



Waters Overall Account Update

27 Apr 2020

2020 Overall CI Update

In Progress
 Complete

Continuous Improvement Plan – Focus Areas		Objective/Goal	Responsible	Jan-Mar	Apr-Jun	Jul- Sep	Oct - Dec
Quality	1. Yield Improvement – Soft failures	Focus top 2 failures (Soft failures)	Joel / Hua Zhen	Comm Failure Dual Noise	Comm Failure Dual Noise	-	Leak Detection Failure
	2. Yield Improvement – Hard failures	Focus on top 2 failures (Hard failures)	KS Chua	M-210000520 GPV	Interface Tubing M-210000520 GPV	-	-
	3. Field data -> Factory quality improvement	Focus on Hot Part / Start up failures	KS Chua	HP	HP		
Enhancement	1. eDHR	Increased process robustness	Aldwin	BSM/QSM	BSM/QSM	Alliance	Alliance
	2. Pick to Scan (Supermart)	Enables picking using barcode.	Anil	Hardware Trial	Implementation for KTS	Enhancement for KTE	Implementation for KTE
	3. CR - Sheet metal Value Engineering.	Sheet metal CR	Amy	Phase 1	-	-	-
	4. CR - PCBA Value Engineering.	PCBA CR	Amy	Phase 1	-	-	-
	5. Shipping box optimization(Joint lean workshop) for Alliance & Detectors	Shipping Box optimization	Gary / Niu Niu	Pending ECO	Spares	Spares	-
	6. Automation serial number traceability to PO.	Enhanced Baan - for SN scanning during shipment	Niu Niu	Plan	Go Live	-	-
4M	1. Recertification and Competency Check	Operator compliance to ASP/TSP	Aldwin / Gary	Pumps	Alliance	BSM/QSM	Detectors
	2. Capacity review & enhancement.	Capacity	Amy / Aldwin				
	3. Q Alert linkage to eDHR.	Increased process robustness	Aldwin	-	-	BSM/QSM	-
	4. TMD linkage to eDHR.	Increased process robustness	Aldwin	-	-	-	BSM/QSM
	5. Testers upgrade	Refurbishment of test equipment	Joel/Hua Zhen	New pump tray tester	Alliance final testers(x4)	Alliance final testers(x4)	BSM/QSM final testers (x8)
	6. Tester capacity Review	Refurbishment of test equipment	Joel/Hua Zhen	Pump tray testers(3x)	Alliance final testers(x4)	Alliance final testers(x4)	BSM/QSM final testers (x8)

Comm Failure: – Monitoring in progress

Dual Noise: Verification of screw head touching C-clip – Close

eDHR: PCN Approved. Flex Change Request Approval Approved – Close

Pick to Scan: hardware purchase completed – Trial run in progress

Shipping Box optimization: ECO receive. FlexQ Approval in progress

SN traceability: Implemented on BSM/QSM, Alliance, Detector, Pump - Close

Competency check: 186001515 completed and report compilation submitted - Close

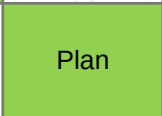
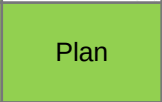
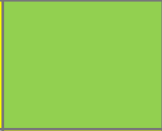
Capacity Enhancement: New pump tray station release to production after validation - Close

flex

Yield Improvement Activity

 In Progress
 Complete

Gantt Chart:

No.	Activity	Jan '20	Feb '20	Mar '20	Apr '20	May '20	Jun '20	Jul '20	Aug '20	Sep '20	Oct '20	Nov '20	Dec '20
1	Data analysis and identify 2 top soft failures - Communication Failure - Leak Detection Failure												
1	Communication Failure: Investigation and 4M (Joint effort Flex and WPPL) - Perform SGA												
	Propose Corrective Action and review with WPPL		Plan										
	Implement of Corrective Action - Milford involvement												
	Monitoring of Effectiveness Check					Plan	Plan						
2	Dual Noise Failure: Investigation and 4M (Joint effort Flex and WPPL) - Perform SGA												
	Propose Corrective Action and review with WPPL		Plan										
	Implement of Corrective Action - Milford involvement		Plan	Plan									
	Monitoring of Effectiveness Check			Plan	Plan	Plan	Plan						

Yield Improvement Activity

 In Progress
 Complete

Gantt Chart:

