

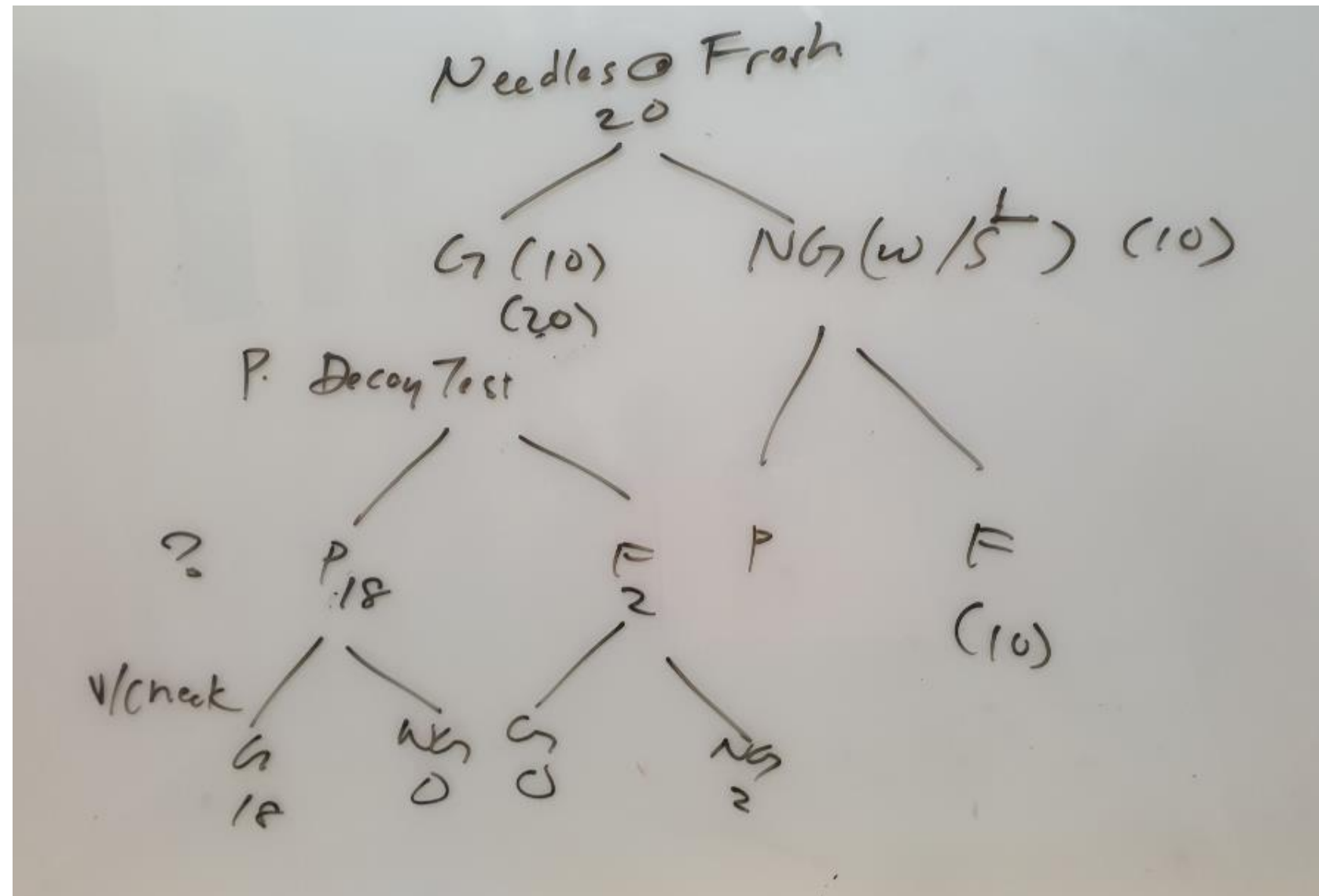
Evaluation of 20u 405001338 Needle

17 Jan 2019

405001338 Needle

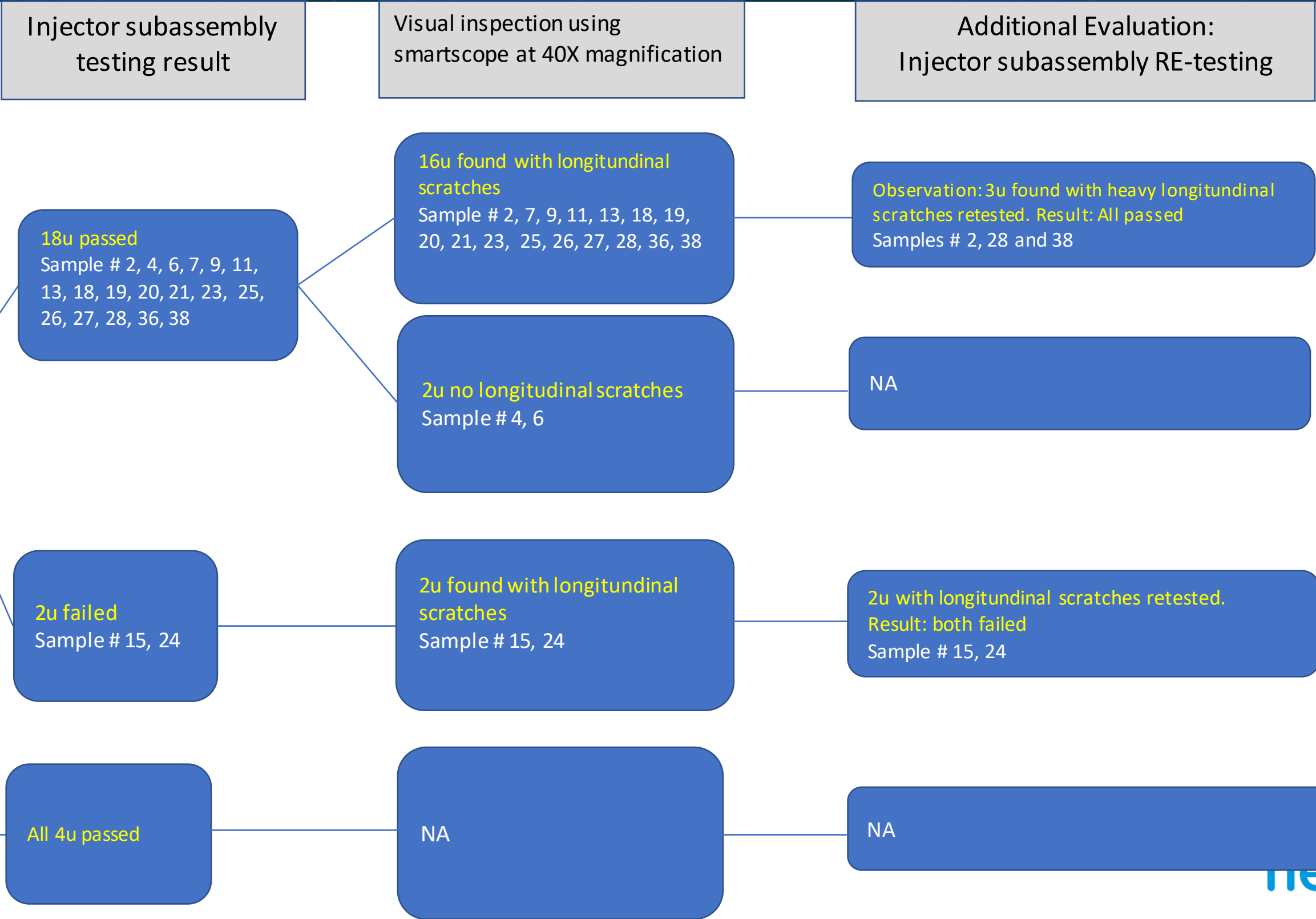
Background:

- On 11 Jan 2019 evening, Eugene provided a base (guideline), to evaluate on the 10% failures reported at Alliance Injector Sub-assy in WW01-2019.



405001338 Needle

Summary:



405001338 Needle

Summary:

- About 50% of the needles found with scratches when checked under 40x magnification.
- Majority of the known good (no scratches) fresh needle are found with longitudinal scratches after testing.
- It may be a concern to observed longitudinal scratches on the known good (no scratches) fresh needle after testing. WPPL and Flex may need to look into this concern.
- As of to date 17 Jan 2019, it is still not known whether the needles themselves and/or possibly other associated mechanisms or parts, is/are causing the high reject rate (10% fallout) in Pressure Decay test .

Evaluation of 20u 405001338 Needle

– Back up slides –

14 Jan 2019

405001338 Needle

Background:

- The needles are to be inspected prior assembly using Smartscope at 40x magnification. Visual verification result (refer to next slides for the photo):

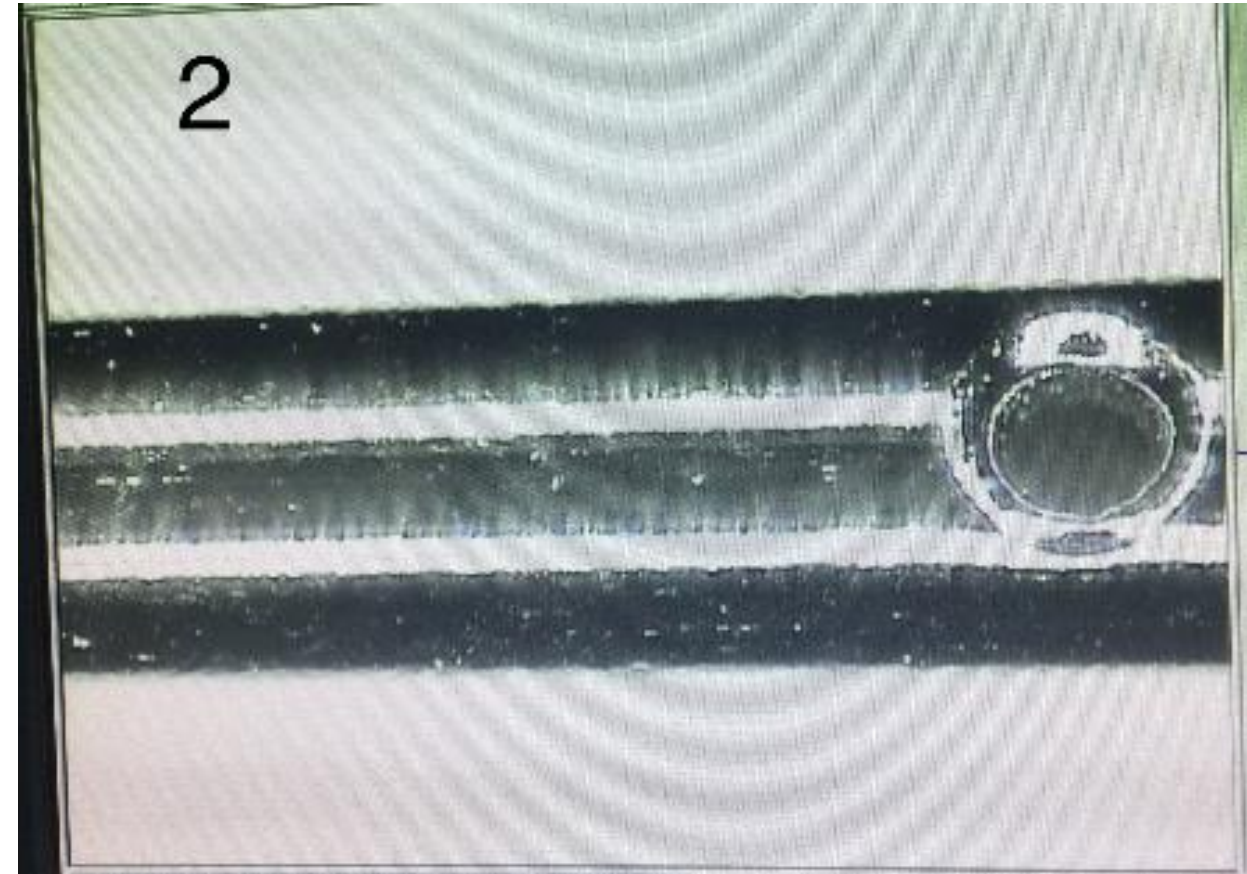
Identification	40X magnification smartscope check	
	Longitudinal scratch observed? (Y/N)	Remarks
1	Y	NA
2	N	NA
3	Y	NA
4	N	NA
5	Y	NA
6	N	scratch observed
7	N	NA
8	Y	NA
9	N	NA
10	Y	NA

Identification	40X magnification smartscope check	
	Longitudinal scratch observed? (Y/N)	Remarks
11	Y	NA
12	Y	NA
13	N	NA
14	Y	NA
15	Y	NA
16	Y	NA
17	Y	NA
18	N	scratch observed
19	Y	NA
20	N	scratch observed

