

CI Activity Update – Sep 2018

KNAPHEIDE
SINCE 1848

Amazon Build 2018

Knapheide Charleston, SC

Team Members

Christy Frankel – Black Belt

Terry Elder - Sponsor

Richard Pioch – Team Lead

Phil Fryrear

Joe Enke

Allen Pruett

Sunil Rajagopal

Sean Fischer



Amazon Goal

Total Units	2,800
Completed units per day	45
Completed units per week	225
Approximate weeks for build	12
Hours per build	9
Total minutes per day	24,300
Installation Stations	18; 2 lines with 9 stations each.
Minutes per Station	1,350
Hours per station	22.5
Approximate installers per station	3.5

Current progress

Total Units Completed	780
Completed units per day	17-20
Completed units per week	170-200
Approximate installers per station	3.5

Identified floor space



Bay build layout



Open floor space partially utilized

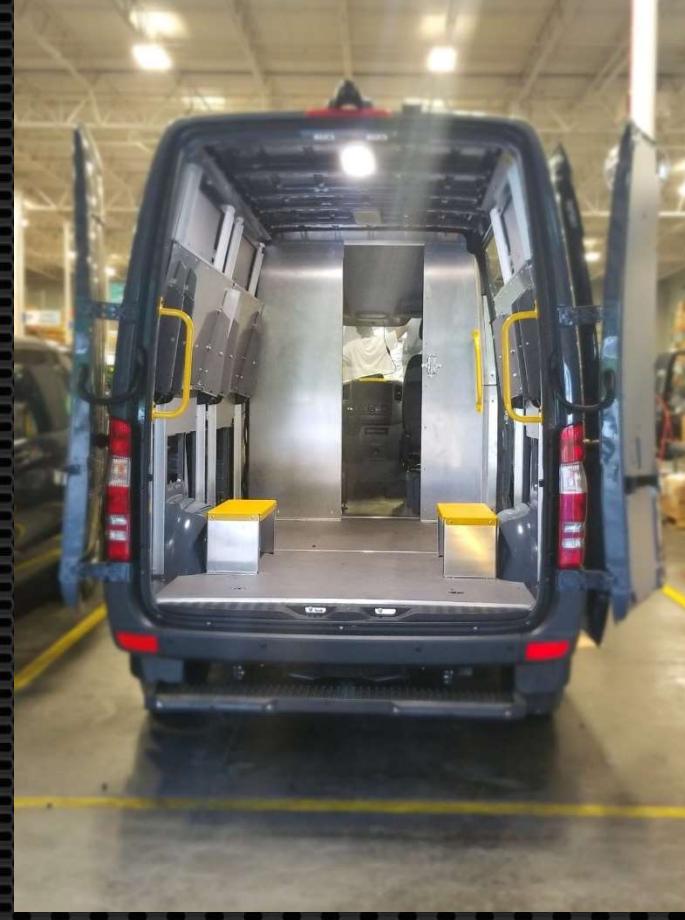


Open floor space not being utilized

Identified floor space cont'd



Interior Build



Exterior Build



6S Designated areas



Dead parts/tools cart

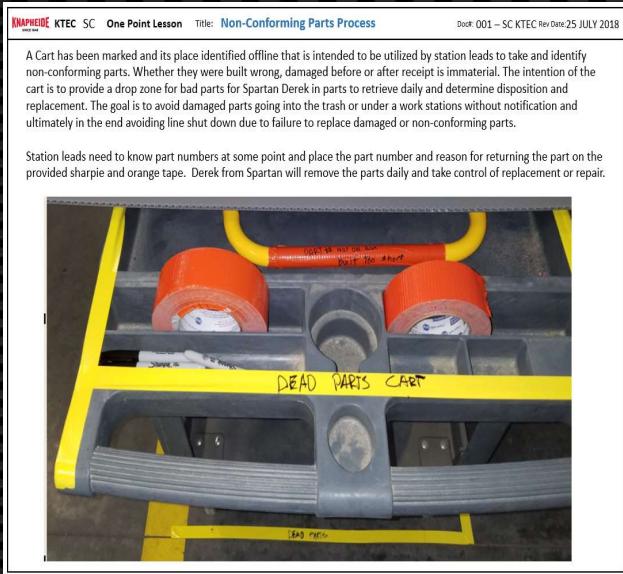


Safety cart



Water cart

Nonconforming Parts



- Document was placed on the dead parts/tools cart to help alleviate any confusion .
- All items should give a description of what is wrong and a station number.