No.	Activity	Jan '20	Feb '20	Mar '20	Apr '20	May '20	Jun '20	Jul '20	Aug '20	Sep '20	Oct '20	Nov '20	Dec '20
3	Interface Tubing: Investigation and 4M (Joint effort Flex and WPPL) - Perform SGA		Plan		Plan								
	Propose Corrective Action and review with WPPL		Plan	Plan	Plan								
	Implement of Corrective Action - Milford involvement			Plan	Plan	Plan							
	Monitoring of Effectiveness Check			Plan	Plan	Plan	Plan	Plan	Plan				
4	Leak Detection Failure: Investigation and 4M (Joint effort Flex and WPPL) - Perform SGA				Plan						Plan		
	Propose Corrective Action and review with WPPL					Plan					Plan		
	Implement of Corrective Action - Milford involvement					Plan	Plan					Plan	
	Monitoring of Effectiveness Check						Plan	Plan	Plan				Plan

Yield Improvement – Interface Tubing

Project Title : Yield Improvement – Interface Tubing Replacement (Soft Failure)

Line / Area : Acquity SDS Family

Category : Operation

Type : SGA

Team Lead : Joel

Team Members : Hua Zhen, David, Shamsul, Aldwin



Presentation Situation and Problem :

Based on 2019 FPY data, current failure rate is 10.67 %

To create a baseline for Interface Tubing base on data collection

Objectives:

- To improve soft failure rate by 53%
- To gather 100 data points per station for 8 Tester (total of 800 data)
- To publish status on weekly Engineering Meeting

Goals:

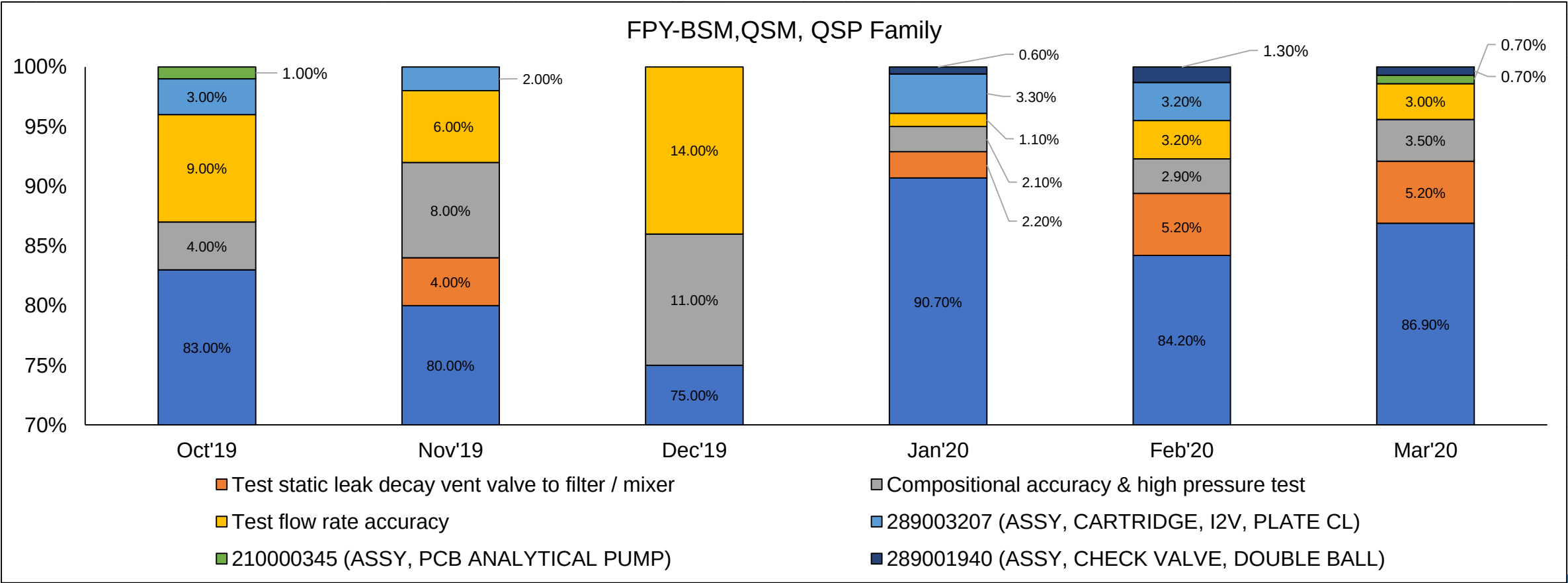
No	CTQ	Before	Target	% Improvement
1	Soft Failure	10.67 %	5 %	53%