405001338 Needle

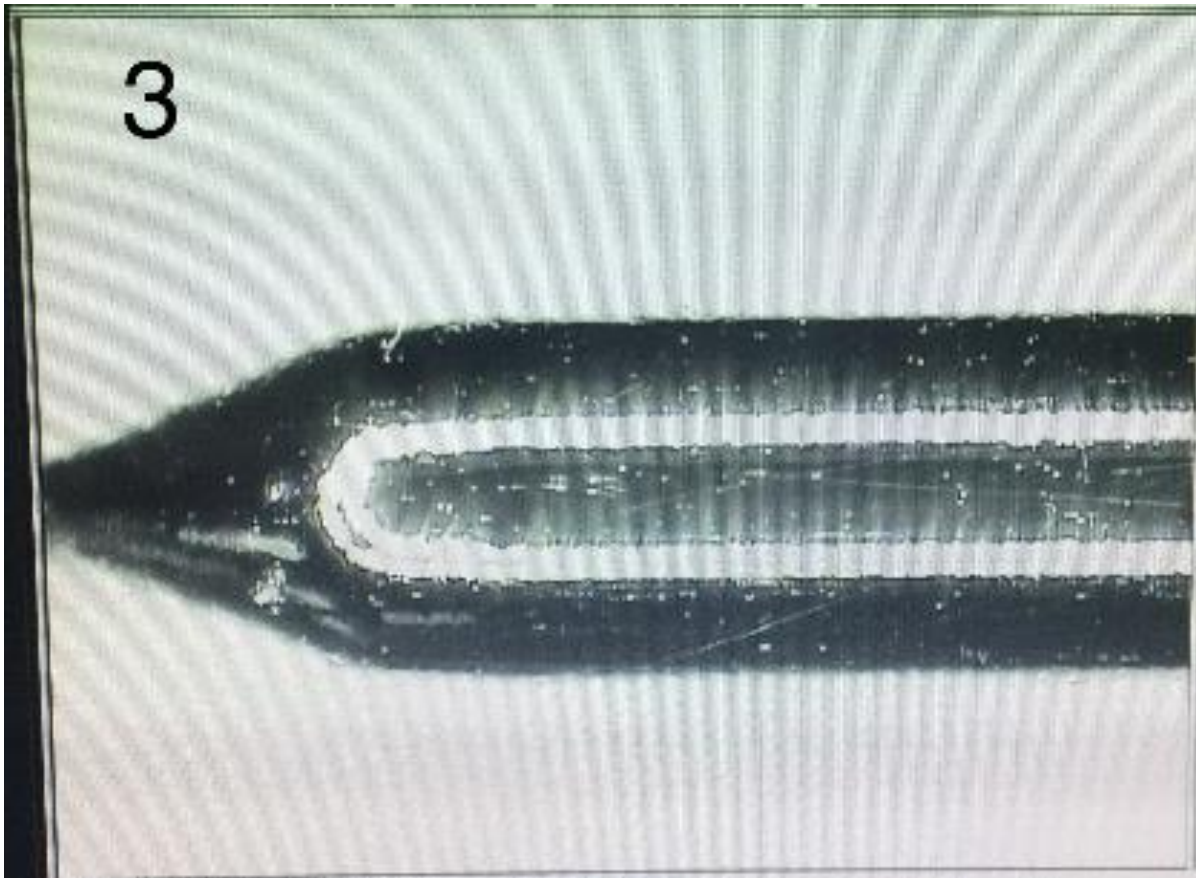


Longitudinal scratches observed



No longitudinal scratches observed

405001338 Needle

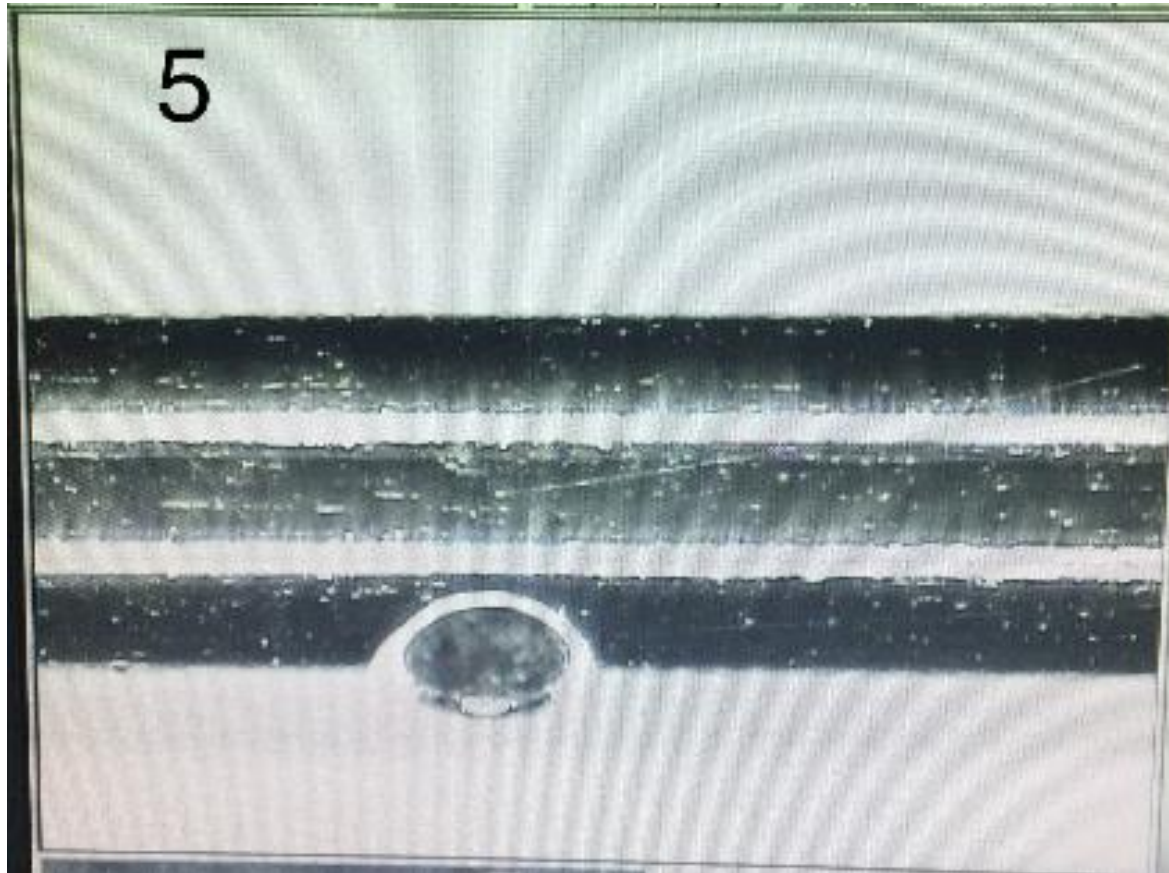


Longitudinal scratches observed

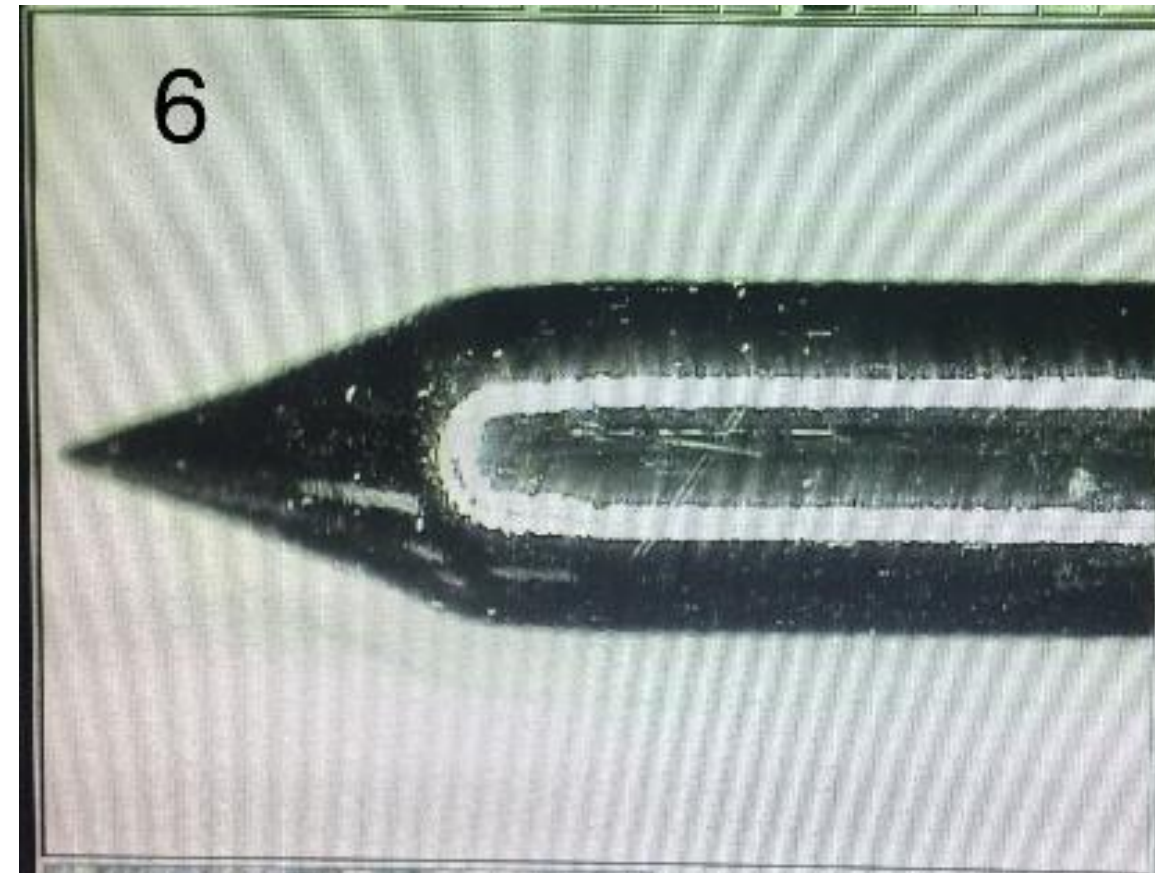


No longitudinal scratches observed

405001338 Needle



Longitudinal scratches observed



No longitudinal scratches observed but scratches observed

405001338 Needle



No longitudinal scratches observed

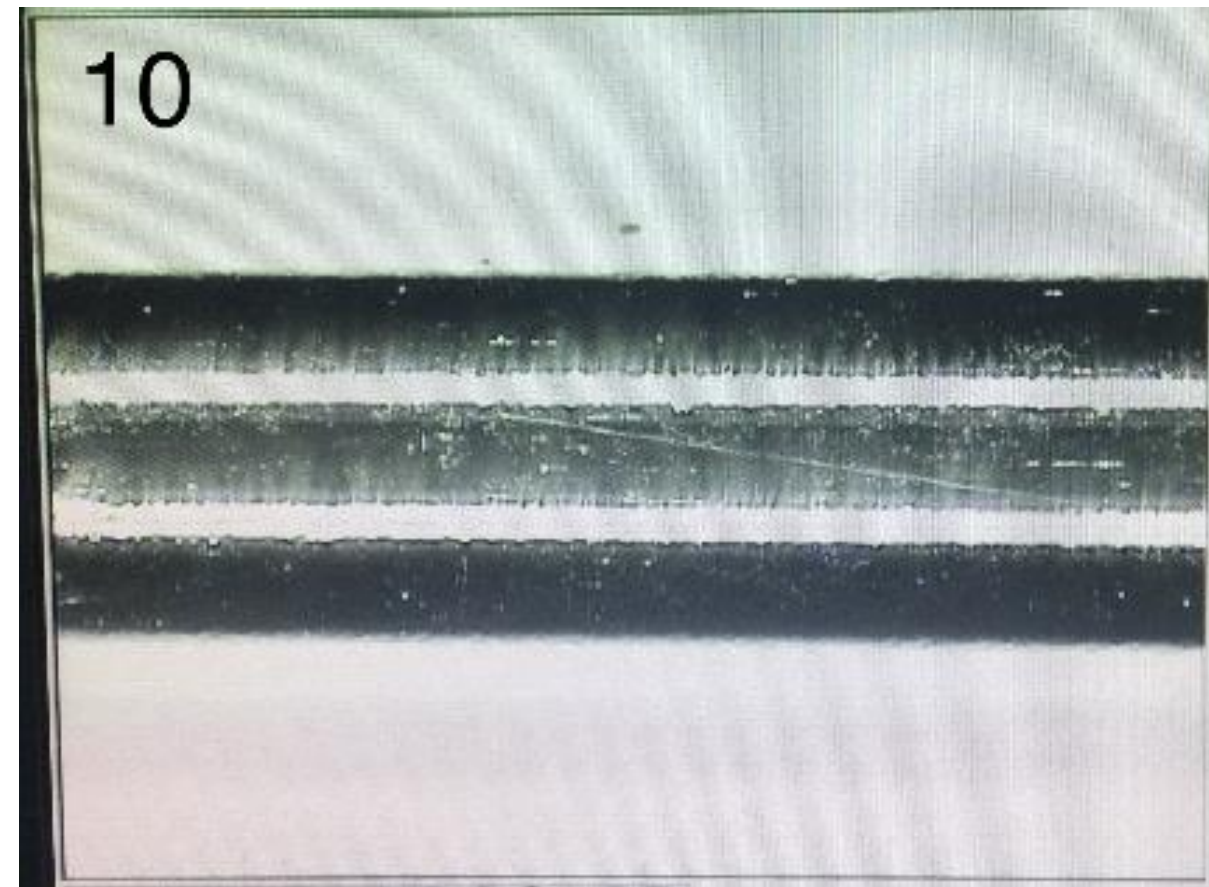


Longitudinal scratches observed

405001338 Needle



No longitudinal scratches observed

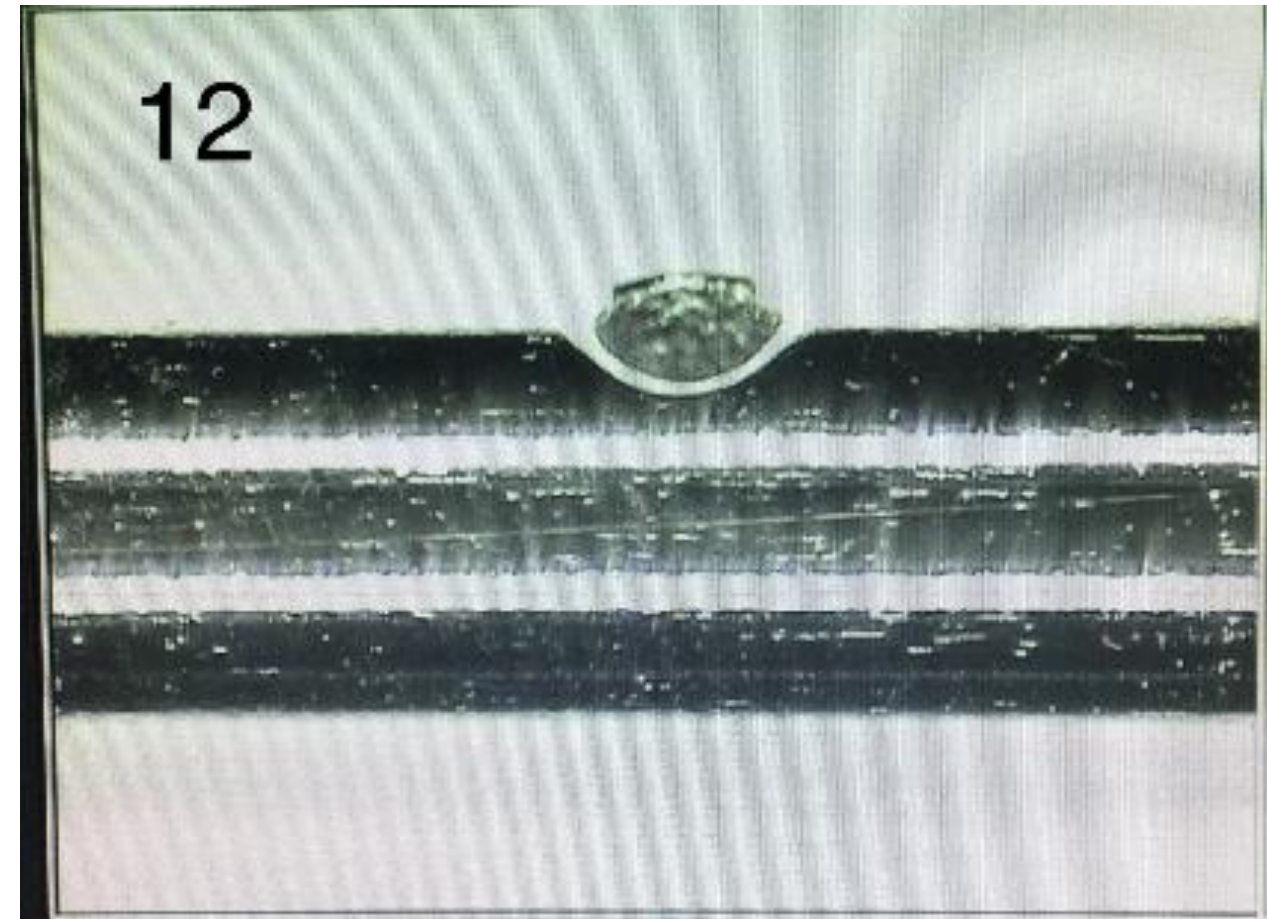


Longitudinal scratches observed

405001338 Needle

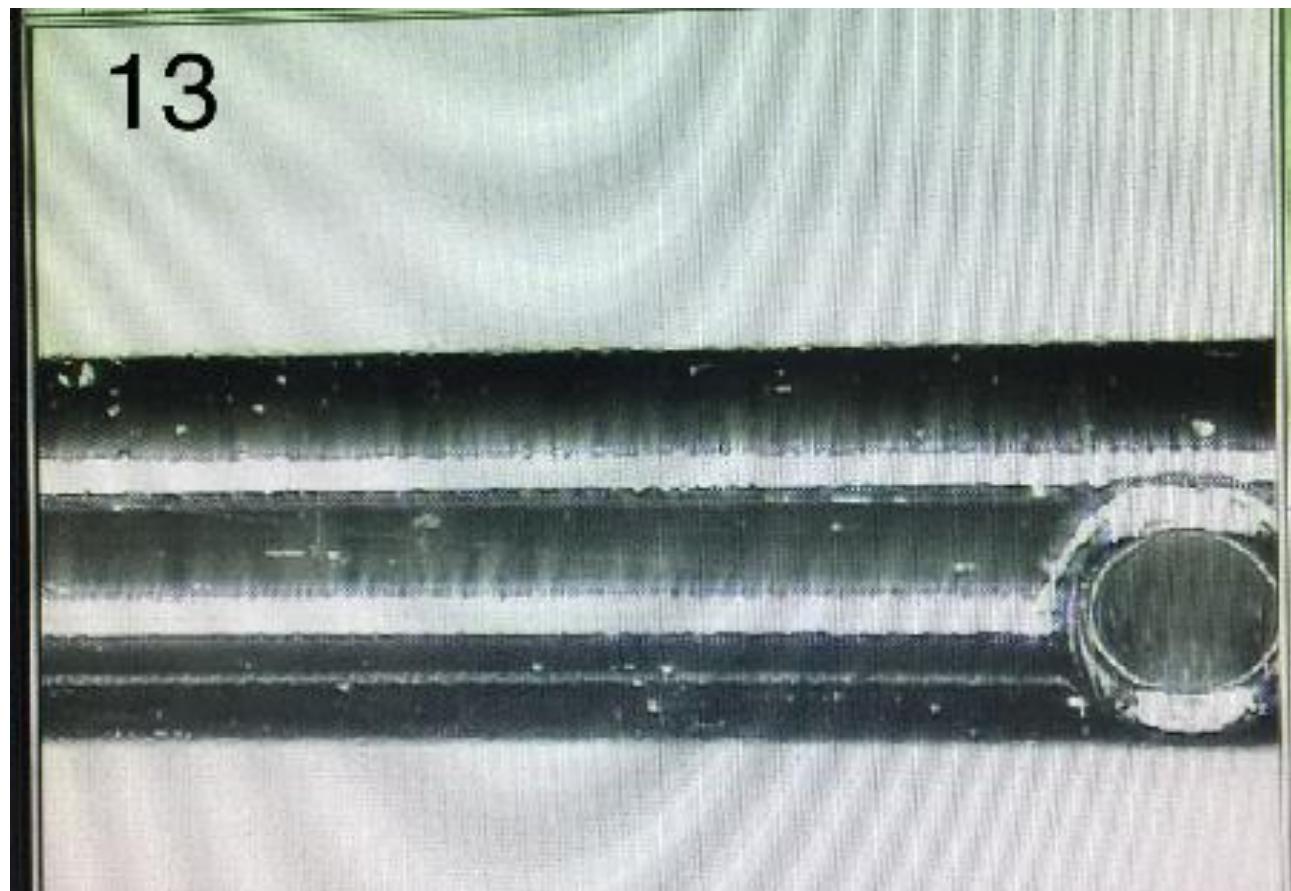


Longitudinal scratches observed

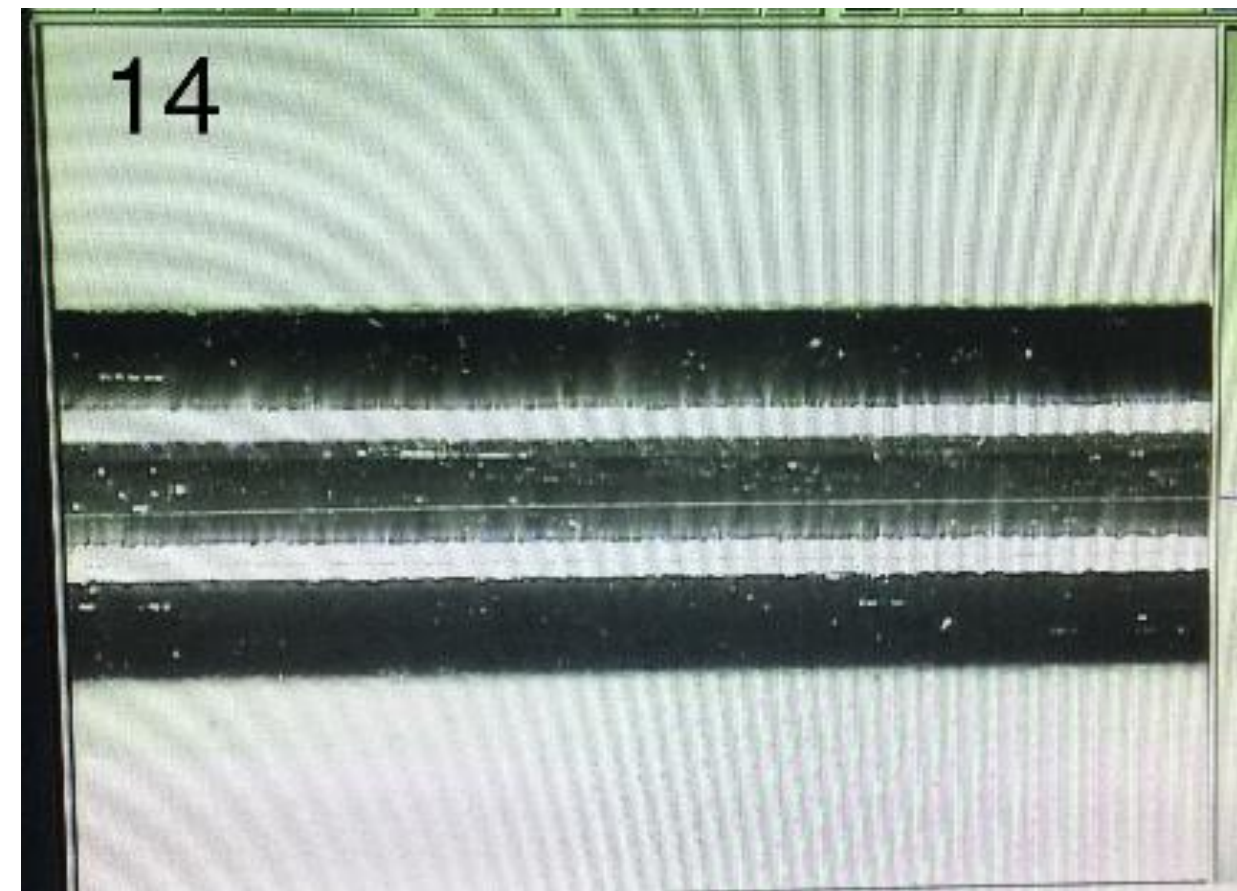


Longitudinal scratches observed

405001338 Needle



No longitudinal scratches observed

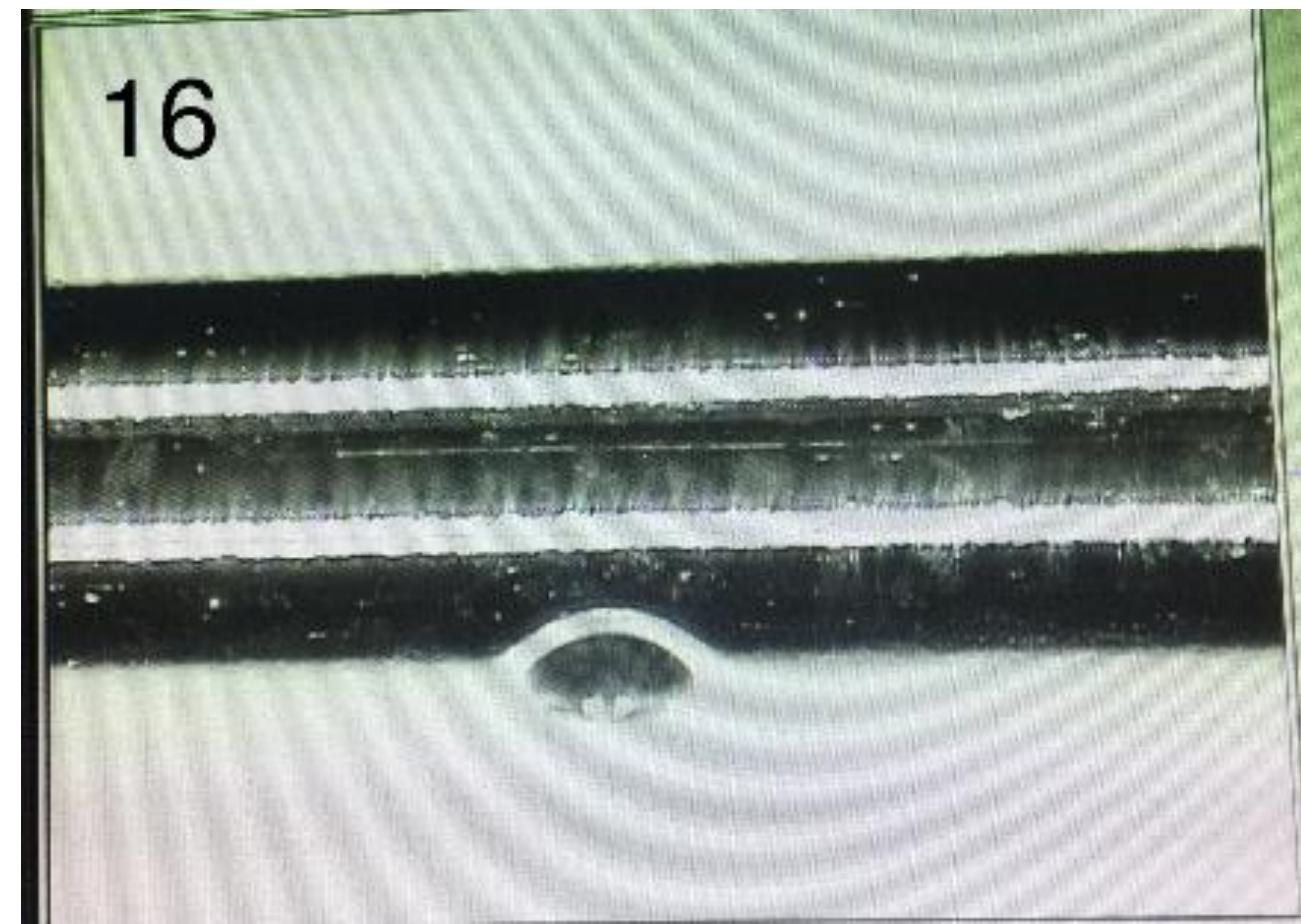


Longitudinal scratches observed

405001338 Needle



Longitudinal scratches observed



Longitudinal scratches observed

405001338 Needle



Longitudinal scratches observed

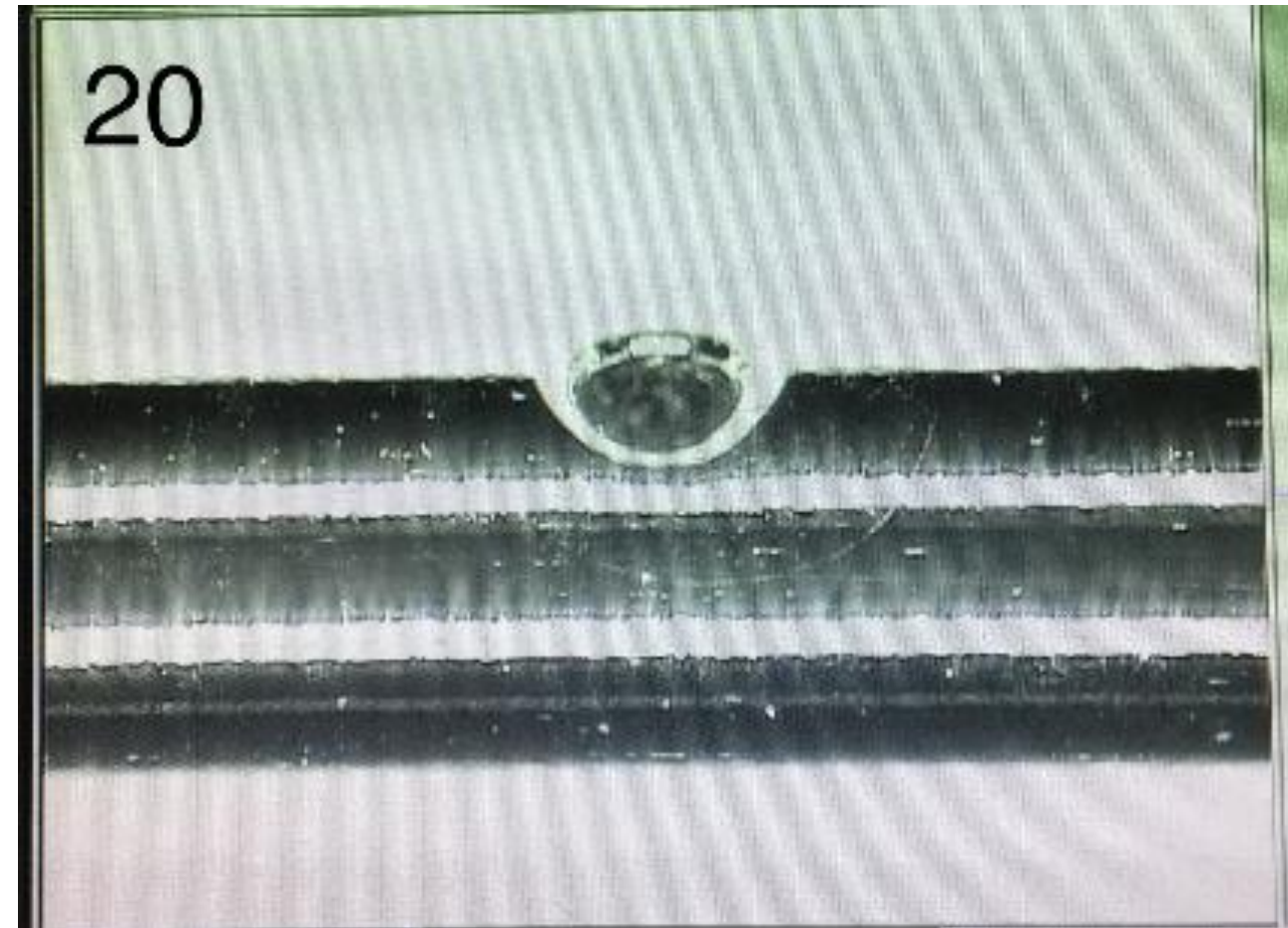


No longitudinal scratches observed, but scratches observed

405001338 Needle



Longitudinal scratches observed



No longitudinal scratches observed, but scratches observed

405001338 Needle