Process for nonconforming parts/power tools

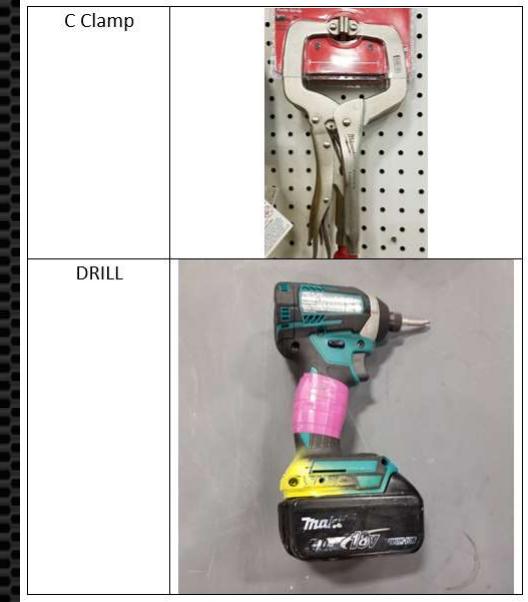
Dead Parts/Tools Cart

This cart is to be used for dead parts/tools only. Using the orange tape and permanent marker provided please follow the steps below. At the end of the day Materials will clear the cart of all dead parts.

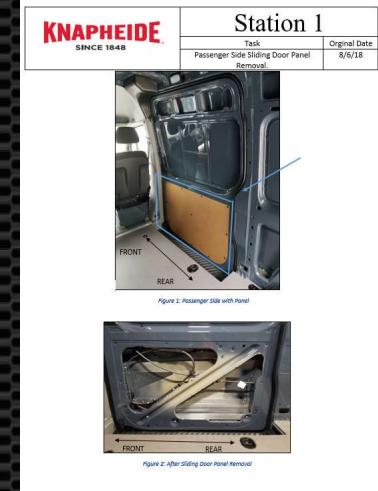
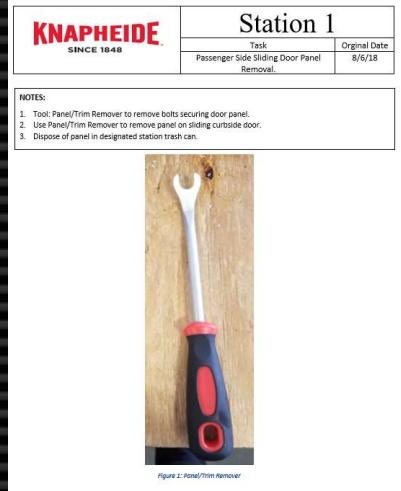
1. Write what is wrong with the part or tool.
2. Include your station number.
3. Example:



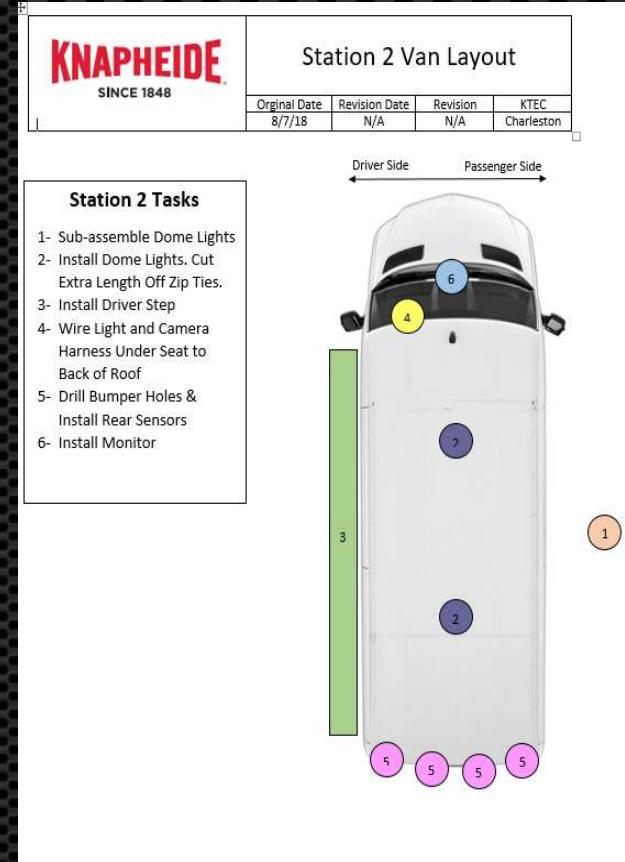
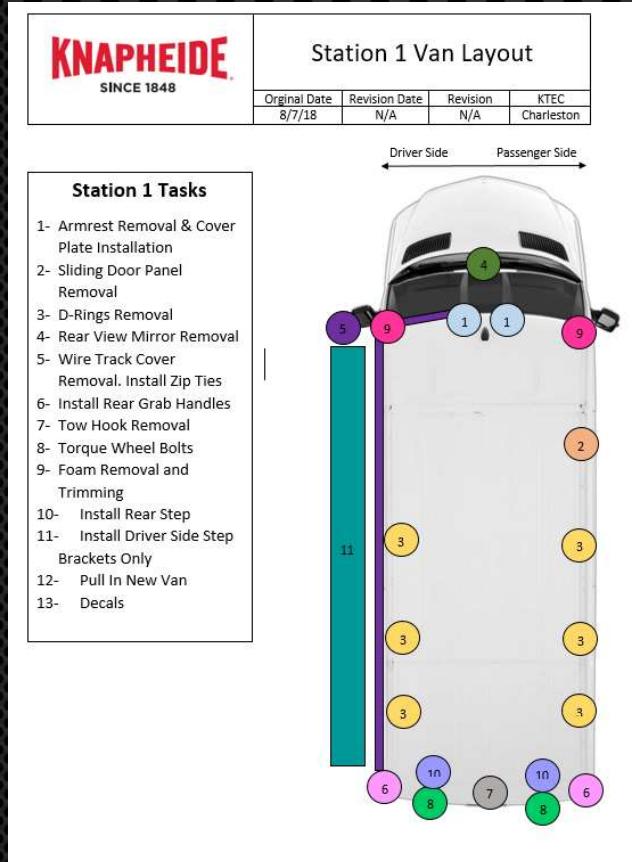
Instructional books – tools list