FPY – Acquity SDS Family

FPY-BSM,QSM, QSP Family	Oct'19	Nov'19	Dec'19	Jan'20	Feb'20	Mar'20
	83.00%	80.00%	75.00%	90.70%	84.20%	86.90%
Test static leak decay vent valve to filter / mixer	0.00%	4.00%	0.00%	2.20%	5.20%	5.20%
Compositional accuracy & high-pressure test	4.00%	8.00%	11.00%	2.10%	2.90%	3.50%
Test flow rate accuracy	9.00%	6.00%	14.00%	1.10%	3.20%	3.00%
289003207 (ASSY, CARTRIDGE, I2V, PLATE CL)	3.00%	2.00%	0.00%	3.30%	3.20%	0.00%
210000345 (ASSY, PCB ANALYTICAL PUMP)	1.00%	0.00%	0.00%	0.00%	0.00%	0.70%
289001940 (ASSY, CHECK VALVE, DOUBLE BALL)	0.00%	0.00%	0.00%	0.60%	1.30%	0.70%

Top 3 Failure related to Interface Tubing

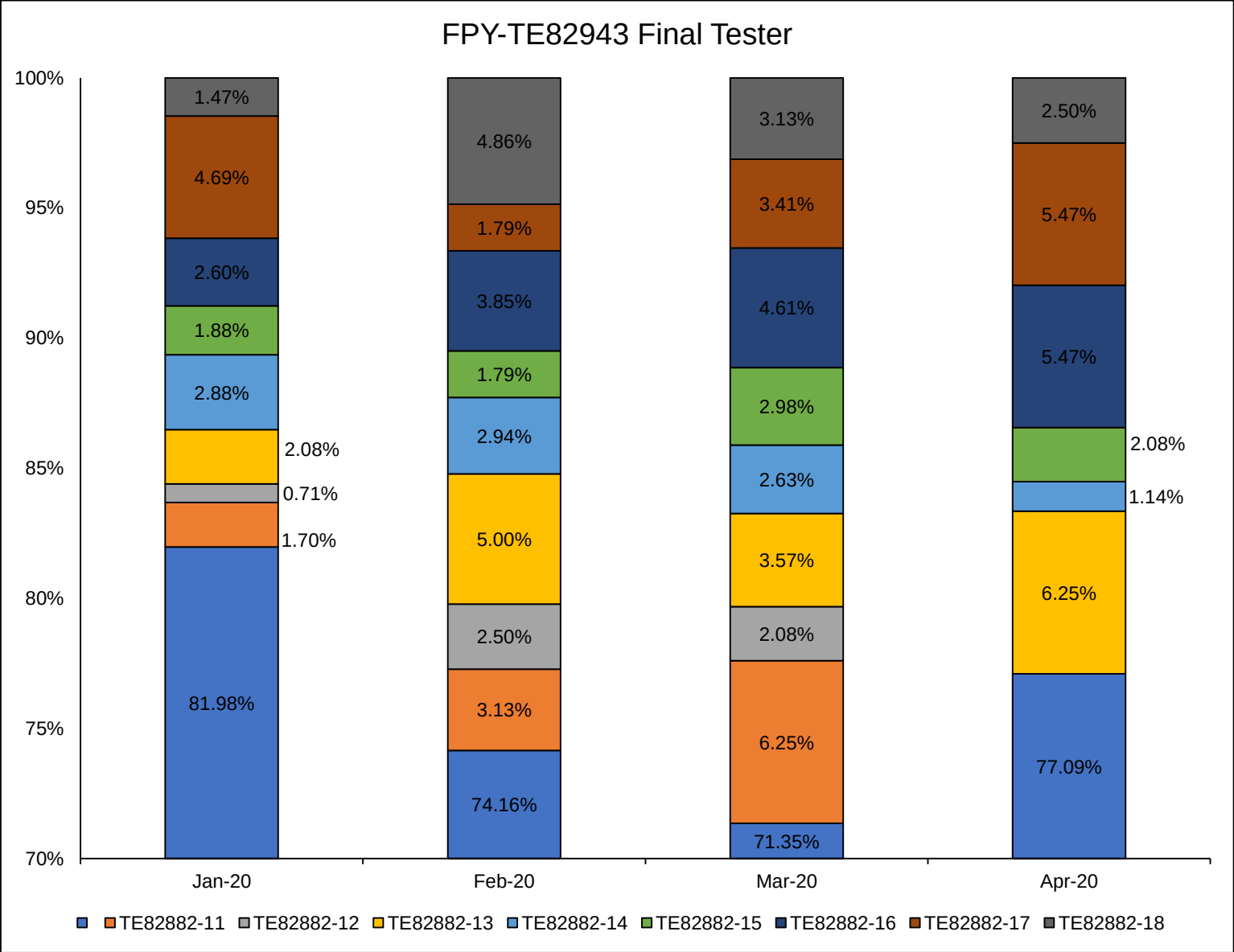
- 1. Test static leak decay vent valve to filter / mixer
- 2. Compositional accuracy & high-pressure test
- 3. Test flow rate accuracy