Date of Activities: 15 Jan 2019

- 12u out of 20u fresh needles found to have longitudinal scratches.
- 8u needles without longitudinal scratches to be assembled to Injector subassembly and subject for testing (sample #2, 4, 6, 7, 9, 13, 18 and 20)
- After verification of WPPL (Eugene), samples #11, 15 and 19 are also to be considered “pass” and to be assembled to Injector subassembly and subject for testing as well.

405001338 Needle

- Another 20u needles inspected to complete the 20u good sample size using Smartscope at 40x magnification.
- Visual verification result (refer to slides for the photo):

Identification	40X magnification smartscope check	
	Longitudinal scratch observed? (Y/N)	Remarks
21	N	scratch observed
22	Y	NA
23	N	NA
24	N	scratch observed
25	N	scratch observed
26	N	NA
27	N	scratch observed
28	N	NA
29	Y	NA
30	Y	NA

Identification	40X magnification smartscope check	
	Longitudinal scratch observed? (Y/N)	Remarks
31	Y	NA
32	Y	NA
33	Y	NA
34	Y	NA
35	Y	NA
36	N	NA
37	Y	NA
38	N	NA
39	Y	NA
40	Y	NA

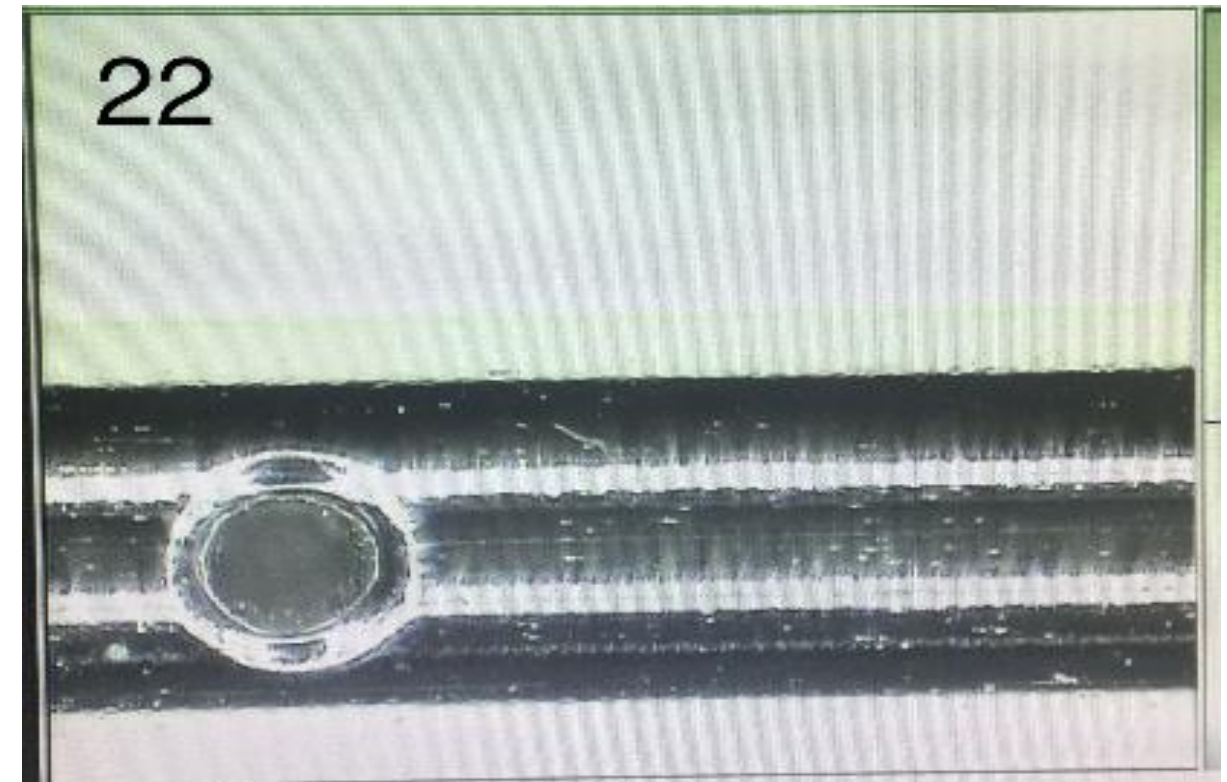
405001338 Needle

- 11u out of 20u fresh needles found to have longitudinal scratches.
- 9u needles without longitudinal scratches to be added to the first inspected 11u to be assembled to Injector subassembly and subject for testing (sample #21, 23, 24, 25, 26, 27, 28, 36 and 38)

