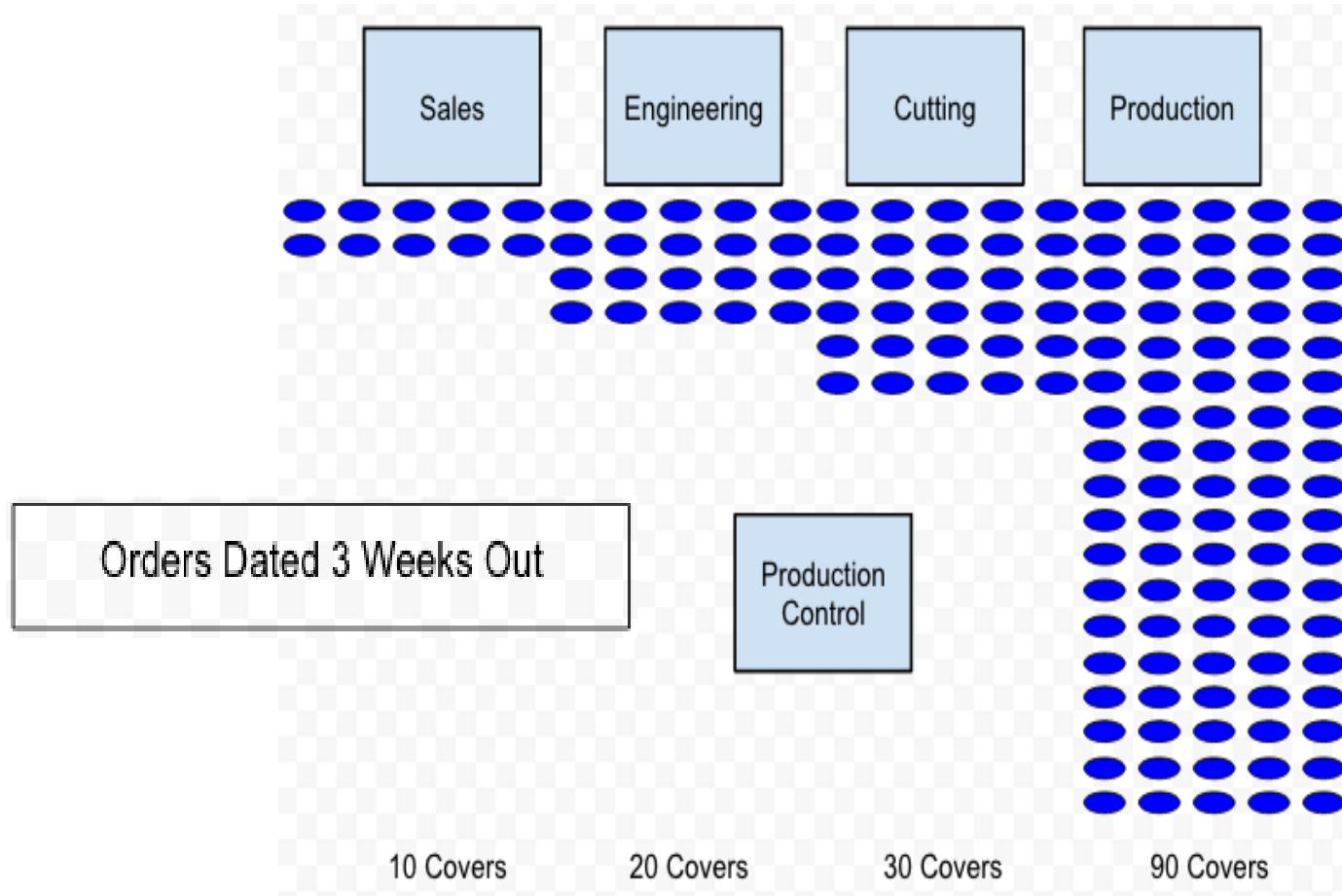
Lead Time History

*Pool Cover Season data is from 7/1 through 11/30

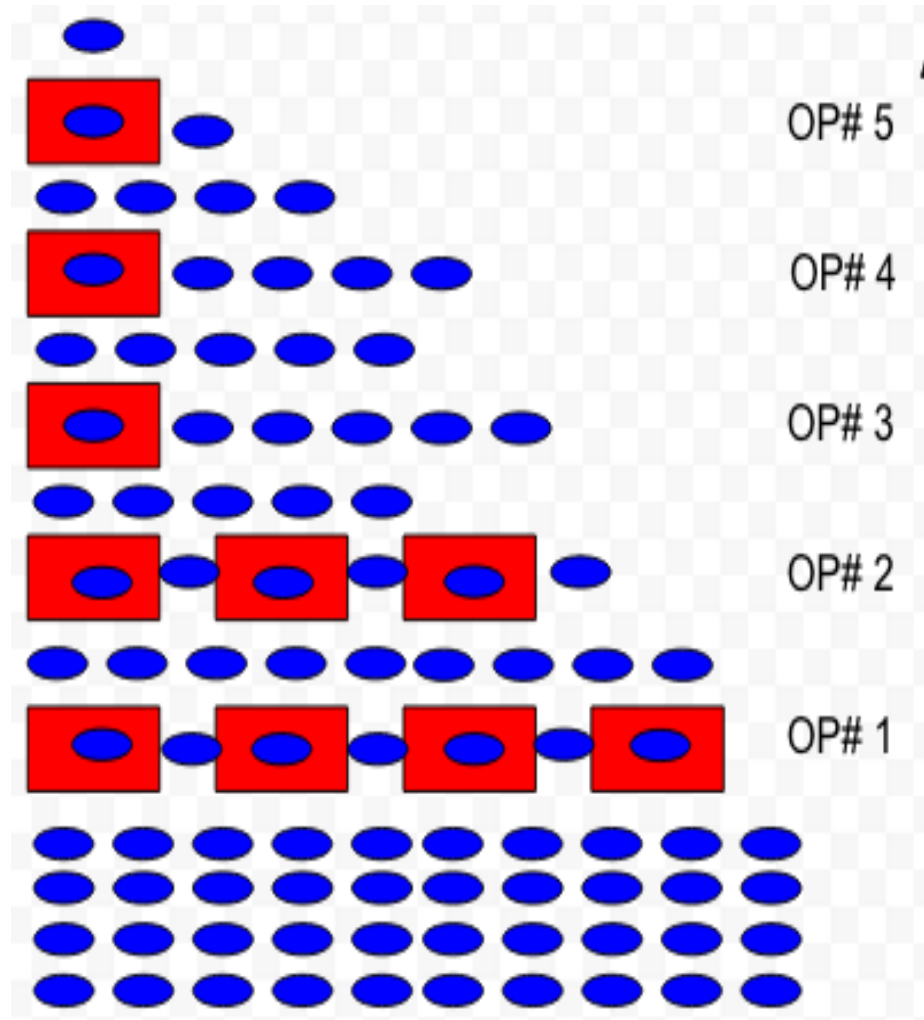
Year / Calendar days open to
complete:

| | |
|-------|------|
| 2010- | 15.0 |
| 2011- | 12.4 |
| 2012- | 11.6 |
| 2013- | 7.3 |
| 2014- | 8.3 |
| 2015- | 6.6 |
| 2016- | <5 |

Value Stream Before “Pull”



Production Mess





Improvement Phase 1- Understanding Customer Demand

- 150 orders in the system
- 150/15 day lead time = 10 covers/day
- We use customer demand to drive our daily pitch/goal
 - If you lower the desired lead time, the pitch goes up
 - If customer demand goes up the pitch also goes up to maintain desired lead time

Example- Determining the “Pitch”

- 150 covers / 12 day desired lead time = 13
- 200 covers / 12 day desired lead time = 17
- 150 covers / 10 day desired lead time = 15
- Customer demand is always changing so the value stream has to be flexible.