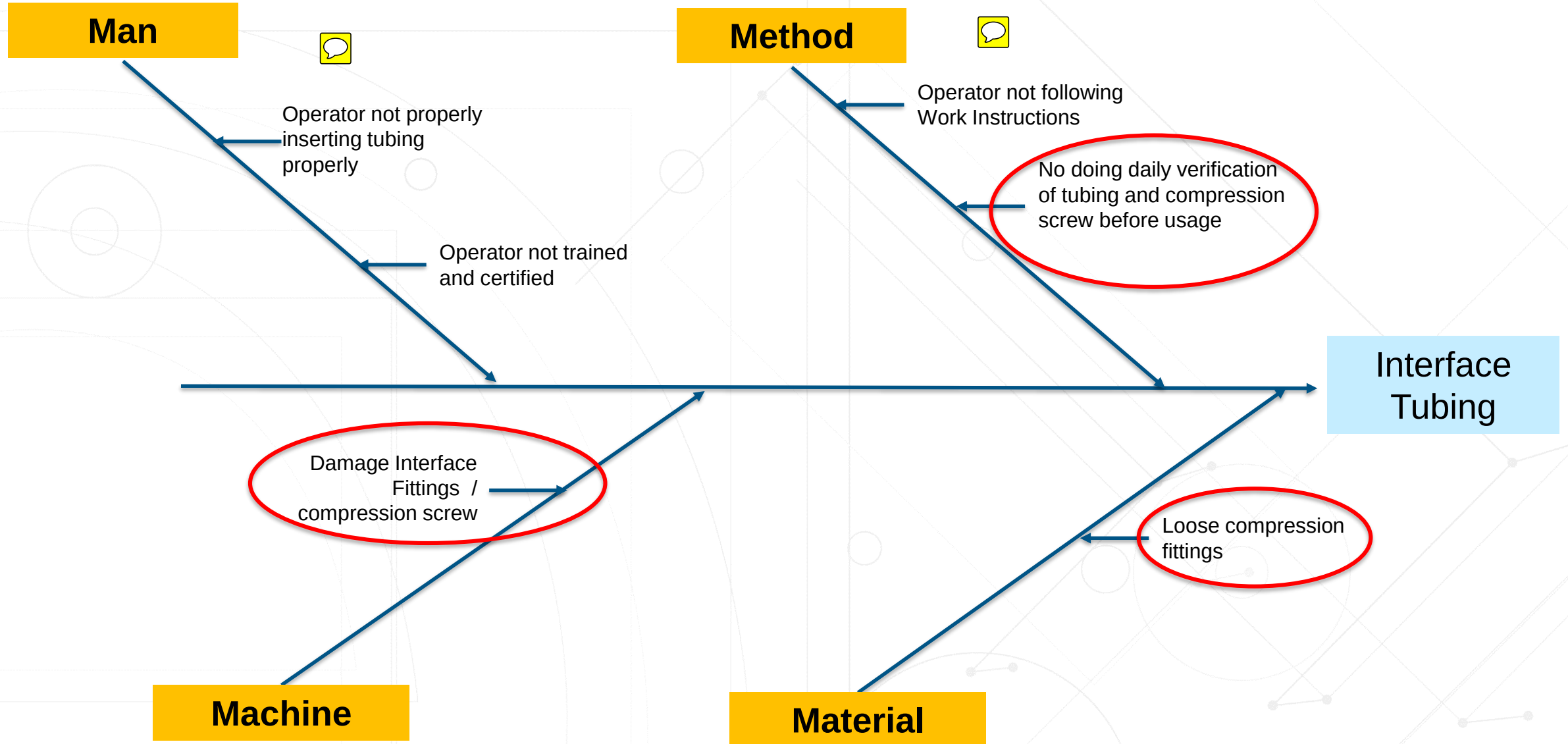
FPY – Acquity SDS Family

FPY - TE82943 Final Tester	Jan-20	Feb-20	Mar-20	Apr-20
	81.98%	74.16%	71.35%	77.09%
TE82882-11	1.70%	3.13%	6.25%	0.00%
TE82882-12	0.71%	2.50%	2.08%	0.00%
TE82882-13	2.08%	5.00%	3.57%	6.25%
TE82882-14	2.88%	2.94%	2.63%	1.14%
TE82882-15	1.88%	1.79%	2.98%	2.08%
TE82882-16	2.60%	3.85%	4.61%	5.47%
TE82882-17	4.69%	1.79%	3.41%	5.47%
TE82882-18	1.47%	4.86%	3.13%	2.50%

TE82943 FT	Initial Date	Replacement Date	UUT Tested	Remove Low/H Value
TE82943-11	02-Jan-20	15-Jan-20	12	12
	16-Jan-20	30-Mar-20	29	29
	30-Mar-20	16-Apr-20	0	0
TE82943-12	02-Jan-20	13-Jan-20	20	20
	14-Jan-20	29-Jan-20	14	14
	30-Jan-20	16-Apr-20	58	
TE82943-13	02-Jan-20	15-Jan-20	24	24
	16-Jan-20	11-Mar-20	28	28
	12-Mar-20	07-Apr-20	13	13
	07-Apr-20	16-Apr-20	1	
TE82943-14	02-Jan-20	22-Jan-20	11	11
	23-Jan-20	16-Apr-20	51	
TE82943-15	02-Jan-20	29-Jan-20	19	19
	30-Jan-20	19-Mar-20	52	
	20-Mar-20	16-Apr-20	35	35
TE82943-16	02-Jan-20	15-Jan-20	12	12
	16-Jan-20	29-Jan-20	11	11
	30-Jan-20	16-Apr-20	64	
TE82943-17	02-Jan-20	16-Apr-20	63	
TE82943-18	02-Jan-20	16-Apr-20	76	
Average			30	
Average w/o L/HV				18



Yield Improvement – Interface Tubing 4M



Yield Improvement – Interface Tubing Replacement

Possible Cause:

When Interface tubing need replacement?

- Before Test – need to check the physical attribute of interface tubing such as damaged tip or loose compression screw
- Middle of Test - need to perform priming or verification of leak close to the interface tubing fittings and found to have leak.
- After Test - need to perform priming or verification of leak close to the interface tubing fittings and found to have leak.
- Tester wise or number of UUT run to the tester



430001150 Interface tubing

Yield Improvement – Interface Tubing Replacement

Defect observed before replacement :



1. Scratches on the tubing surface