405001338 Needle

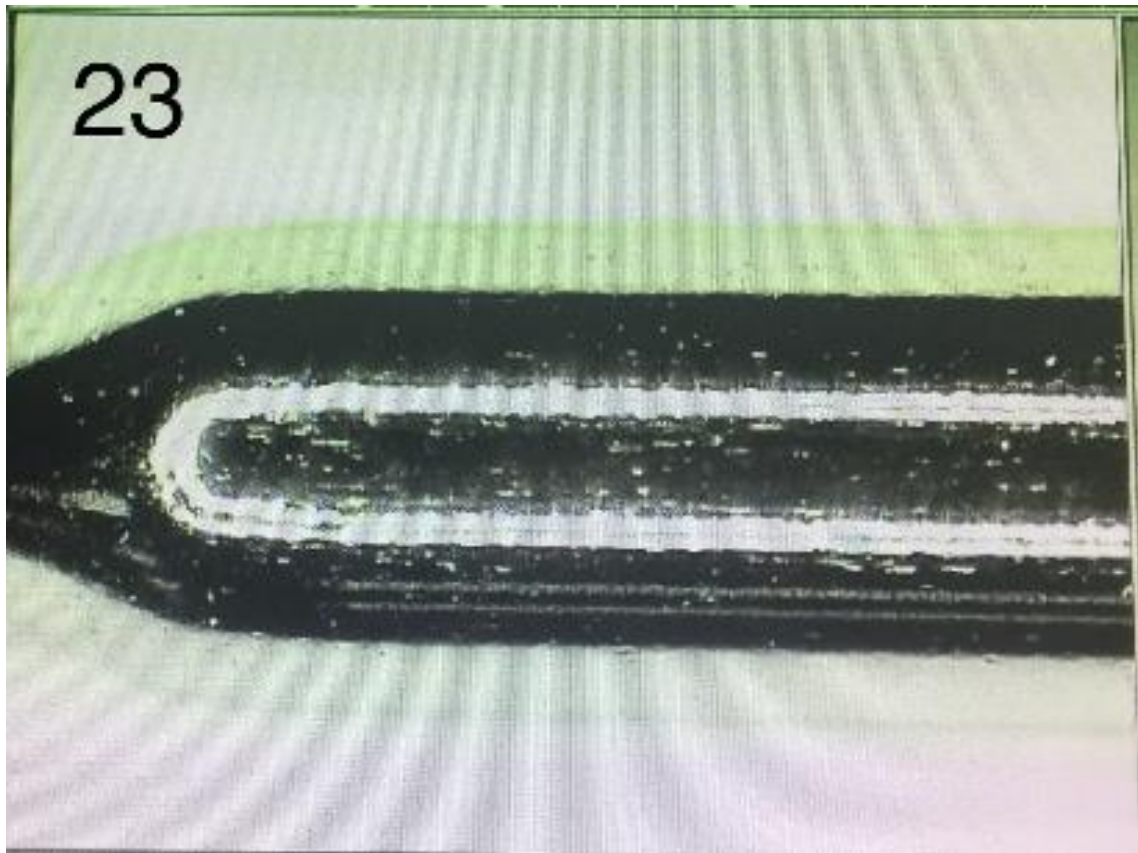


No longitudinal scratches observed,
but scratches observed

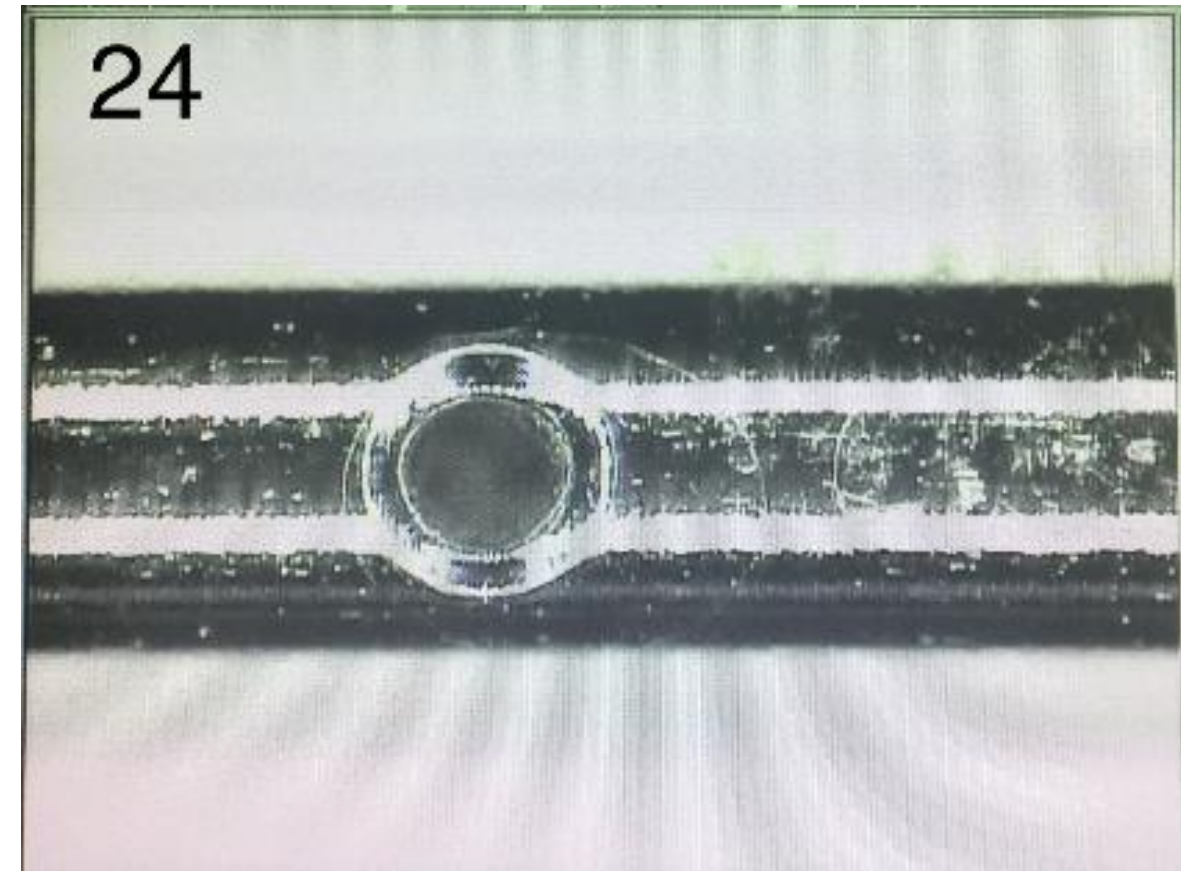


Longitudinal scratches observed

405001338 Needle

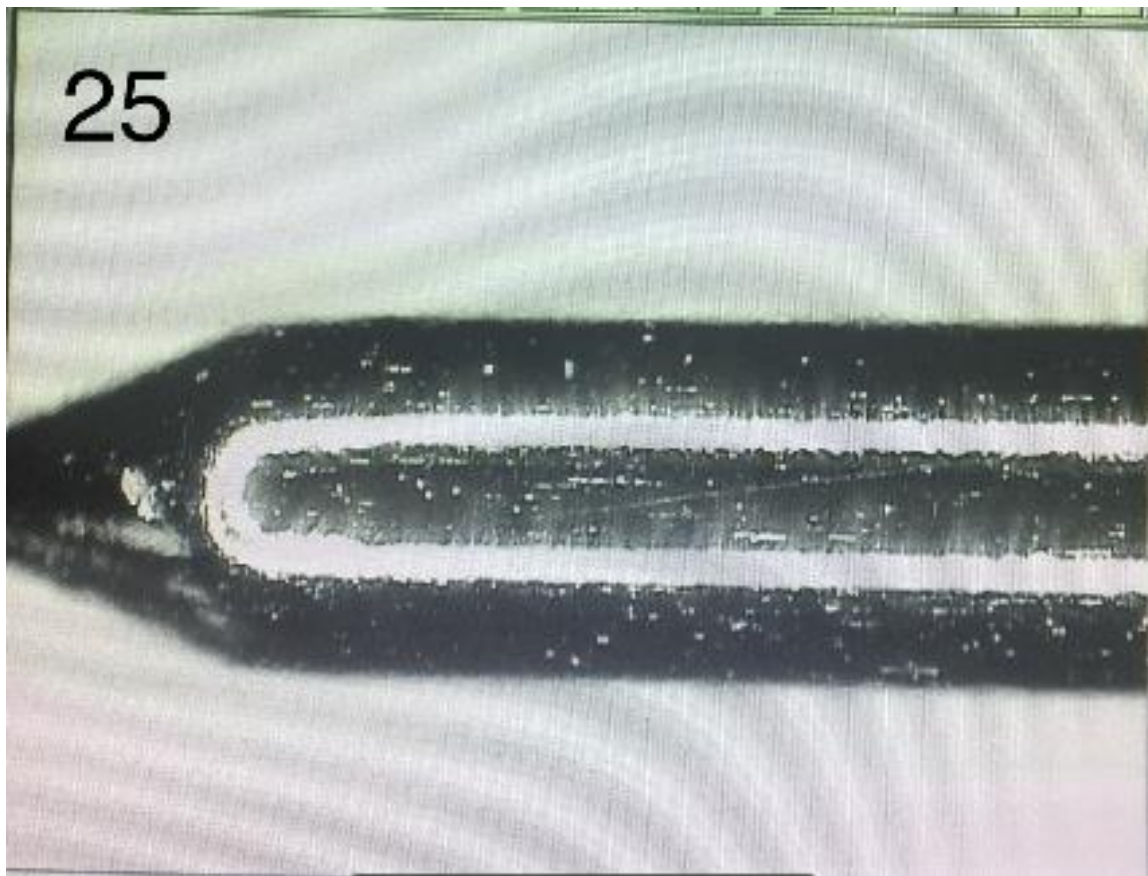


No longitudinal scratches observed,
but scratches observed

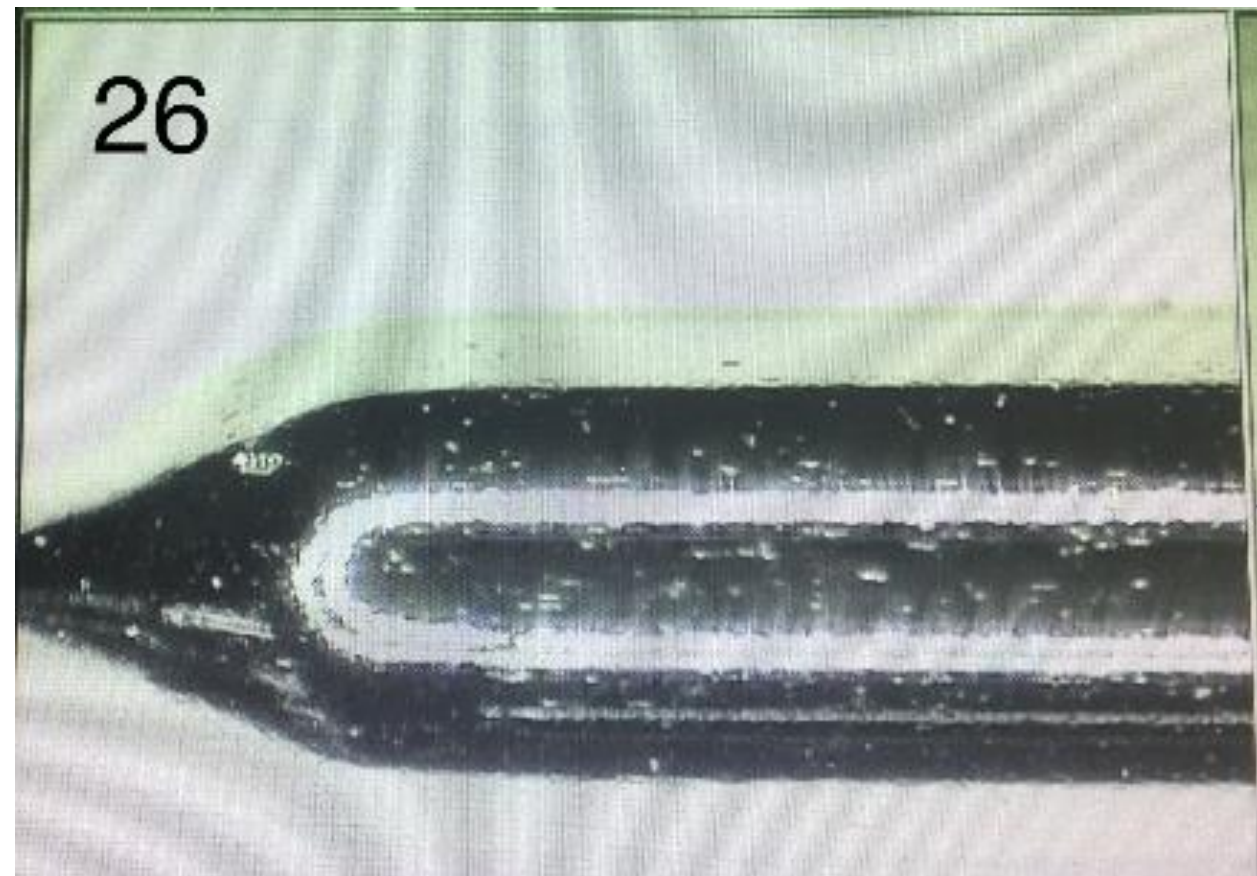


No longitudinal scratches observed,
but scratches observed

405001338 Needle



No longitudinal scratches observed,
but scratches observed

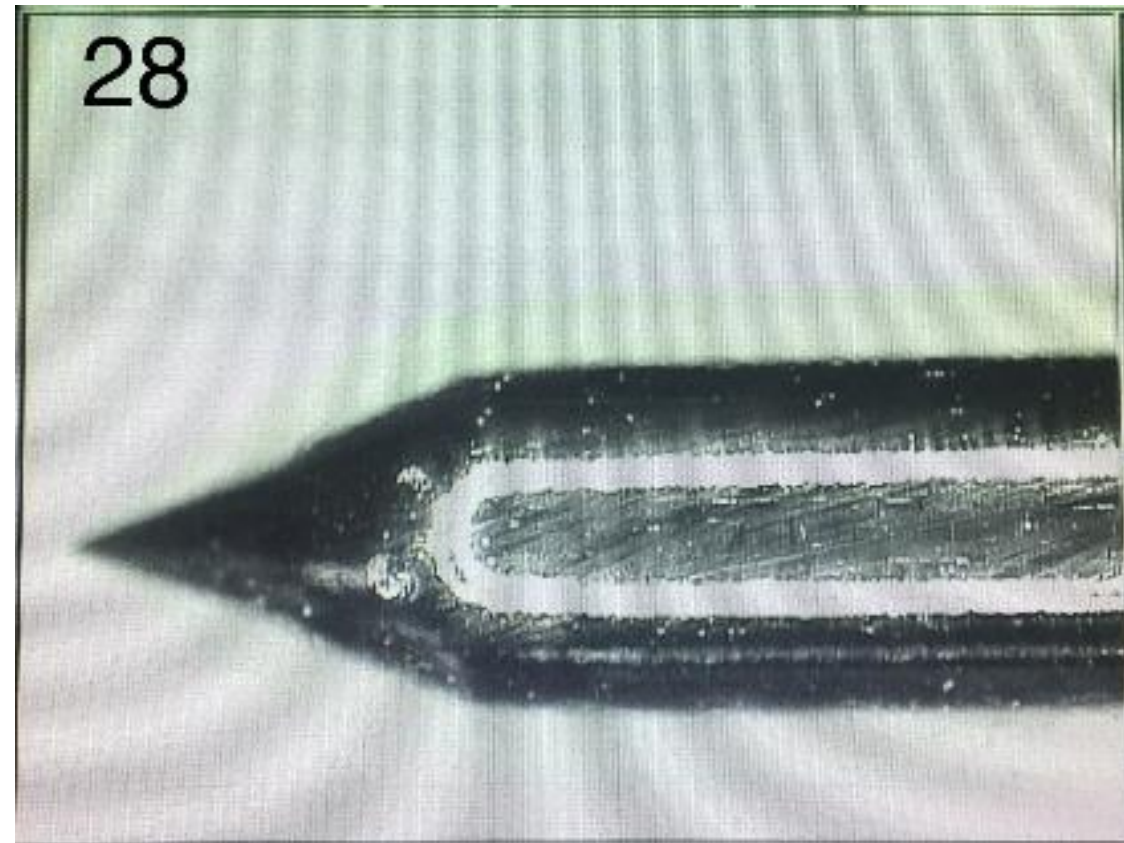


No longitudinal scratches observed,
but scratches observed

405001338 Needle

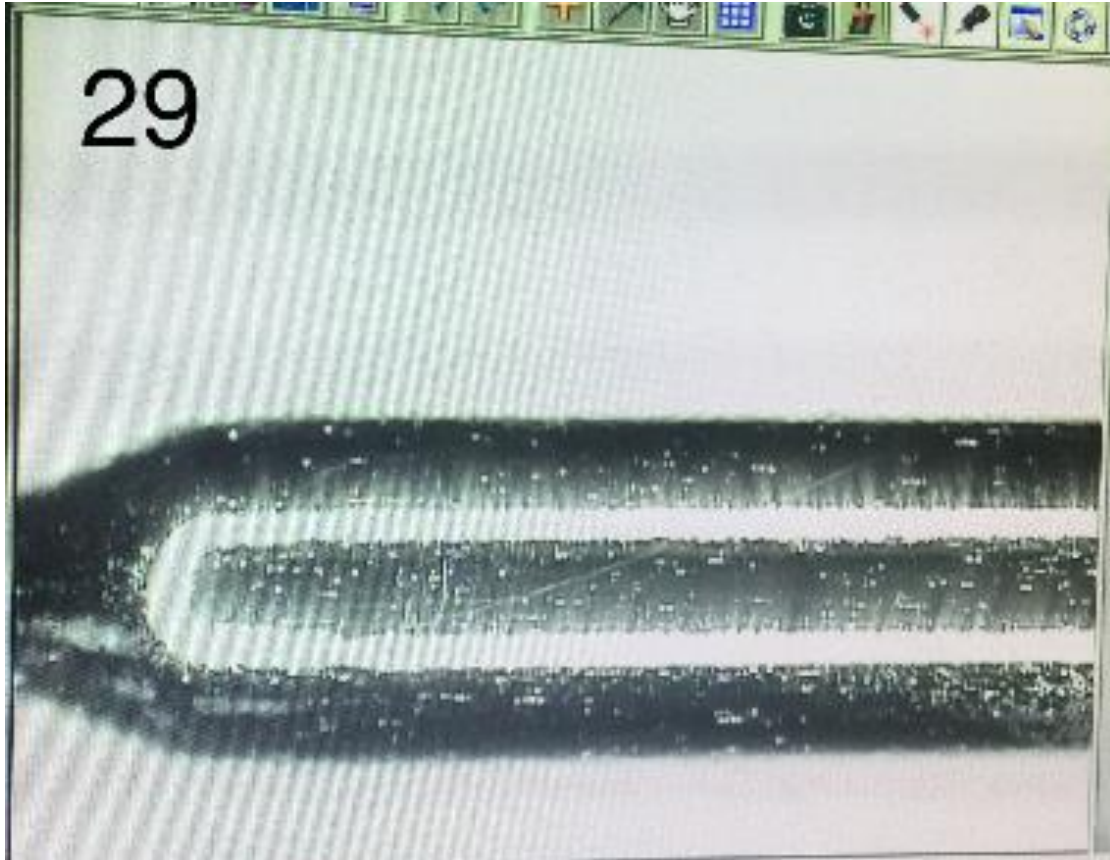


No longitudinal scratches observed,
but scratches observed

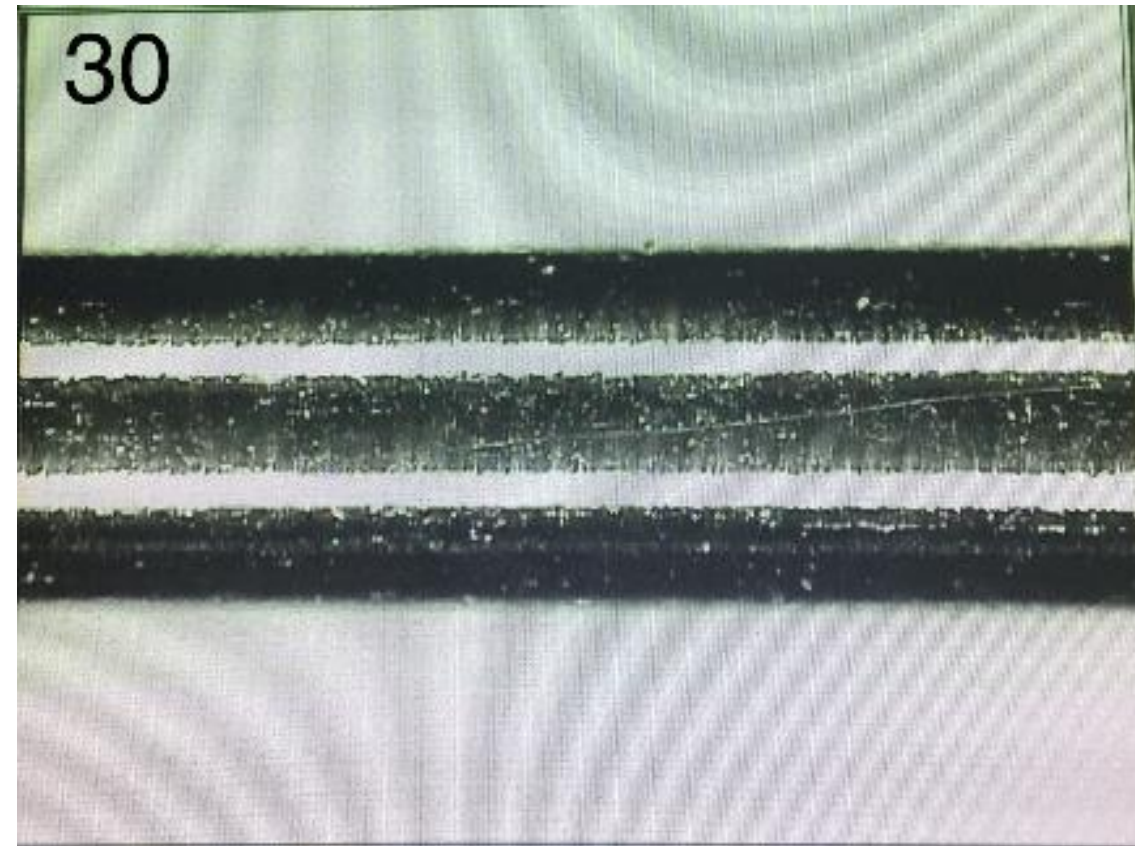


No longitudinal scratches observed

405001338 Needle

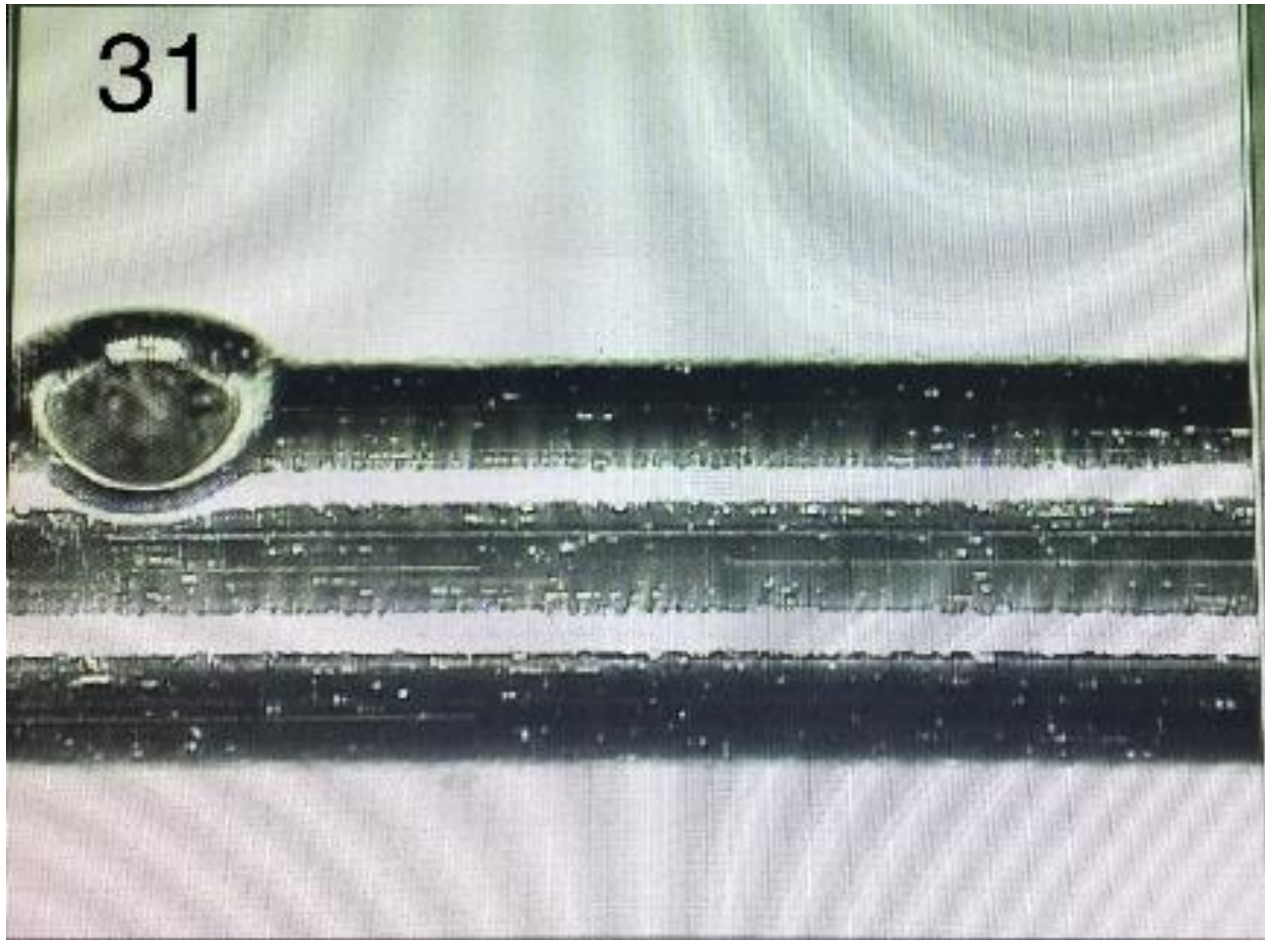


Longitudinal scratches observed



Longitudinal scratches observed

405001338 Needle

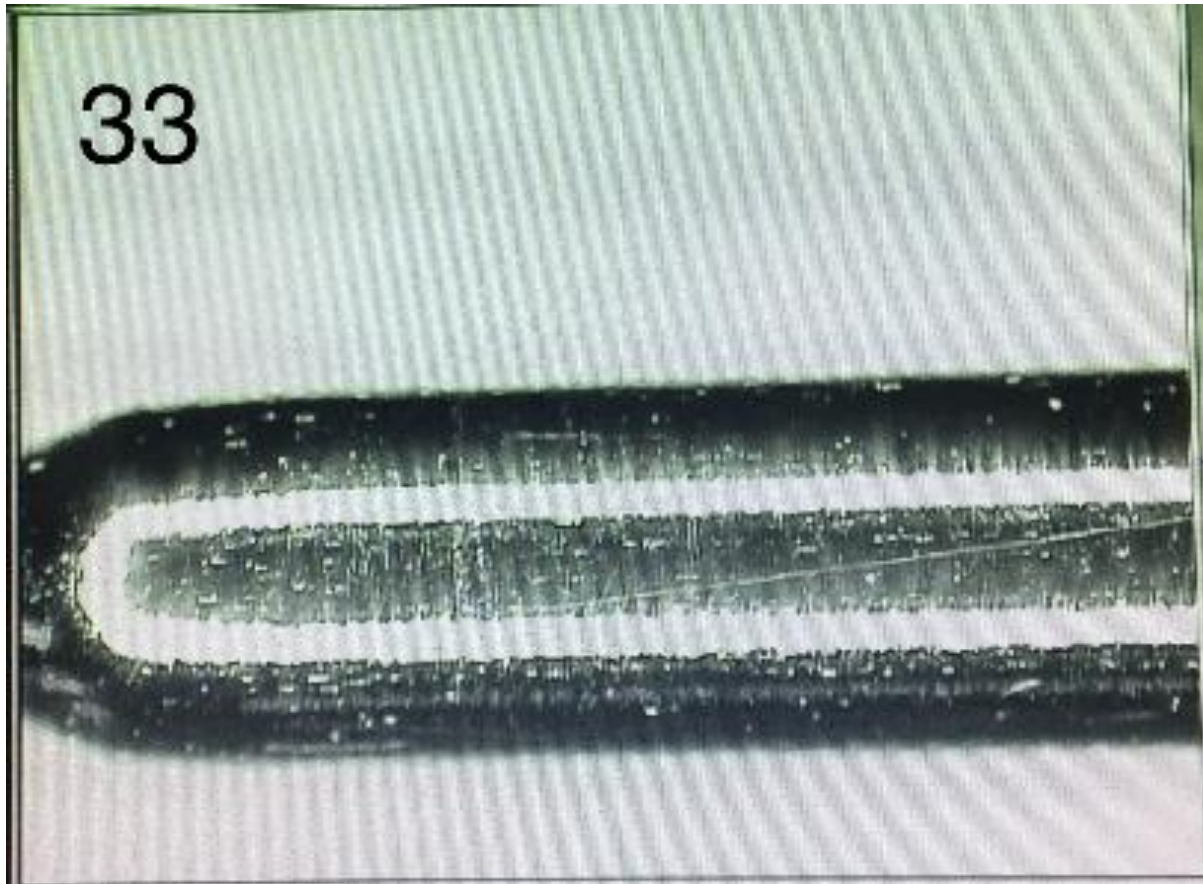


Longitudinal scratches observed

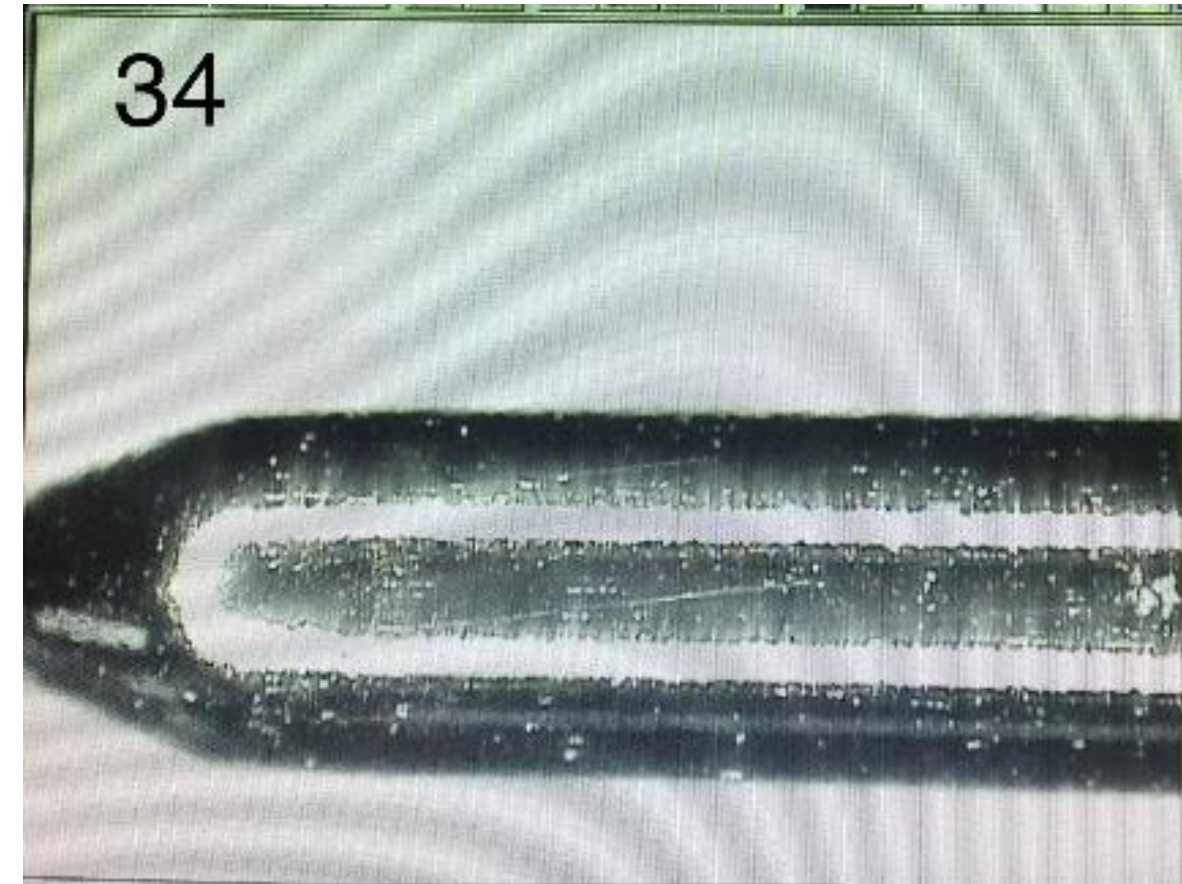


Longitudinal scratches observed