Weekly Meeting to Establish Pitch

All groups represented:

- Sales
- Engineering
- Cutting
- Production
- Production Control
- Shipping



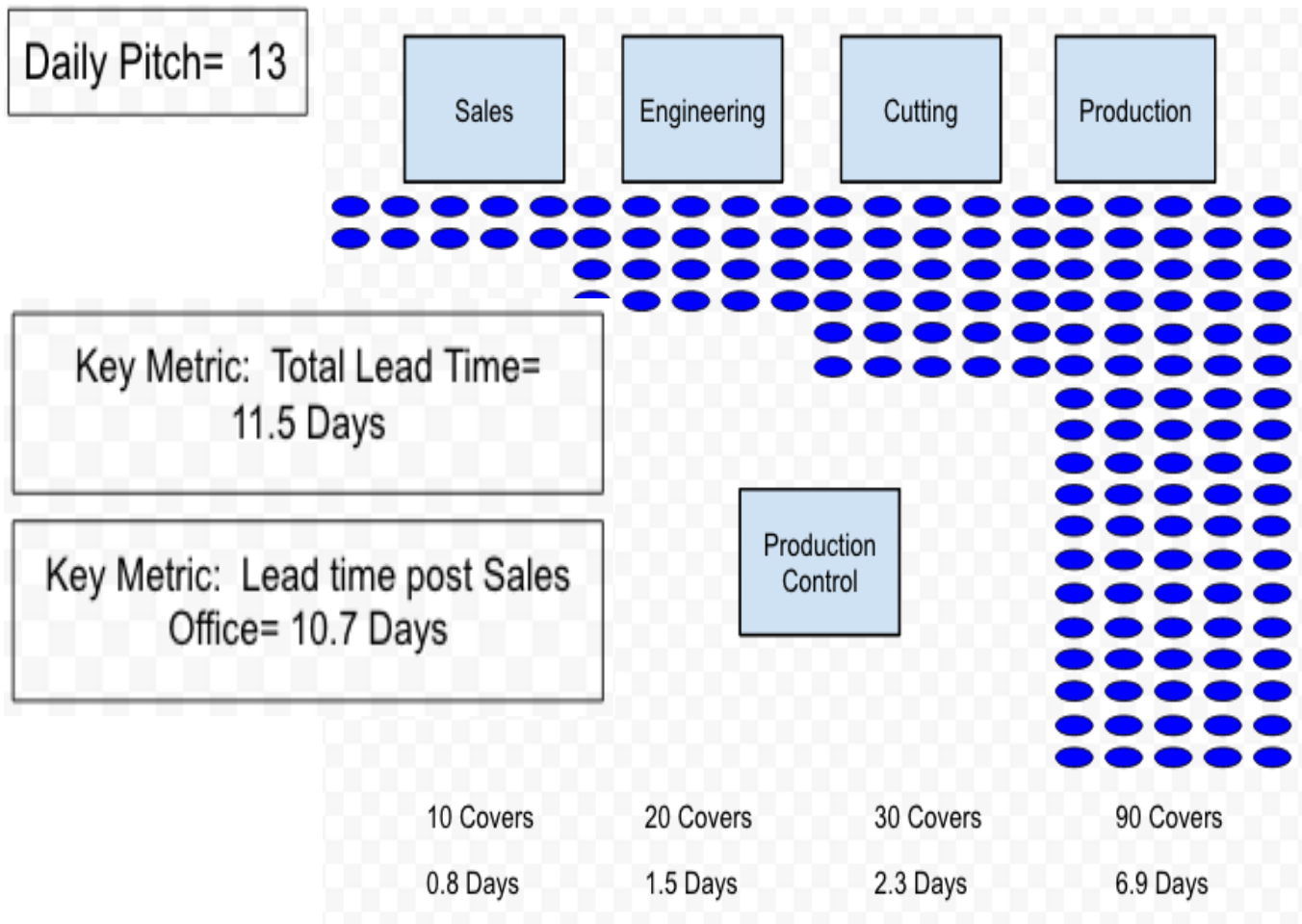
Introducing Pull by Creating a “Pitch”