Instructional books cont'd



Instructional books cont'd



Material flow



Continuous Amazon projects

- 6S station carts
- Implement instructional books
- Construct extra templates for back up
- Confirm installation flow to prevent any bottlenecks on the line
- Collaborate with Utilimaster Materials Manager that processes are working
- Metric to monitor the progress

Hurricane Florence Action



Collaborative effort from Knapheide,
temporary installers and Utilimaster.

- Moved over 40 vans in less than an hour.
- Locations
 - Mercedes lot
 - Inside Knapheide shop



United Rentals

- Collaborated with Engineering on the BOM
- Collaborated with W.Q. on existing issues



607 Material flow and availability

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607 Material Flow Improvement

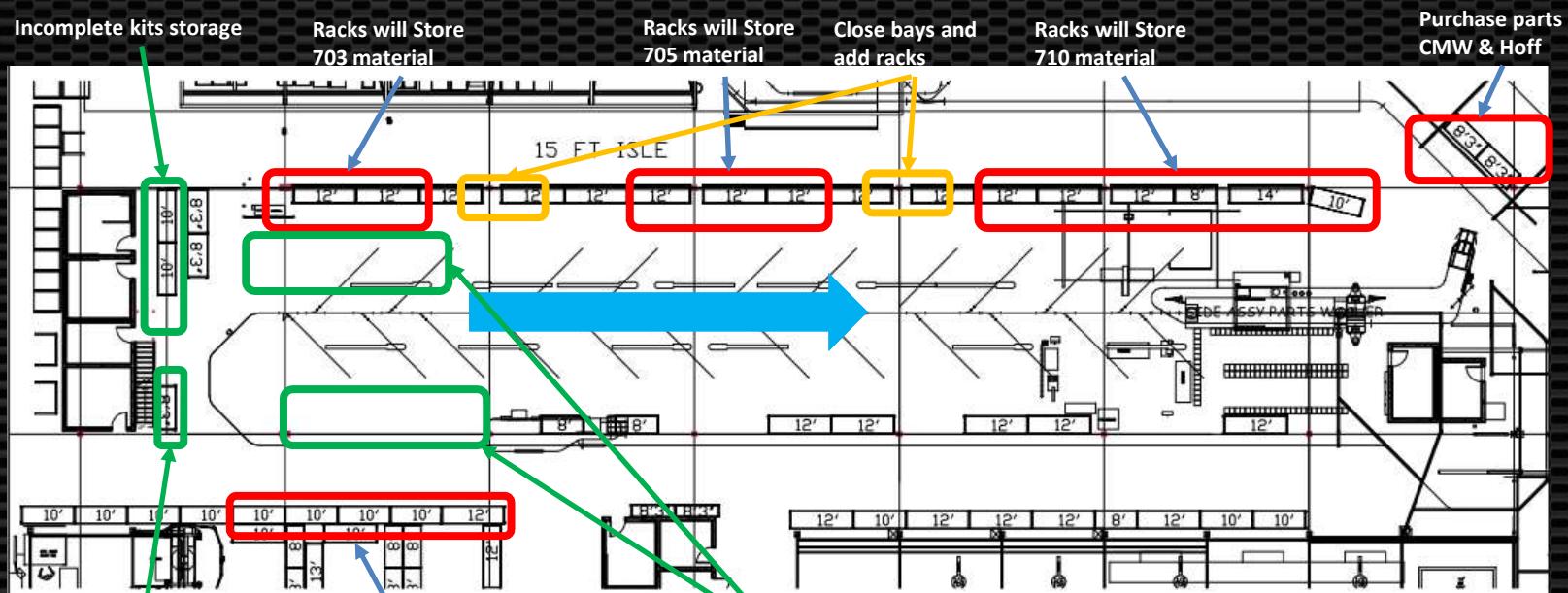
Situation

607 is a constraint to the growth of the business.