405001338 Needle

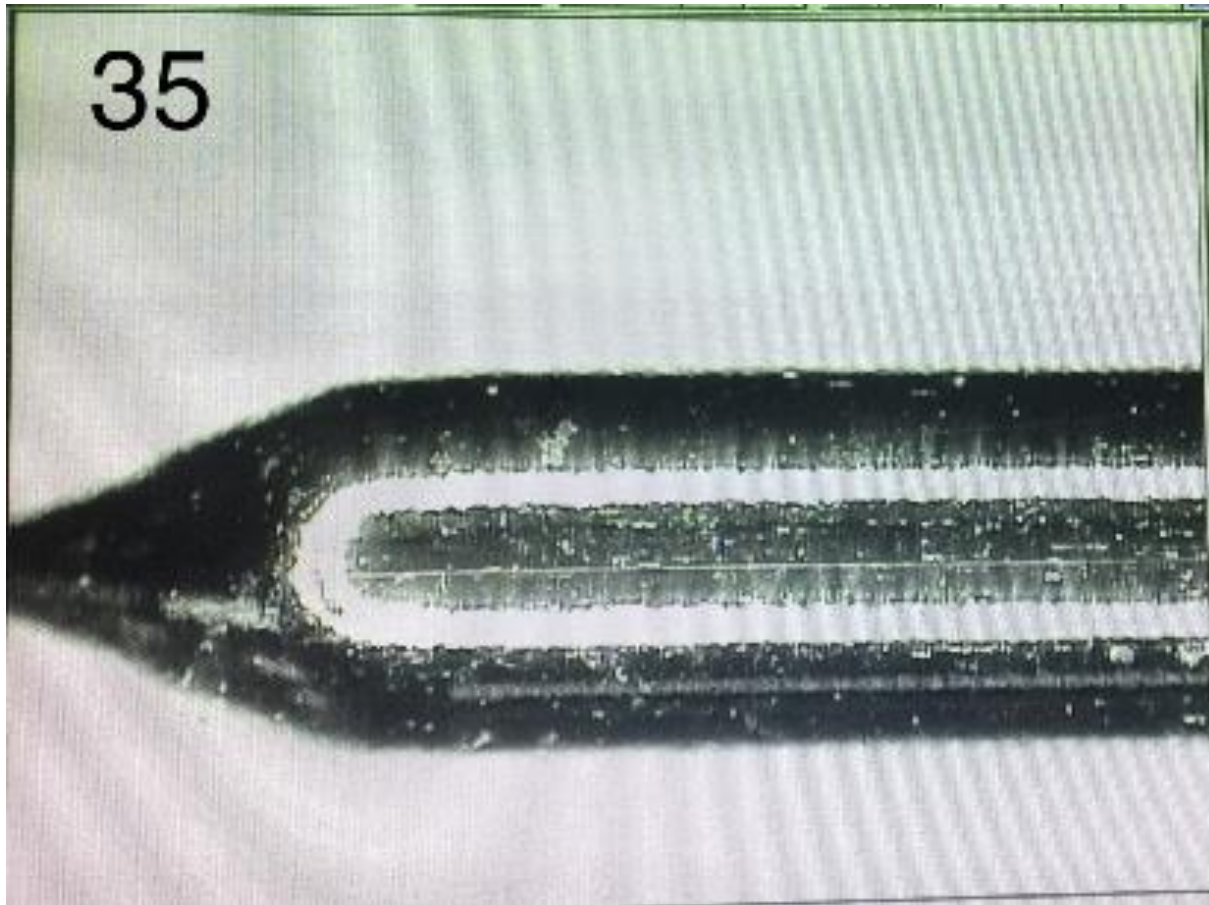


Longitudinal scratches observed

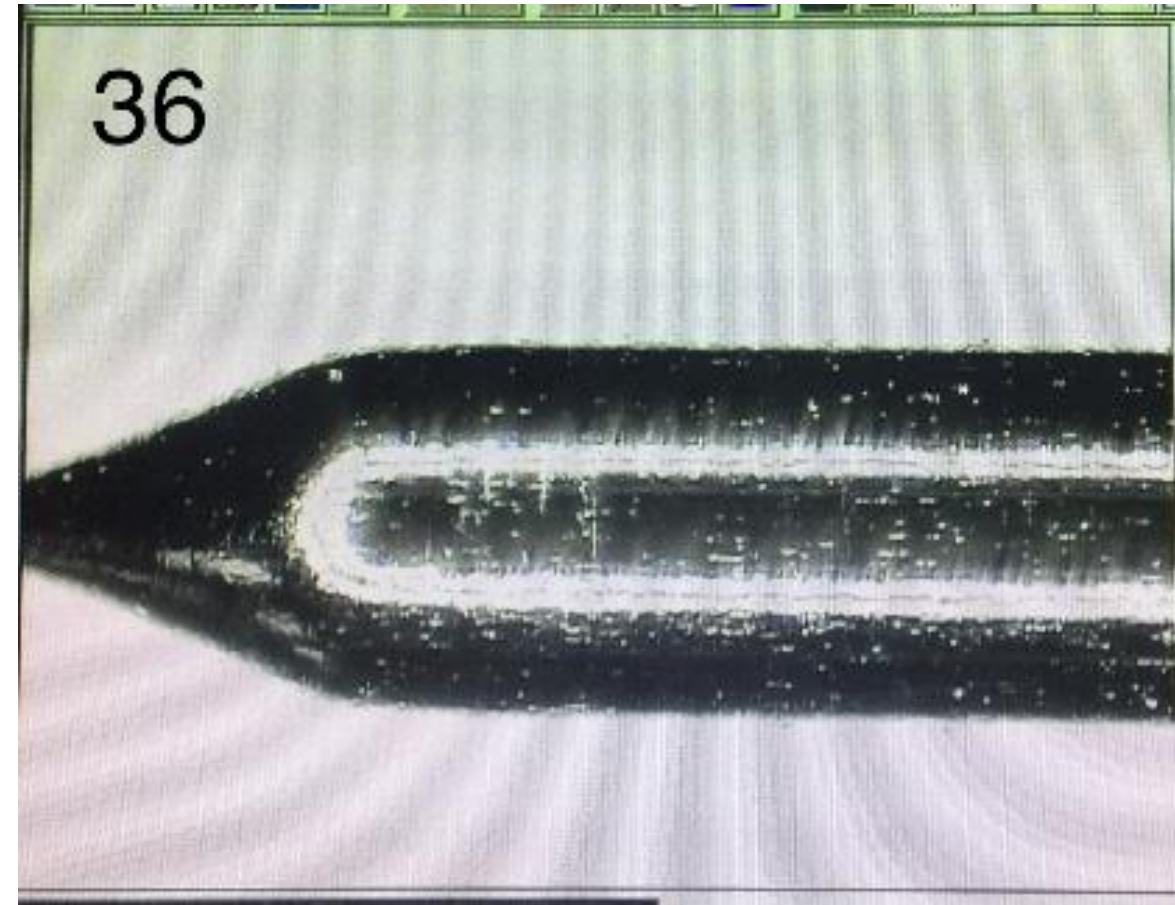


Longitudinal scratches observed

405001338 Needle

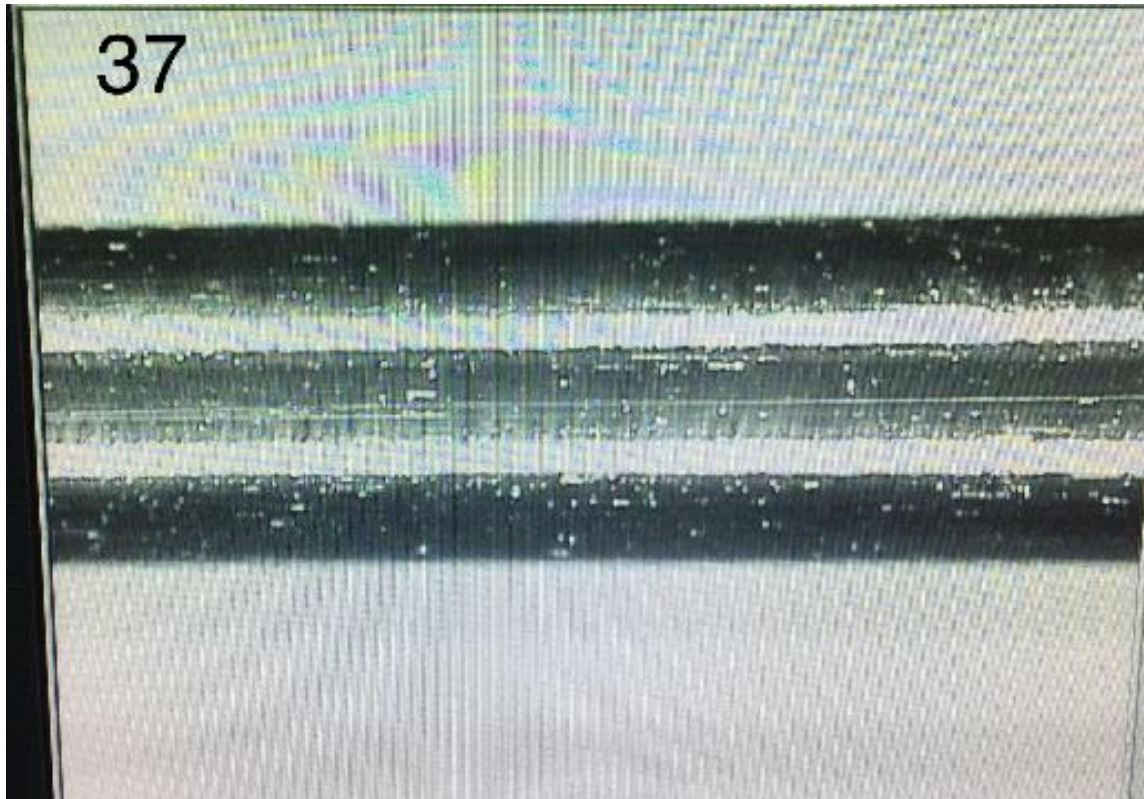


Longitudinal scratches observed



No longitudinal scratches observed

405001338 Needle



Longitudinal scratches observed



No longitudinal scratches observed

405001338 Needle



Longitudinal scratches observed



Longitudinal scratches observed

405001338 Needle

- Injector Subassy test result: 2u failed out out 20u tested. Refer to below table for the breakdown.
- After testing of Injector Subassy , visual inspection of “passed” and “failed” needles also conducted (refer to next slide for the photos);

Identification	Injector Subassy testing (P/F)	40X magnification smartscope check after testing
		Longitudinal scratch observed? (Y/N)
2	P	Y
4	P	N
6	P	N
7	P	Y
9	P	Y
11	P	Y
13	P	Y
15	F	Y
18	P	Y
19	P	Y

Identification	Injector Subassy testing (P/F)	40X magnification smartscope check after testing
		Longitudinal scratch observed? (Y/N)
20	P	Y
21	P	Y
23	P	Y
24	F	Y
25	P	Y