- 150 total covers in the value stream
- Desired Lead Time = 12 Days
- $150/12 = 12.5$ or 13 covers* per day

*13 covers becomes the daily goal for production

Improvement Phase 1 2012

2010-



Improvement Phase 2- Using Kanban to Pull in Production

| | |
|-----------|--|
| Number Of | |
|-----------|--|

kan·ban = Signal for Action
 /'känbän/

| | | | | | | | | | |
|----------|--|--|--|--|---|---|---|--|-------|
| 30 to 39 | | | | | 5 | | | | 6 Cov |
| 40 to 49 | | | | | | 6 | | | |
| 50 to 59 | | | | | | | 7 | | |

Kanban in Production

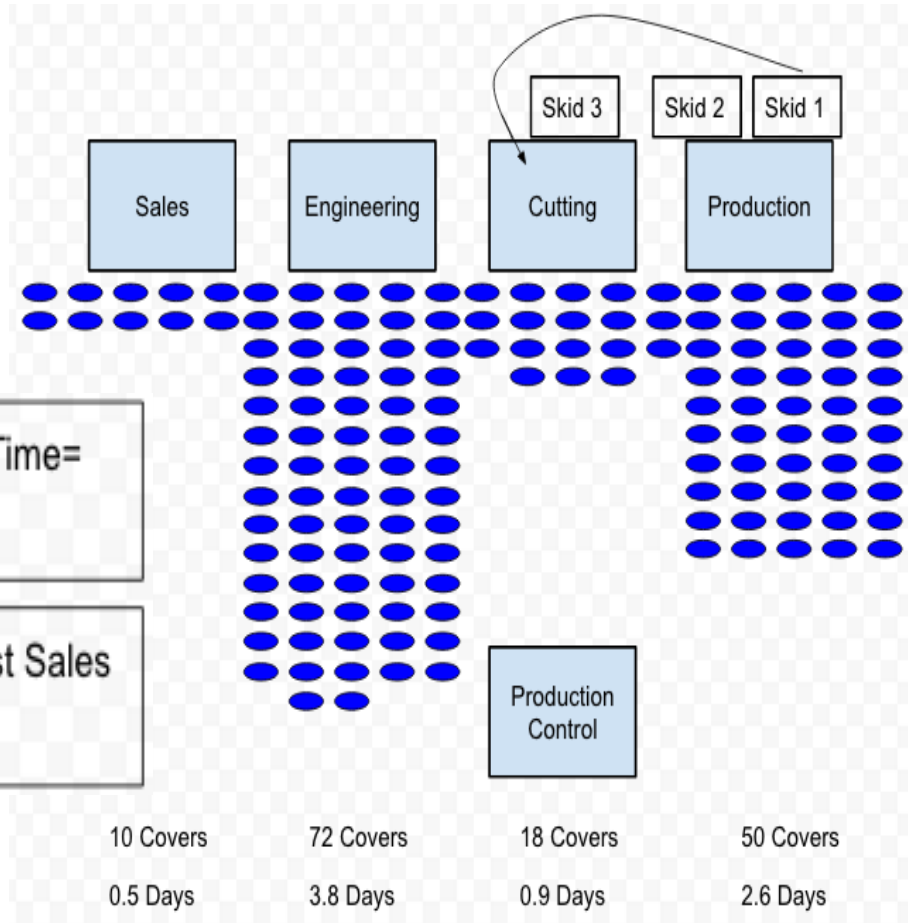


Phase 2 – Kanbans between Cutting & Production 2013

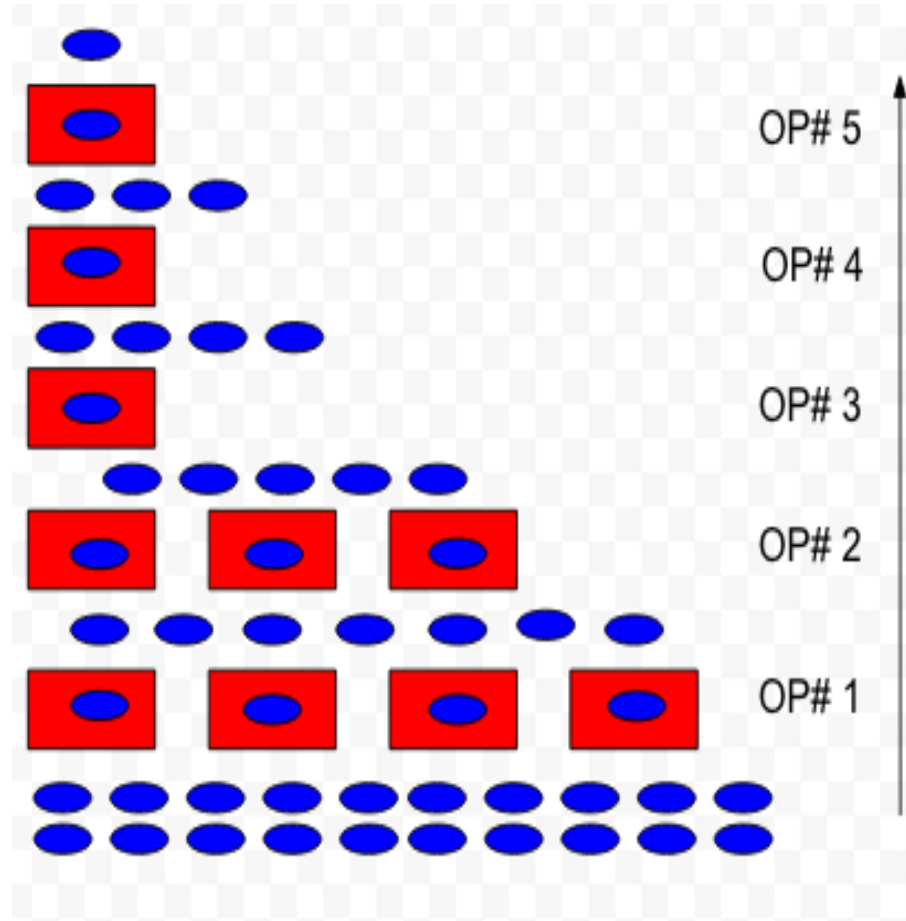
Daily Pitch= 19

Key Metric: Total Lead Time= 7.9 Days

Key Metric: Lead time post Sales Office= 7.4 Days



Production WIP Clean Up

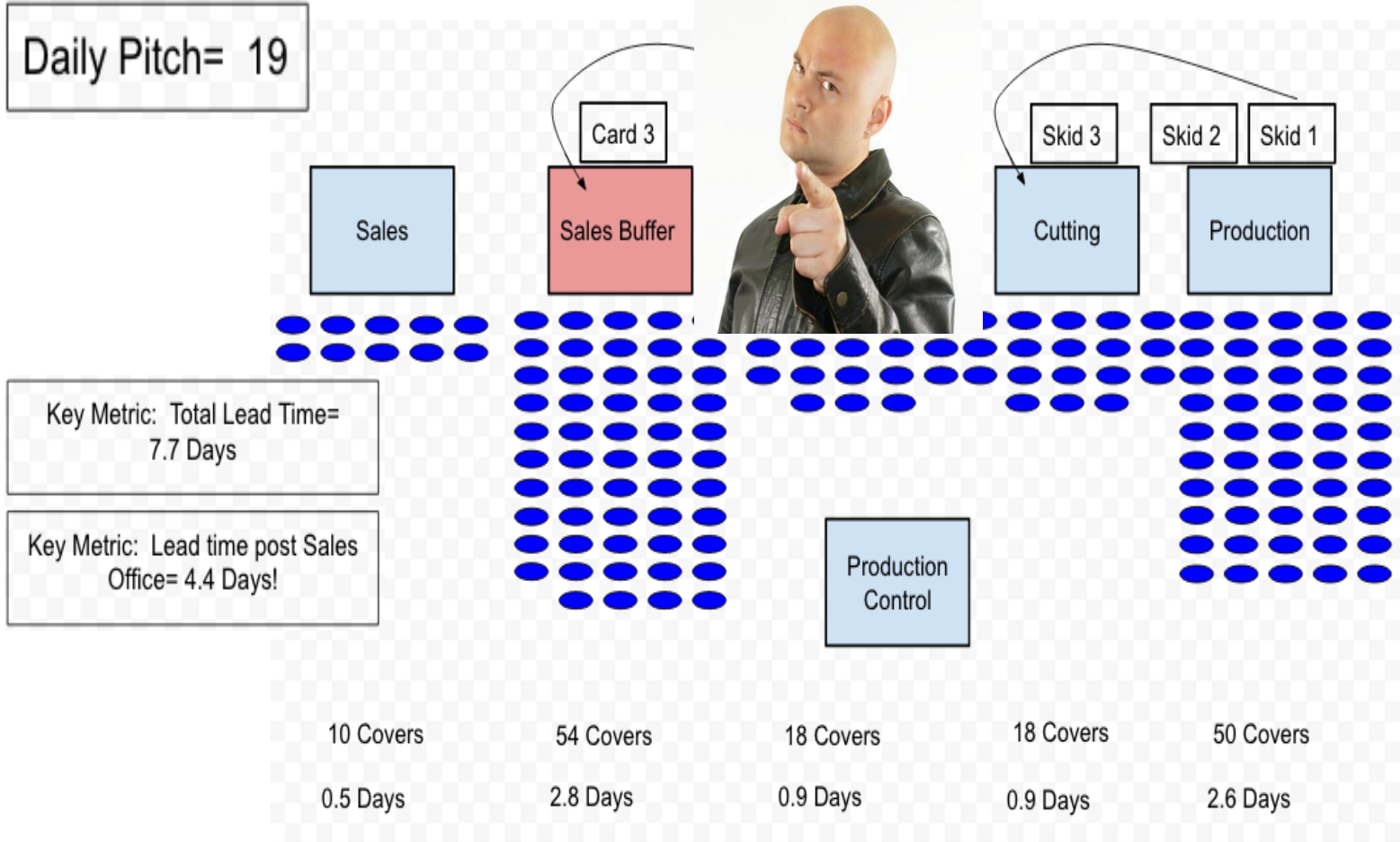


Phase 3 – Introducing the Office Kanban and “Sales Buffer Cart”

- Kanban cards regulate the volume of orders throughout the office
- Sales Buffer Cart is a physical filing system on wheels to hold orders ready for design
- Pull is now dictated by production all the way back to sales



Phase 3 – Sales Buffer Cart and Office Kanban Cards 2014-2015



Daily Meeting



2015 Results from Phase 3

- 5.6 day lead time throughout the two busiest months of the season (Sept & Oct)
- Productivity up 14% over previous year

Phase 4 – Current State

- Still 150 covers in the value stream
- $150/5$ day desired lead time = Pitch of 30
- Kanban size reduced to 5 covers
- # of Kanbans in play: 5