The parts fabricated at 607, used by other Assembly CCU's, are not delivered as per schedule due to **various reasons** with kitted material availability and flow to individual stations within 607.

- Too many kitted material placed next to stations cluttering up the workplace preventing access to it when needed
- Kitted orders next to stations are not sequenced to their daily operations
- Allowing Partially kitted orders to be processed which clutters the limited space next to the stations till the entire order is kitted and processed.
- No defined or designated locations for the kitted orders in the queue to be processed
- No clear process to handle kitted order for scrap and missing parts once they are in the queue to be processed
- Pallet of parts placed in front of the racks preventing material handlers access to parts on the racks
- Rework orders do not have a designated location and mixed with regular orders
- Wrong components on kits
- Discrepancy in actual kitted hours available
- Discrepancy in completed orders reported
- Processed orders not wanded

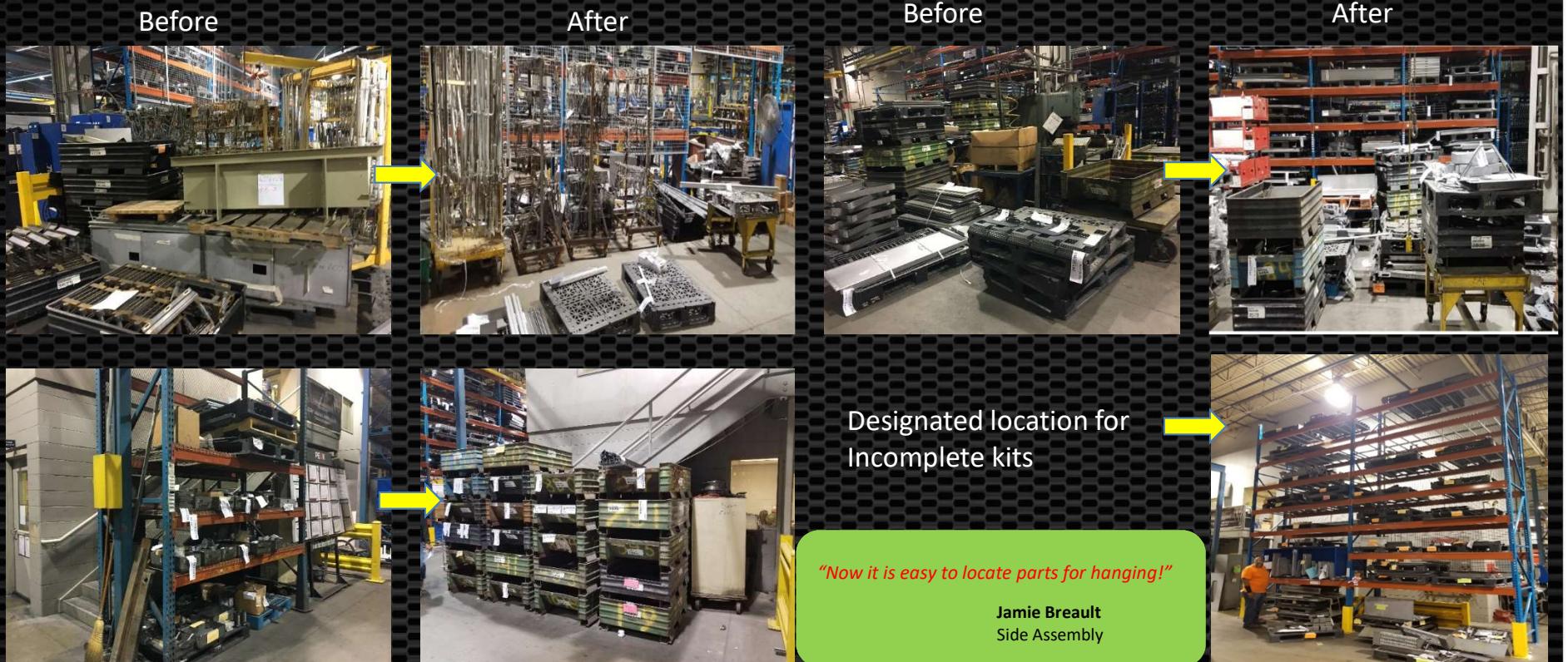
607 Material Reorganization-First Step



- Complete (Green Box)
- In-process due date 9/26/2018 (Yellow Box)
- In the plan due date 10/5/2018 (Red Box)