26	P	Y
27	P	Y
28	P	Y
36	P	Y
38	P	Y

405001338 Needle

- Visual inspection of failed needle (Sample #15)



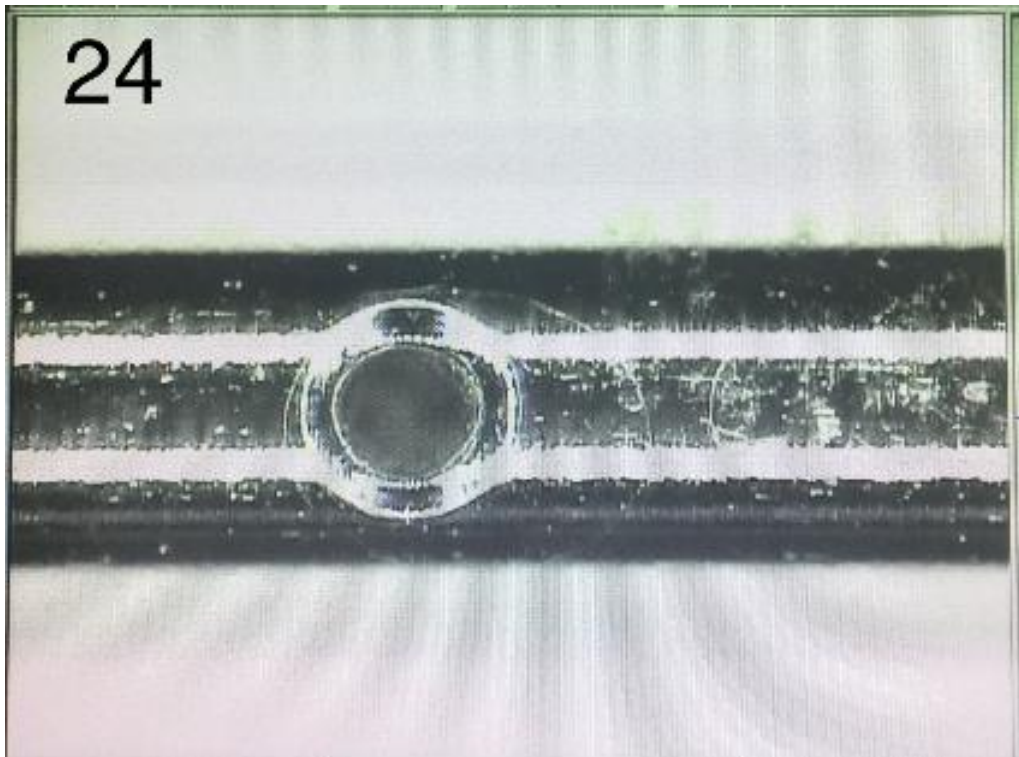
Before testing no longitudinal scratches
Observed but scratches observed as per a
bove photo.



Longitudinal scratches observed

405001338 Needle

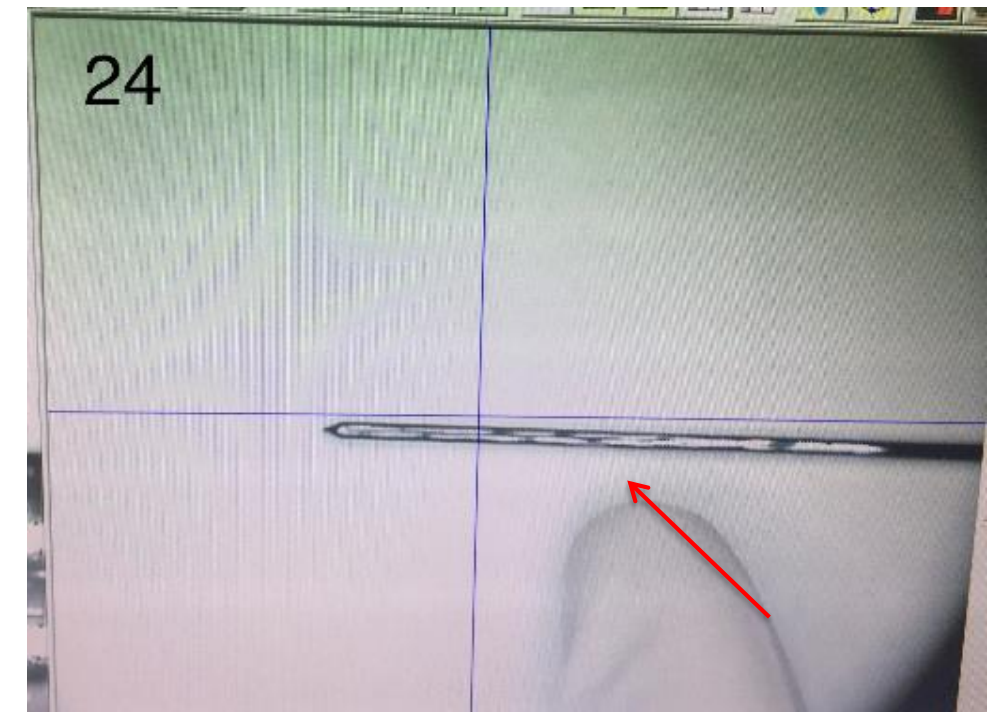
- Visual inspection of failed needle (Sample #24)



Before testing, no longitudinal scratches observed but circular scratches observed near the needle hole as per above photo.



After testing, longitudinal scratches observed along needle body from near the needle tip to the arrow as indicated in the right photo.

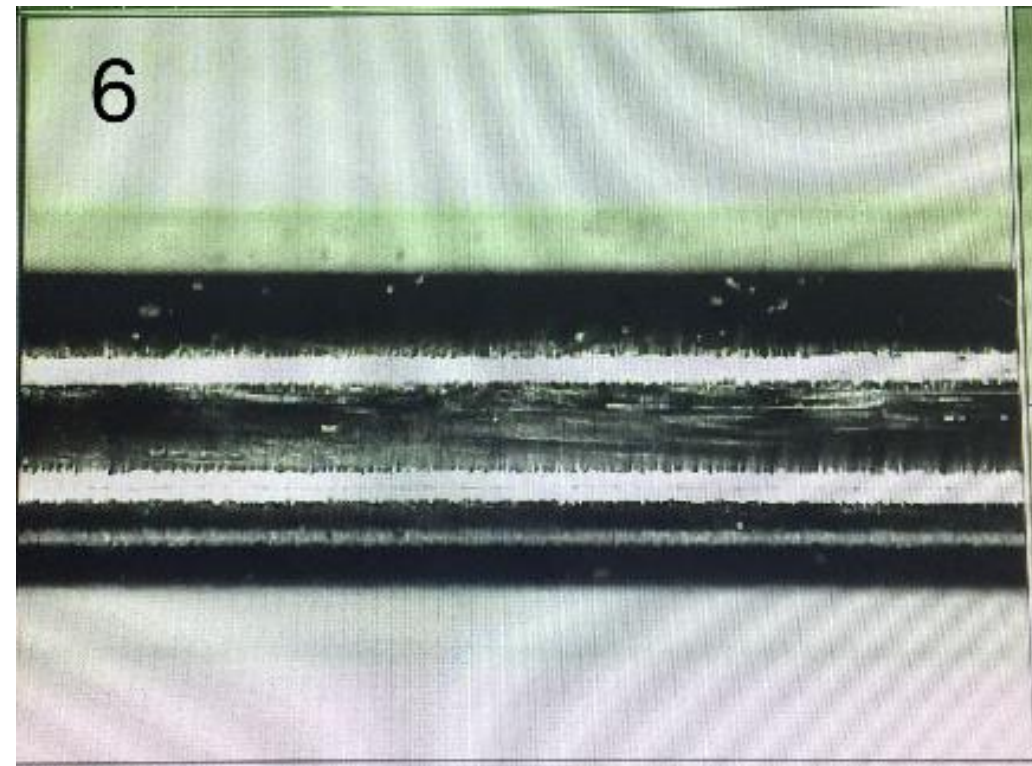


405001338 Needle

- Visual inspection of 18u passed needle
- Result : 2 out of 18 found with no longitudinal scratches (Sample #4 and #6)
- Refer to the succeeding slides for the photo of samples that was observed with longitudinal scratches.



No longitudinal scratches observed but scratches observed as per above photo.



No longitudinal scratches observed but scratches observed as per above photo.