2. Scratches on the tubing surface

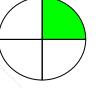
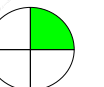


3. Outer wall collapse

Yield Improvement – Interface Tubing 4M

	Possible Causes	Verification	Possible cause (Y/ N)	Proposed Actions
Man	1) Operator not properly plugin tester cables	Verified, trained/ certified Tech/Operators performing Detector Testing as per document provide by WPPL. No abnormality found.	N	N/A
	2) Operator not trained and certified	Verified that Tech/Operators performing test for detectors as per document 735002010/735002155 provided by Waters. No abnormality found	N	N/A
Method	Operator not following Work Instructions	All test procedures as per TSP provide by Waters test PDA Detector Family. Refer to PN table at document 735002010/735002155 . No abnormality found	N	N/A
Material	Loose compression screw / fittings	Verified NCMR flow and did not see reject related to loose screw / fittings	N	N/A
Machine	Damaged Interface Tubing due to wear and tear.	Verified the interface tubing and shown wear and tear	Y	To perform daily task by Test EA as below before release tester to production

Yield Improvement – Communication Failure Activities

Action Item	Who	Due Date	Actual Date	% Completed
1. Before Test – need to check the physical attribute of interface tubing such as damaged tip or loose compression screw	Line Tech'n	30 Jun 2020	TBD	
2. Middle of Test - need to perform priming or verification of leak close to the interface tubing fittings and found to have leak	Line Tech'n	30 Jun 2020	TBD	
3. After Test - need to perform priming or verification of leak close to the interface tubing fittings and found to have leak.	Line Tech'n	30 Jun 2020	TBD	
4. After Test - need to perform priming or verification of leak close to the interface tubing fittings and found to have leak.	Line Tech'n	30 Jun 2020	TBD	