607 Layout

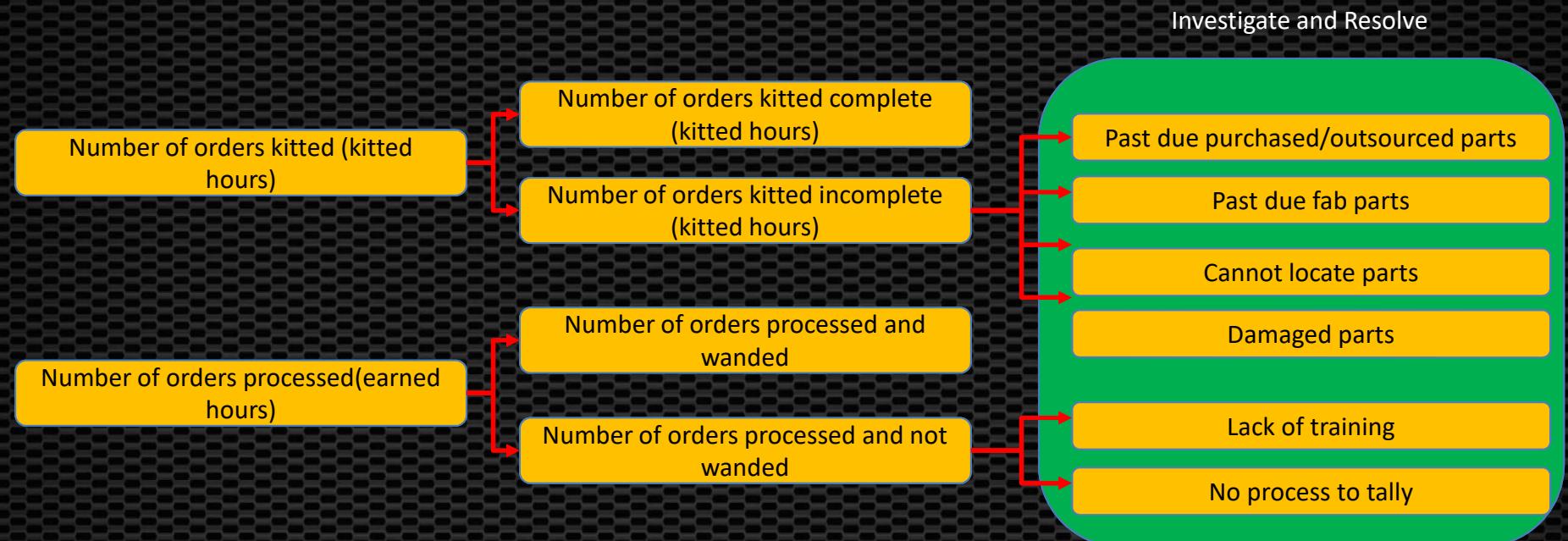
607 Material Flow Improvements



"Now it is easy to locate parts for hanging!"

Jamie Breault
Side Assembly

607 Kitted Material Availability & Flow



607 Kitted Material Availability & Flow

Production schedule

WASHER, SEALING .27 X .302				
A	B	C	D	E
1 SMO Start	Date	Raw m.	Raw material Description	Raw mat
2 703 07/06/2018 31954580	PANEL TOP ANGLE BACK 6X18X38	3		
3 703 08/01/2018 12211199	PLUG PLAS BUTTON PLUG 1.25	4		
4 703 08/02/2018 12211199	PLUG PLAS BUTTON PLUG 1.25	4		
5 703 08/02/2018 30313600	WLD NUT 25-20UNC	12		
6 703 08/02/2018 33323230	TOP & SIDES HS 6X14096 LIGHT BAR	1		
7 703 08/02/2018 31022320	FRONT T.O.B. 54L X 24H	2		
8 703 08/02/2018 32205440	BTM PNLS HS DCL 19.50 X 124.88	2		
9 703 08/21/2018 12211132	BRACKET DR DBL-SPRG HLD FO RIV	8		

Hot orders

A	B	C	D	E	F	G
Order #	QTY Due	Who Needs	Status	Comment	Assembly Part	Kitter
1 1672612	1	618	Cited		71232892260	#N/A
2 2326081	1	618	Cited		2982170	Roger M.
3 1685935	12	615	pulled		40060140	#N/A
4 2382634	1	618	pulled		31732110	Mike Cramsey
5 2450881	1	615	pulled		3208710	Kevin Thurman
6 277601	1	615	pulled		32087100	#N/A
7 3078871	1	615	pulled		33306410	#N/A
8 2945534	1	615	pulled		33323820	Kevin Thurman