405001338 Needle

- Visual inspection of 18u passed needle



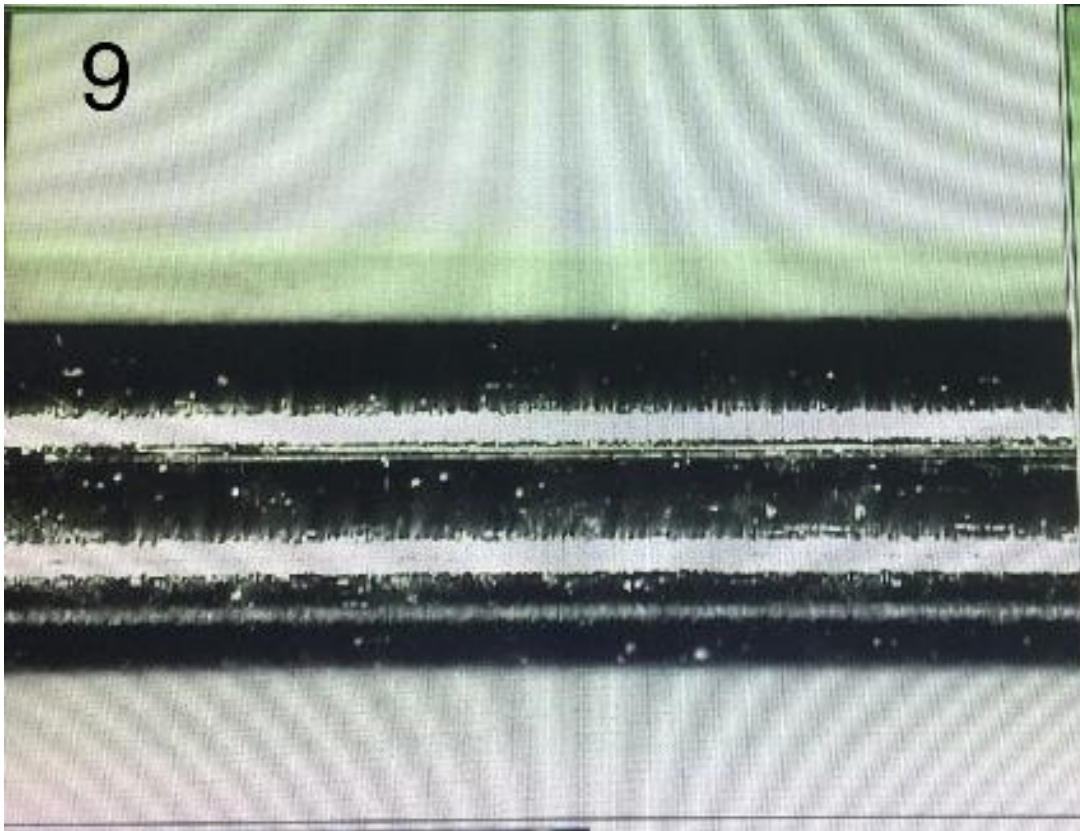
Longitudinal scratches observed



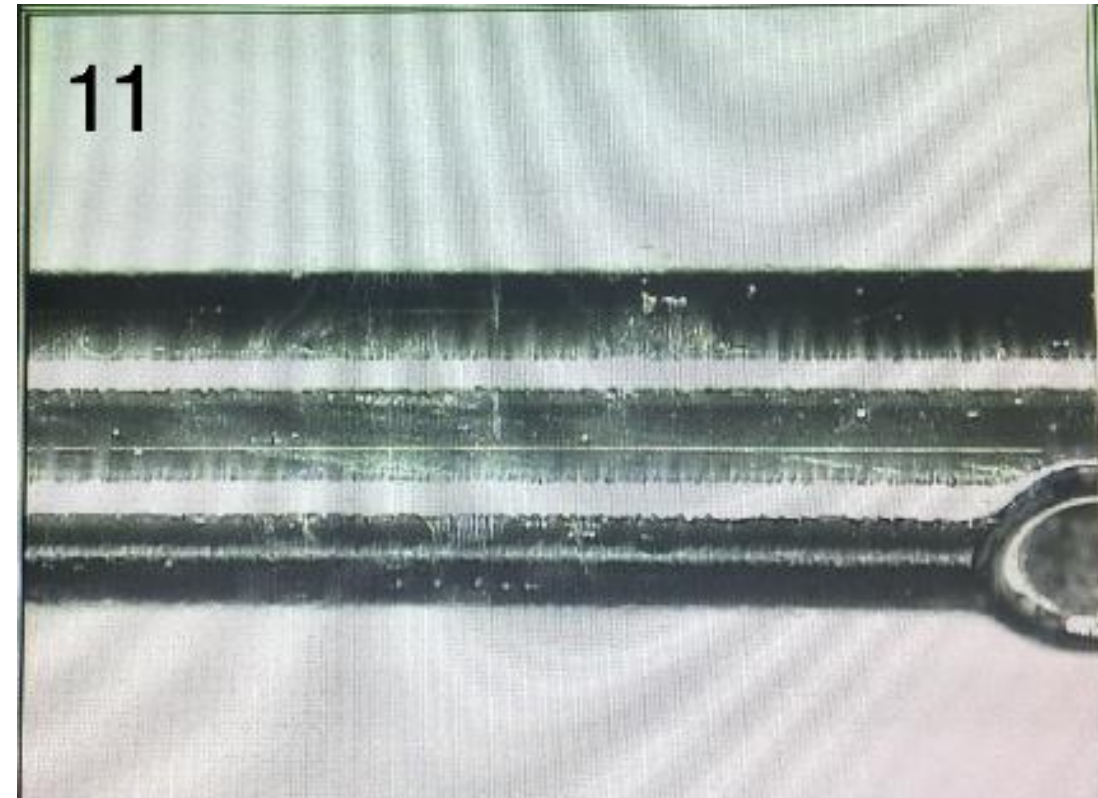
Longitudinal scratches observed

405001338 Needle

- Visual inspection of 18u passed needle



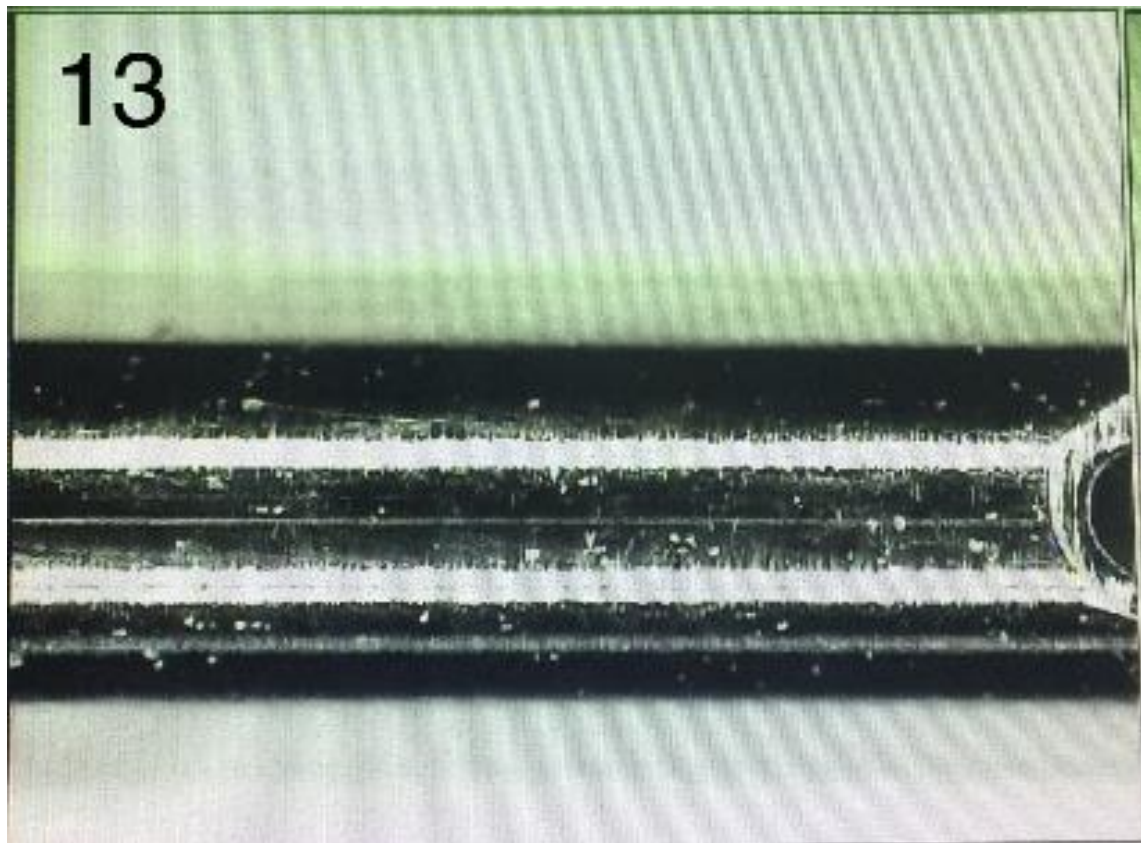
Longitudinal scratches observed



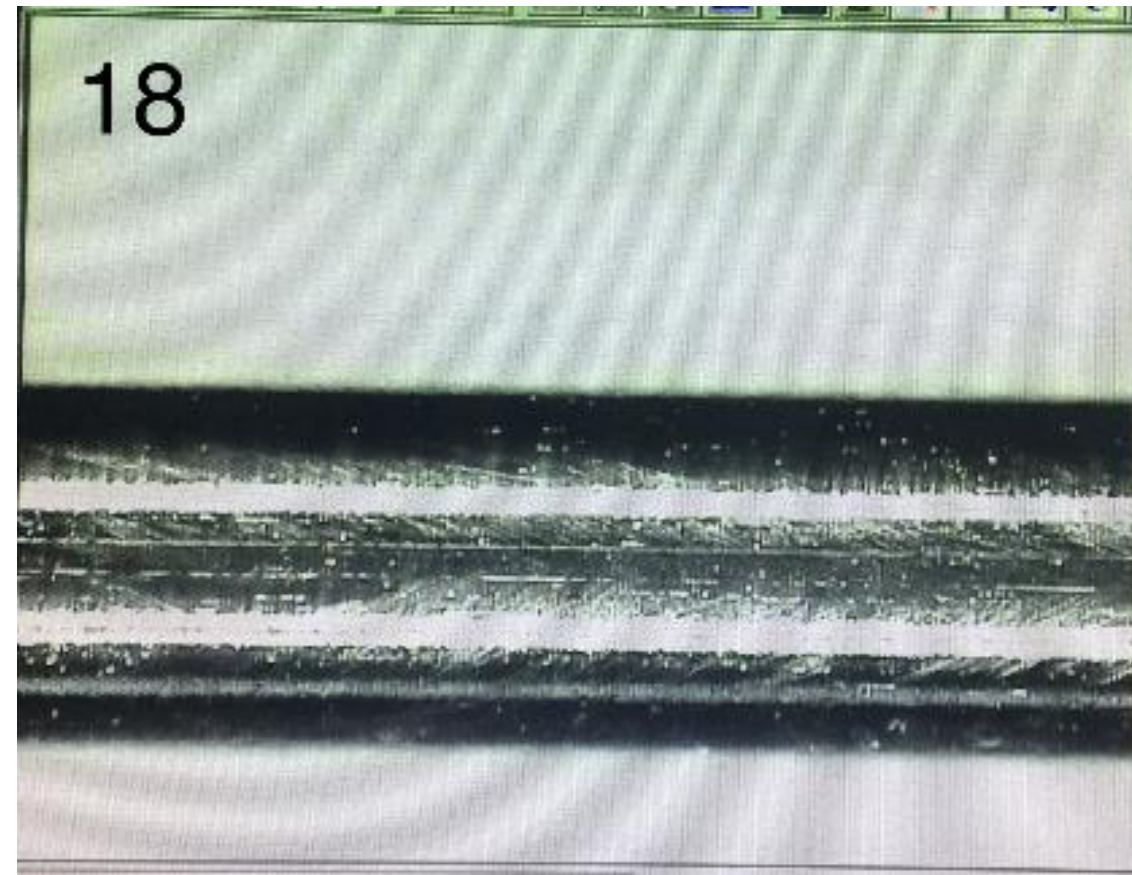
Longitudinal scratches observed

405001338 Needle

- Visual inspection of 18u passed needle



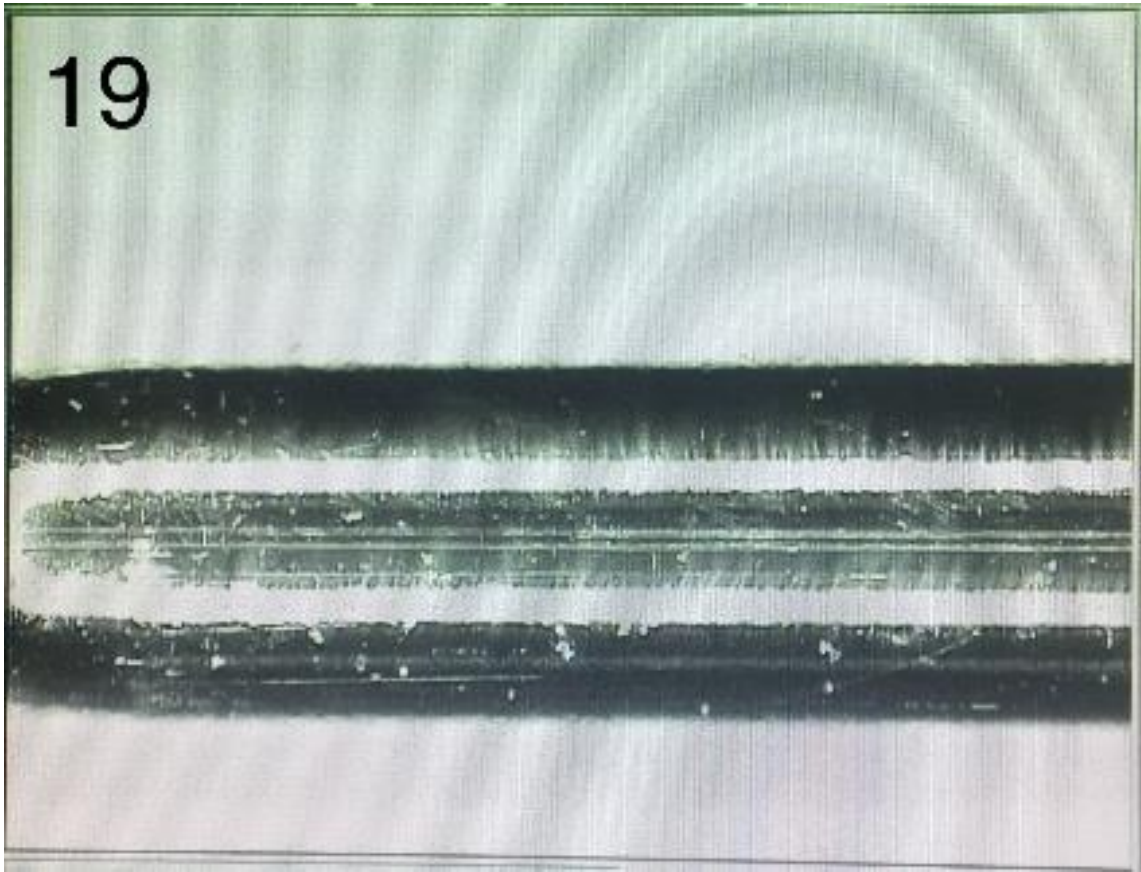
Longitudinal scratches observed



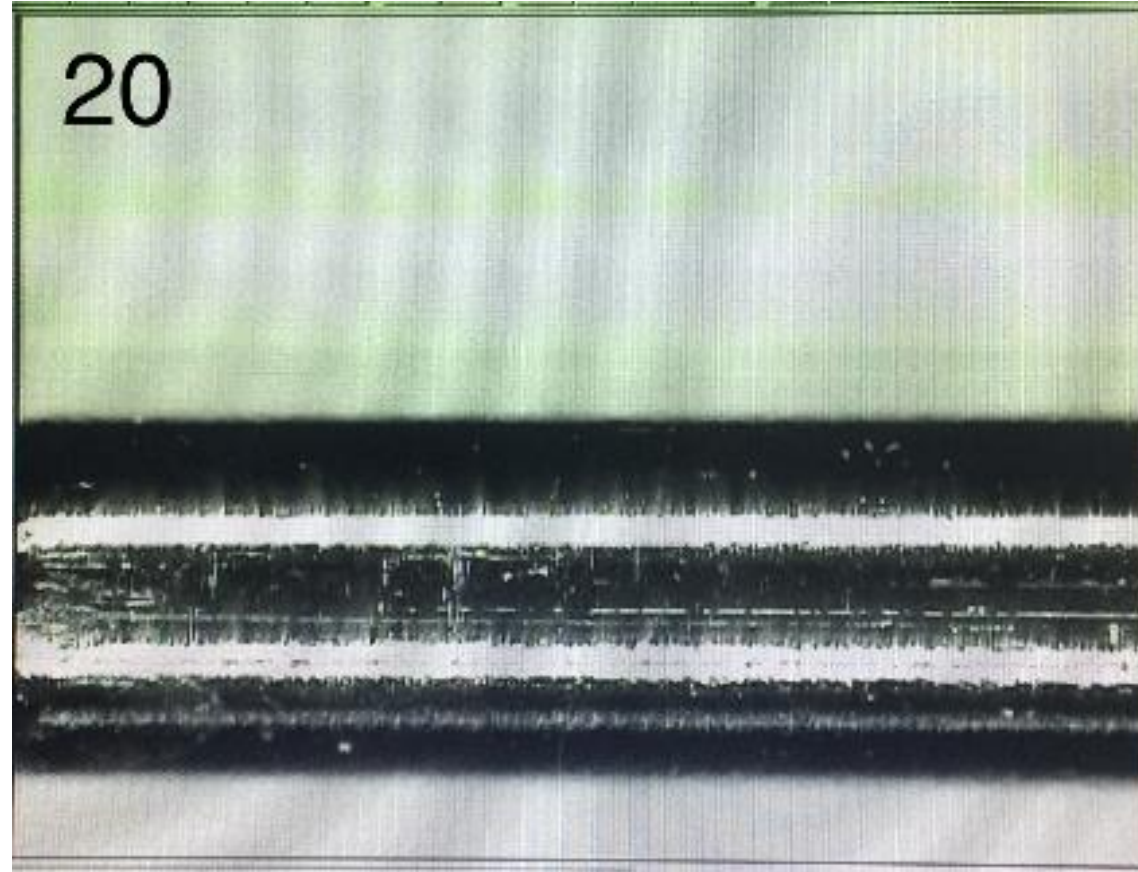
Longitudinal scratches observed

405001338 Needle

- Visual inspection of 18u passed needle



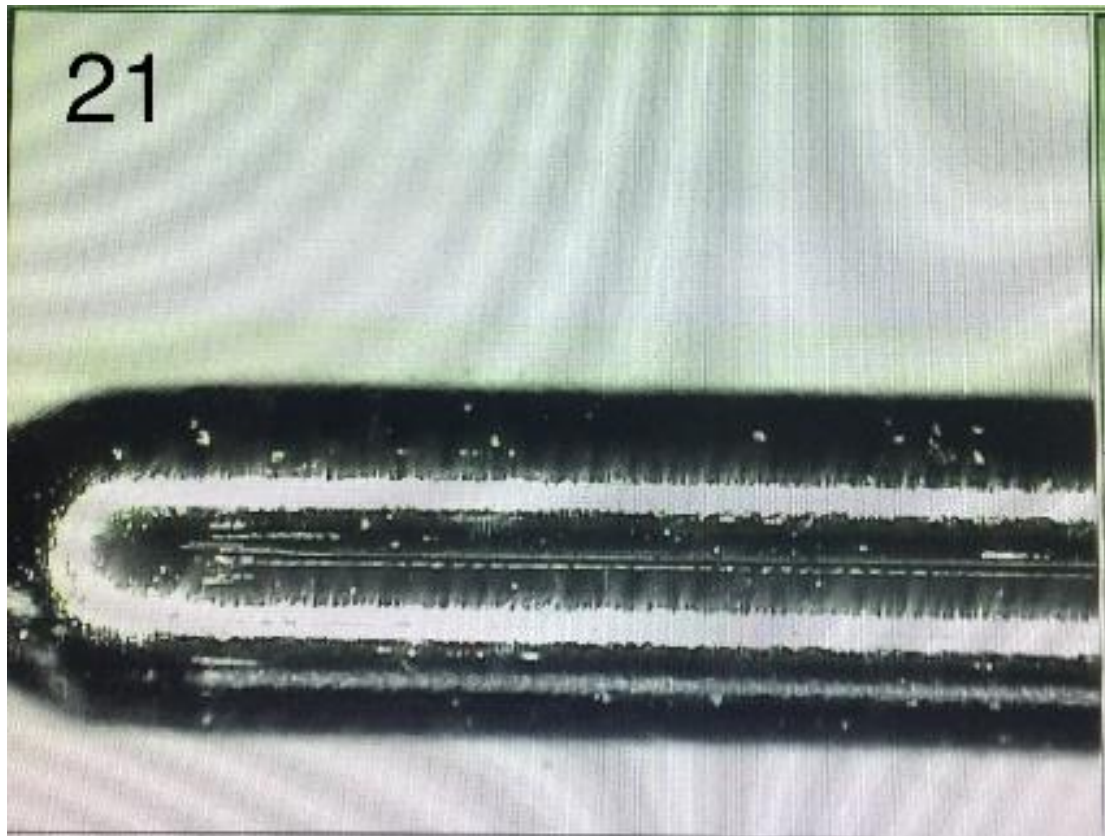
Longitudinal scratches observed