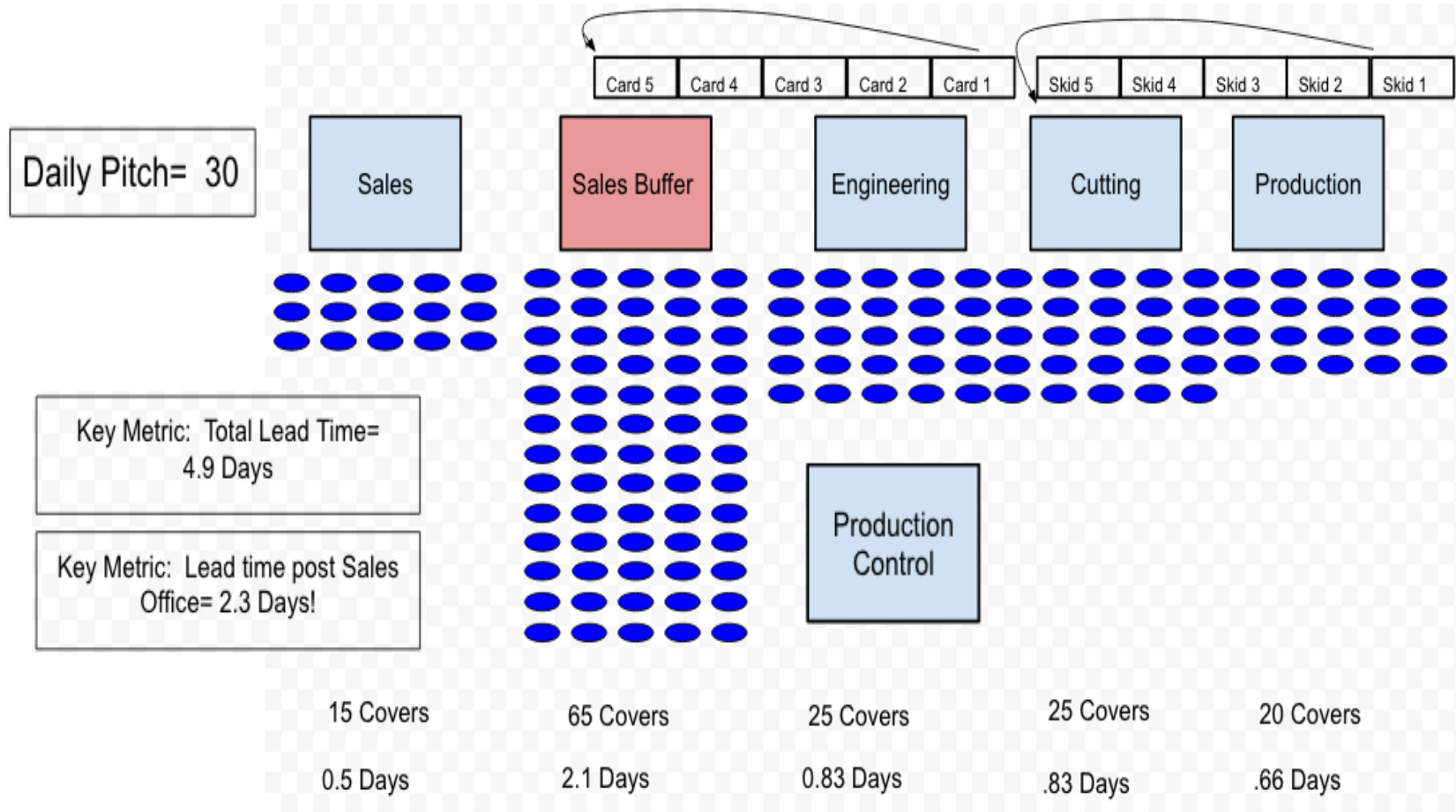
Using Kanban to Pull

| Number Of Covers | Number of Skids for Mesh or Vinyl | | | | | | | | |
|------------------|-----------------------------------|---|---|---|---|---|---|--|--|
| 2 to 9 | | 2 | | | | | | | |
| 10 to 19 | | | 3 | | | | | | |
| 20 to 29 | | | | 4 | | | | | |
| 30 to 39 | | | | | 5 | | | | |
| 40 to 49 | | | | | | 6 | | | |
| 50 to 59 | | | | | | | 7 | | |