Shortage

A	B	C	D	E	F	G
Order #	W	Earn	Missing Part/Qty	Kitter	Hot	Notes
1 1672612	1	6001	1.30010720 2.37240920 2.37241260	Dao Tran	633	0590-kelpro due 9.13 0720-kelpro due 9.13 0824-07 E 5.2 1260-Parts in 07 E 5.2
2 287414	704	5.2	8.82202144	Dao Tran	624	0510-ticket 841616 2144-ticket 841617 2285-ticket 841617 2285-ticket 841617
3 300792	708	8	8.82202144	Tony Klingele	#N/A	9179-07 SA E 1.2 9504-purch order 9/12 2960-07 SP 1.2 2970-07 SP 1.2
4 279919	703	5	1.12026544 4.21029179 4.21029260 2.41029270	Tony Klingele	#N/A	Chad rekt! 9179-07 SA E 1.2 9504-purch order 9/12 2960-07 SP 1.2 2970-07 SP 1.2

Credit on hand

A	B	C	D	E	F	G	H	I	J	K	L
SMO No.	Item #	Model/P art No.	Shop Ord	Due Date	Qty Due	Run Hours	Print Status	dummy cel	Kitted Hours	Kitter	MFG
712 26206532	BRACKET	172864	05/18/2018	8	0.5992	PRINT FAE	#N/A	#N/A	0.5992	#N/A	
712 33067930	RECEIVER	151312	05/31/2018	1	0.08	PRINT FAE	#N/A	#N/A	0.08	#N/A	

Identified 25 hours and is fixed



Daily Reconciliation

A	B	C	D	E	F
Date	Order	Location	Kitter	Shortages	Kit Error
248	21267	6	Larry Robertson		
252	279730	5	Kevin Thurman		
795	203981	1sr	Dao Tran		
				2.31567220	
				Nathan G in 609 wanted these out. We have to assume 609 took the parts for the final two assemblies.	
142	262582		Larry Robertson		
207	279730	5	Tony Klingele		
262	262582	6	Mike Cramsey		
278	249175	6	Kevin Thurman		
773	279699	7	Kevin Thurman	Kitted 32693910 & 32693970, missing the other half of the kit... backfilled	

Kitter Archive

Daily labor report

A	B	C	D	E	F	G	H	I	J	K	L	M
Emp Name	Date	Hrs	Typ	Order#	Opr Wkr	Ctr	Mr	Part No	Description	Ccu	Qty	Hrs Worked
1608 Dickson, James B	09/11/2018	R	291507	10	703	1		33016470	LD AY TOB 52 30213 GAS TLTH	607	2	2.84
1608 Dickson, James B	09/11/2018	R	291507	10	703	1		33016470	LD AY TOB 52 30213 GAS TLTH	607	0	0.21
33067930	09/11/2018	R	291507	10	703	1		33016470	LD AY TOB 52 30213 GAS TLTH	607	1	0.73
3881 Nichols, Scott M	09/11/2018	R	291507	10	703	1		33016470	LD AY TOB 52 30213 GAS TLTH	607	0	0.12
3881 Nichols, Scott M	09/11/2018	R	291507	10	703	1		33016470	LD AY TOB 52 30213 GAS TLTH	607	0	0.25
3899 Smith, Ellis E	09/11/2018	R	295943	10	703	1		31674270	OPEN TOP BOX 96"X6"X6"	607	1	1.37
3899 Smith, Ellis E	09/11/2018	R	295943	10	703	1		31674270	OPEN TOP BOX 96"X6"X6"	607	2	1.48
3899 Smith, Ellis E	09/11/2018	R	295943	10	703	1		31674270	OPEN TOP BOX 96"X6"X6"	607	3	0.57
3899 Smith, Ellis E	09/11/2018	R	295943	10	703	1		31674270	OPEN TOP BOX 96"X6"X6"	607	0	0.64
3899 Smith, Ellis E	09/11/2018	R	295943	10	703	1		31674270	OPEN TOP BOX 96"X6"X6"	607	4	1.07
3899 Smith, Ellis E	09/11/2018	R	295943	10	703	1		31674270	OPEN TOP BOX 96"X6"X6"	607	2	0.89
3899 Smith, Ellis E	09/11/2018	R	295943	10	703	1		31674270	OPEN TOP BOX 96"X6"X6"	607	0	0.1

Why?

Work Center	Description	Goal	11-Sep			12-Sep		
			Earned	not Marked	Kitted	Hours Short	Kitted Available	Earned
703 Boxes		24	5.272	4.62	10	22.712	20172	0
704 Bulkheads		16	5.586	0.405	1.1501	15.7908	64	0
705 Doors		8	11.7657	0.039	0.6726	13.8058	2.4343	0
707 Bumpers		24	13.2467	0.0785	5.7	50.3135	31.2915	0
708 Cont.		12	8.1133	0.0785	4.74	13.6742	6.4289	0.0785
709 Tailshelves		24	0.9915	0.0132	2.0533	24.8567	0	0
710 Glue Doors		20	24.2006	7.7948	0	21.2696	25.925	7.32
712 Misc.		24	44.6205	2.4062	22.1575	61.2344	39.3707	0.133
All		242	113.7963	15.4352	46.4735	223.737	113.8776	7.5315
	Assigned		113.7963	15.4352	46.4735	223.737	113.8776	7.5315
1st		17	15				15	
2nd		16	15				15	
3rd		16	15				16	

UB Reshuffle

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UB Reshuffle Background

Shuffle UB portfolio to run most Productive product mix on correct lines (determined by demonstrated Productivity by weldment)

608	617	618	537	612	Line	Productivity	Production Mix	Line	Mix
696	5/796	5/796	KUV129SU	6132DL-38	608	104%		608	46%
696F/F40	5/7108	5/7108	KUV129SUK	6132DL-44	617	88%		617	19%
696D38	KC – ALL	6132	KUV129SUTPW-EL	6132DLHH-60KJ	618	70%		618	19%
6108	KUV – not on 537	5/7132	KUV129SUKTPW-EL	6132DLH	537	100%		537	11%
6108D	KUV – PMO/SMO	CR	6132D		612	100%		612	2%
6108D54	6132*	6132DF40	6132D54						
	5/7132*								

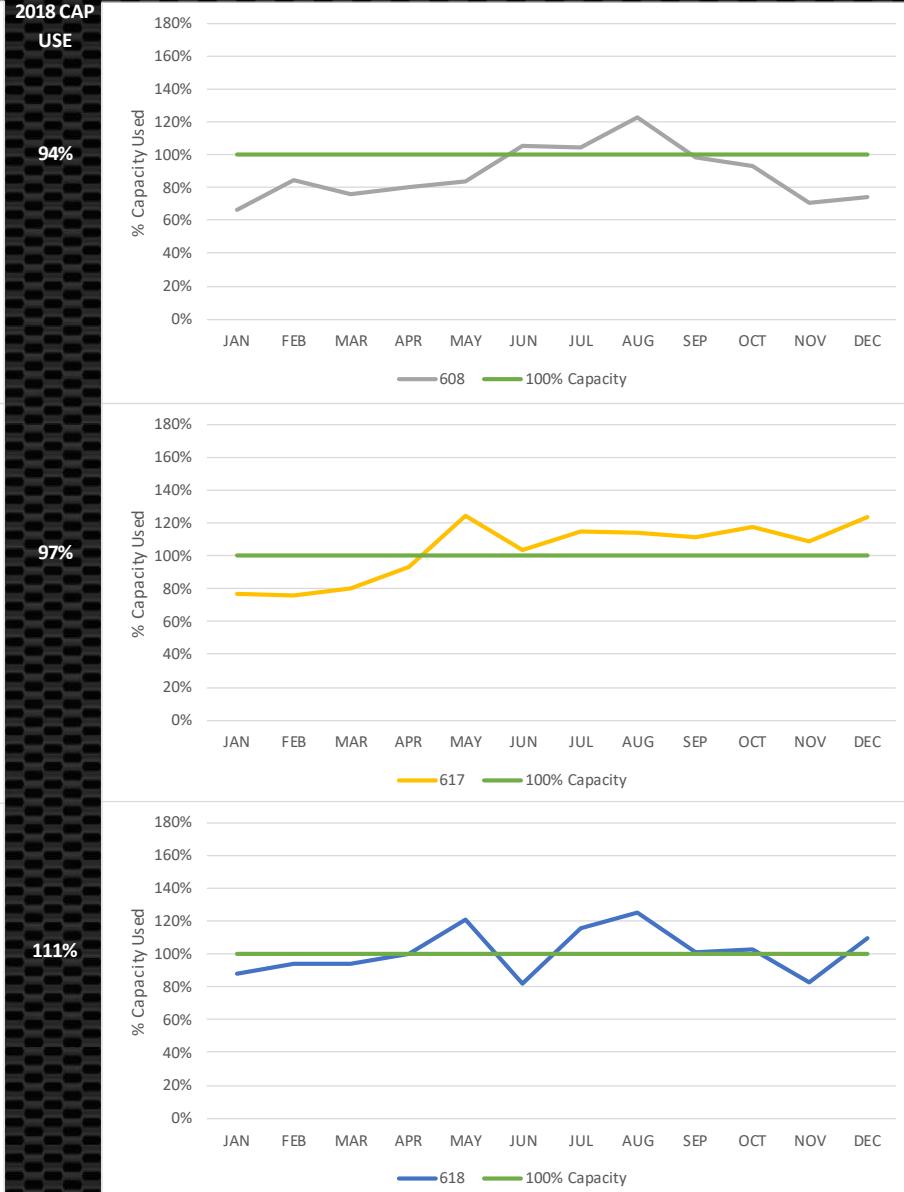
*Flex rule

Measure	Goal	Before Event	After Event
Productivity	52%	48%	TBD
Overtime	Eliminate Saturdays		TBD