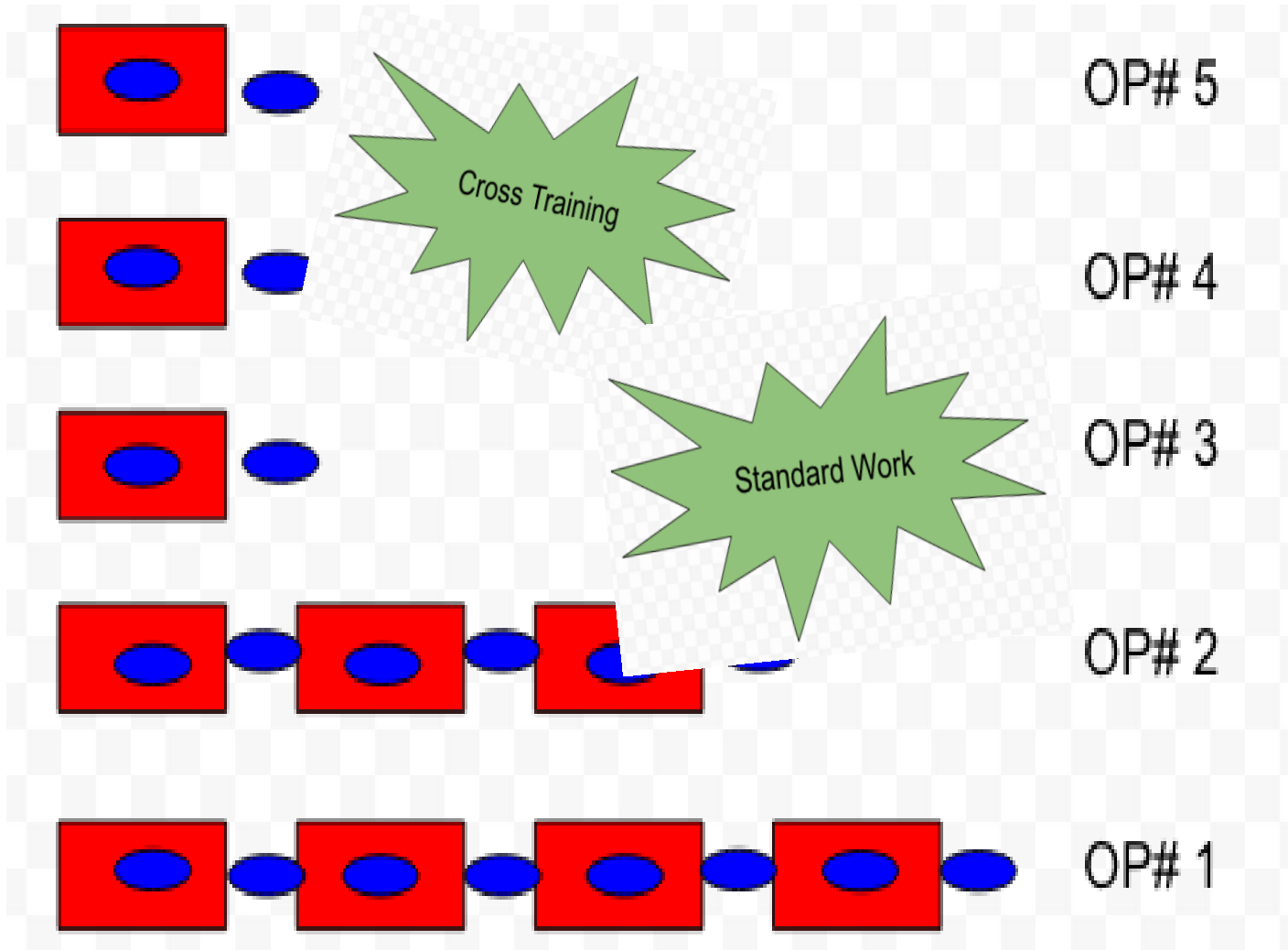
Covers per skid

5

Phase 4 Value Stream Snapshot



Production Snapshot



Summary

- From 2010 to 2016:
 - *67% Reduction in Lead Time from 15 days to <5
 - *18% Productivity Improvement from \$209/Hour/ Team Member to \$246

Current State

- Sales are up 18%
- Productivity is up 3.6%
- Over 100 more covers produced over the same time period
- Lead times up...

Thank You!

Your opinion is important to us!

Please take a moment to complete the survey using the conference mobile app.

Session No: WS/37

Pool Cover Value Stream

From Sales Desk to Shipping Dock

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