2018 Trend Using Future State Mix



2017 Trend Using Future State Mix



2017 CAP USE

88%

103%

101%

15% absenteeism (breaks, vacation, FMLA, ext)
Net 500 unit capacity available

2018 Trend Using Future State Mix



2017 Trend Using Future State Mix

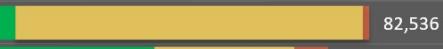
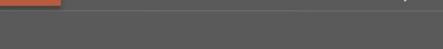


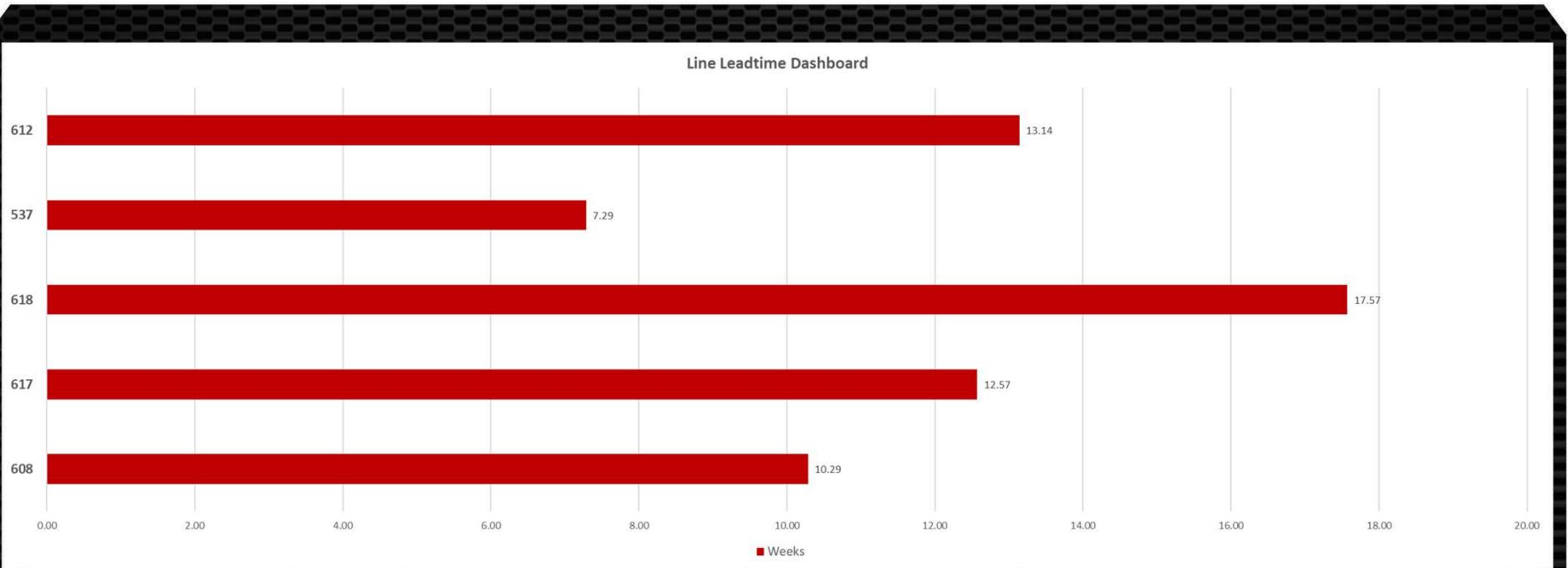
2017 CAP USE

94%

92%

Weldment Updates by Line

Line	Welds Routed Today	Welds Routed Future	Unique Weldment Mix – Future State					Future Production Mix (2017 EARNED HR Production Data)	
			Standard	PMO	SMO	Updates Needed	2017 Avg EARNED Hrs		
608	3,591	1,331	66	1,170	95	1	6.3		82,536
617	2,108	2,076	129	1,661	286	691	13.1		73,784
618	1,374	2,796	43	1,354	1,399	2,021	10.4		59,525
537	0	761	24	627	110	761	11.6		39,771
612	0	111	1	24	84	109	26.9		15,799
2017 Total	7,075	7,075	263	4,836	1,976	3,583	-		



Shuffle Impact Magnitude

Line	Avg Days Already Behind	Avg Days Shuffle Impact	Δ
608	15	0	-15
617	8	1.88	-6.12
618	17.98	13.37	-4.61
537	9	4.39	-4.61
612	17.36	8.56	-8.8
Total	13.468	5.64	-7.828

Next Steps

1. Project Plan/Critical Path Schedule
 - Steps, mitigation plans, owners, delivery dates
2. Weldment routing updates
3. Publish/Train on Routing/Planning SOP



Microsoft Word
7 - 2003 Document

4. Headcount shuffle to enable Productivity gains on key UB lines