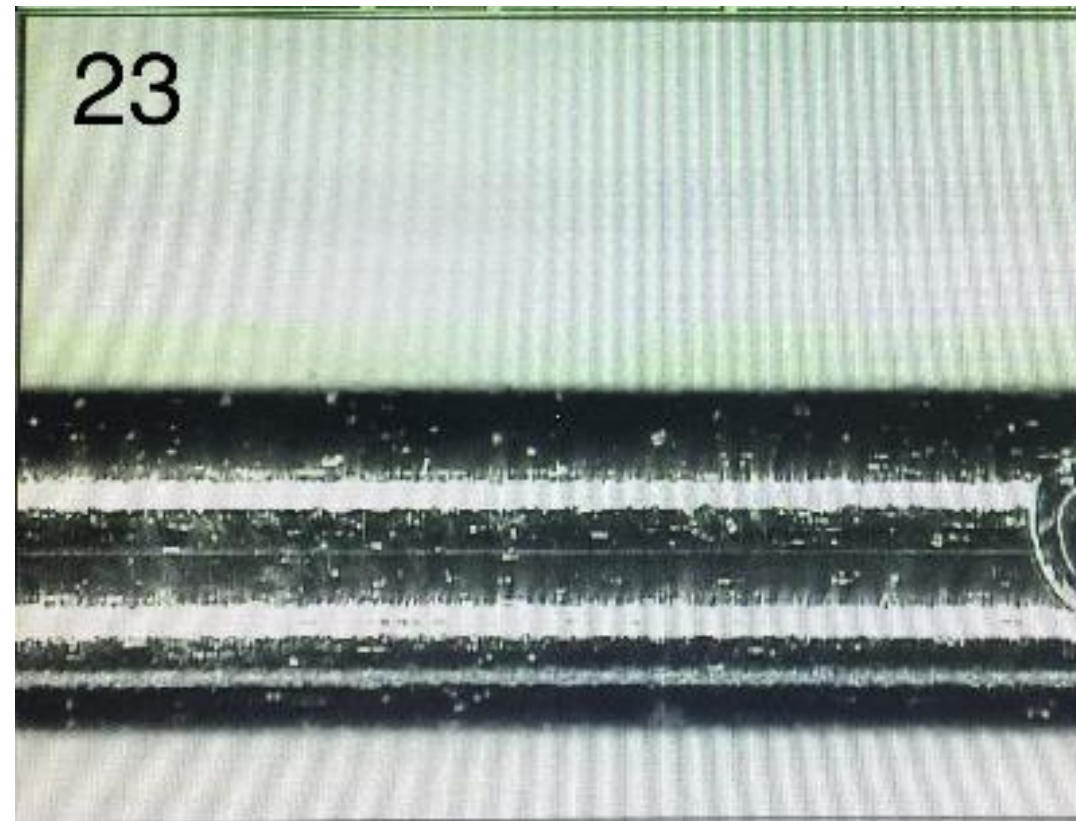
Longitudinal scratches observed

405001338 Needle

- Visual inspection of 18u passed needle



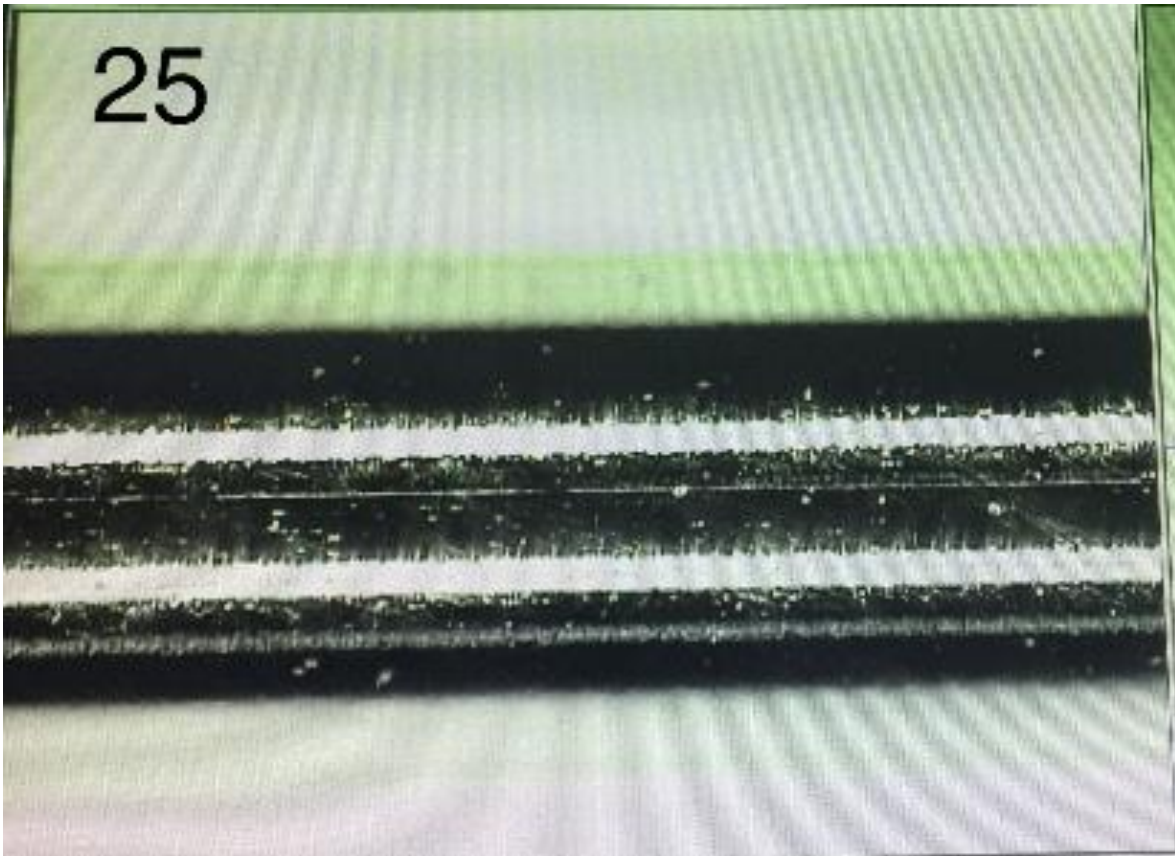
Longitudinal scratches observed



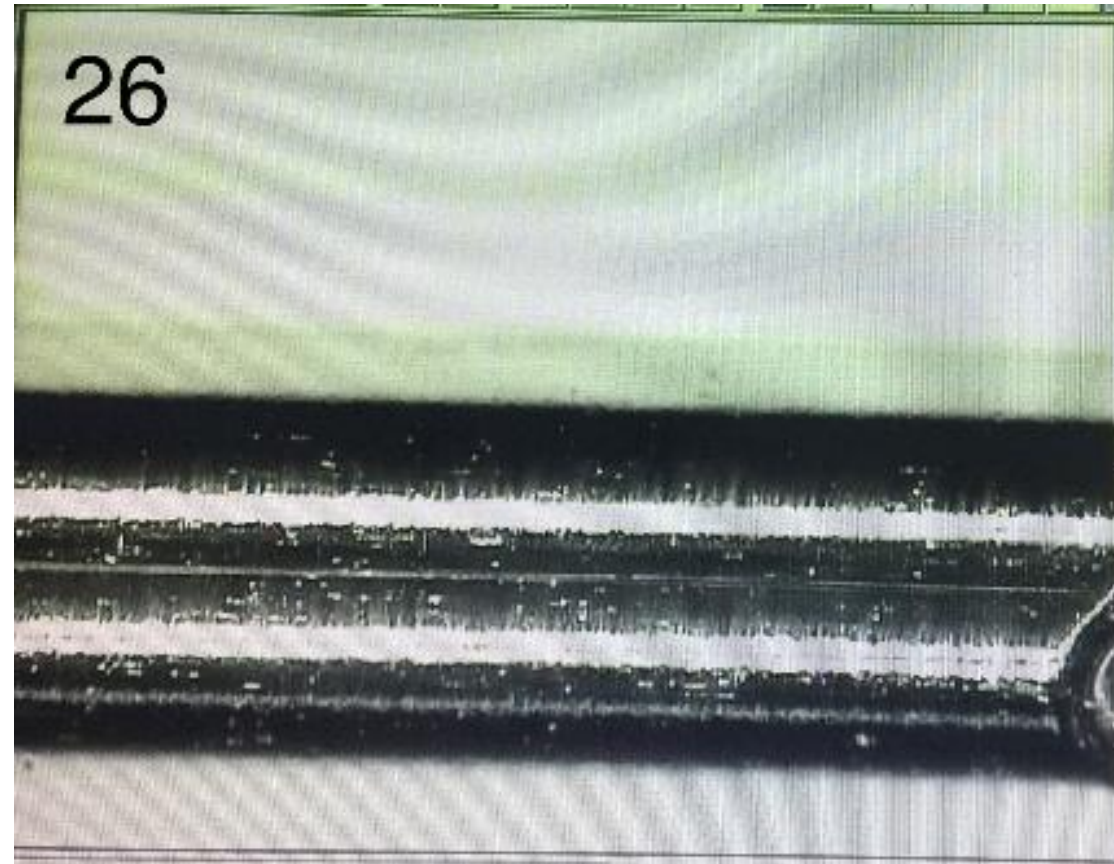
Longitudinal scratches observed

405001338 Needle

- Visual inspection of 18u passed needle



Longitudinal scratches observed



Longitudinal scratches observed

405001338 Needle

- Visual inspection of 18u passed needle



Longitudinal scratches observed



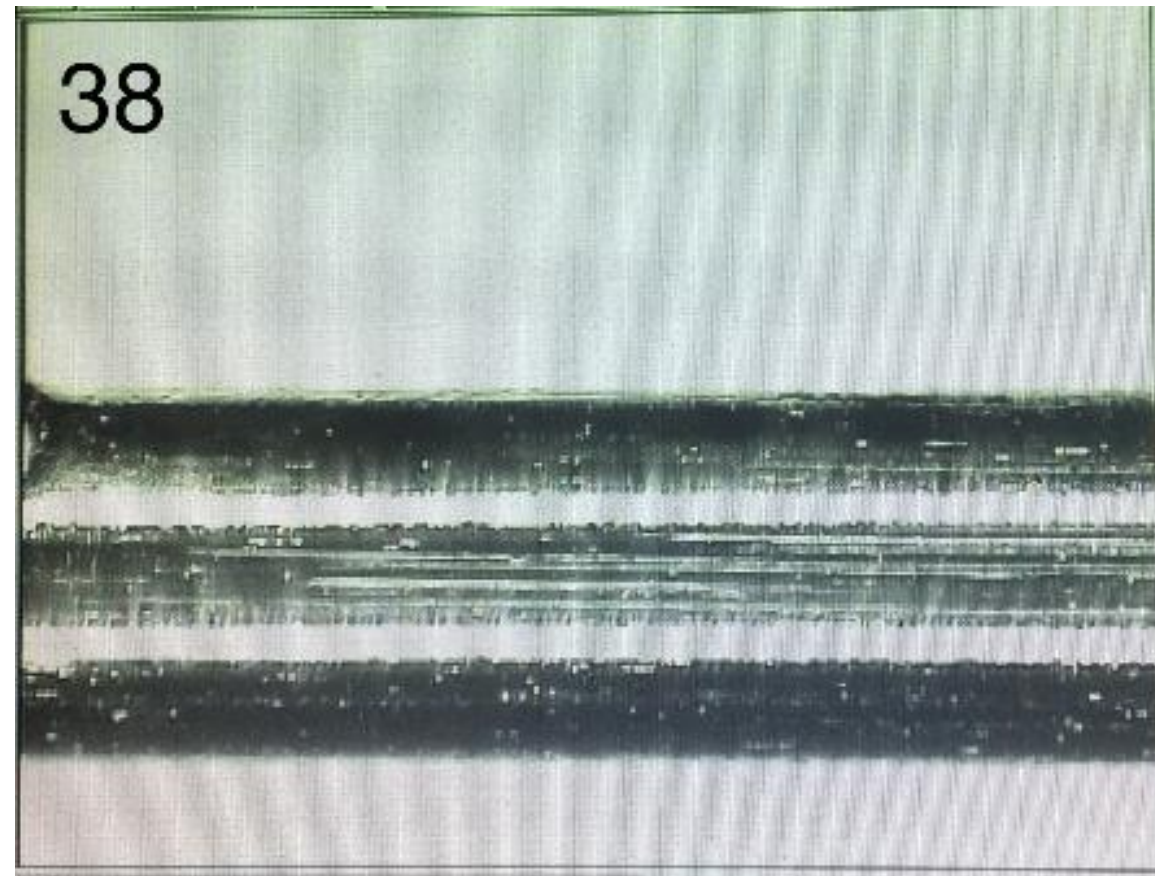
Longitudinal scratches observed

405001338 Needle

- Visual inspection of passed needle



Longitudinal scratches observed



Longitudinal scratches observed

405001338 Needle

Background:

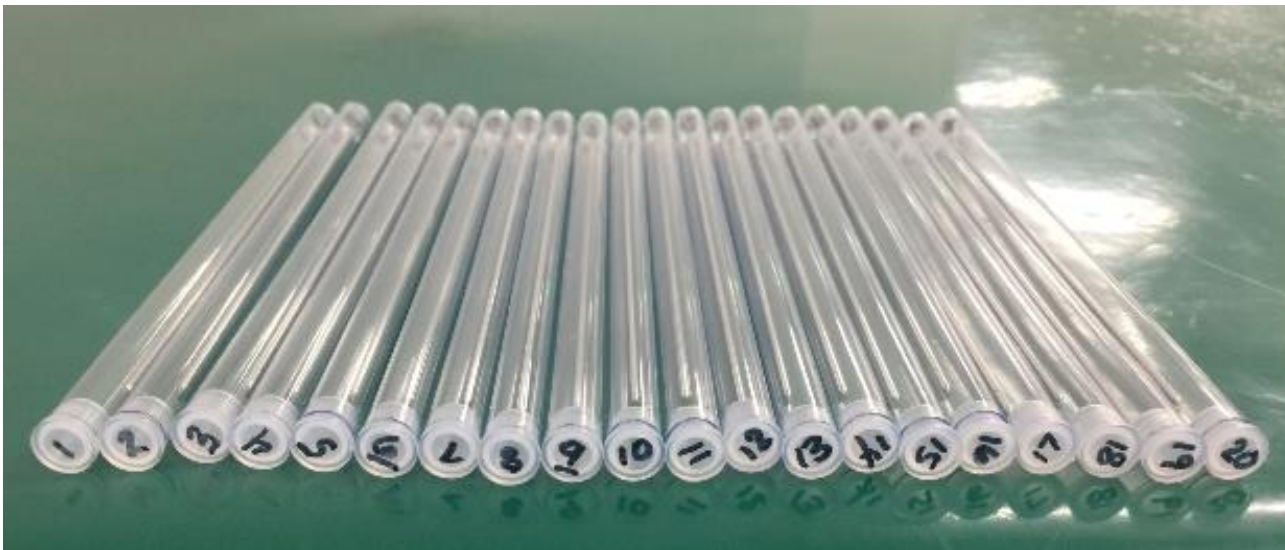
➤ Lot code of needle :



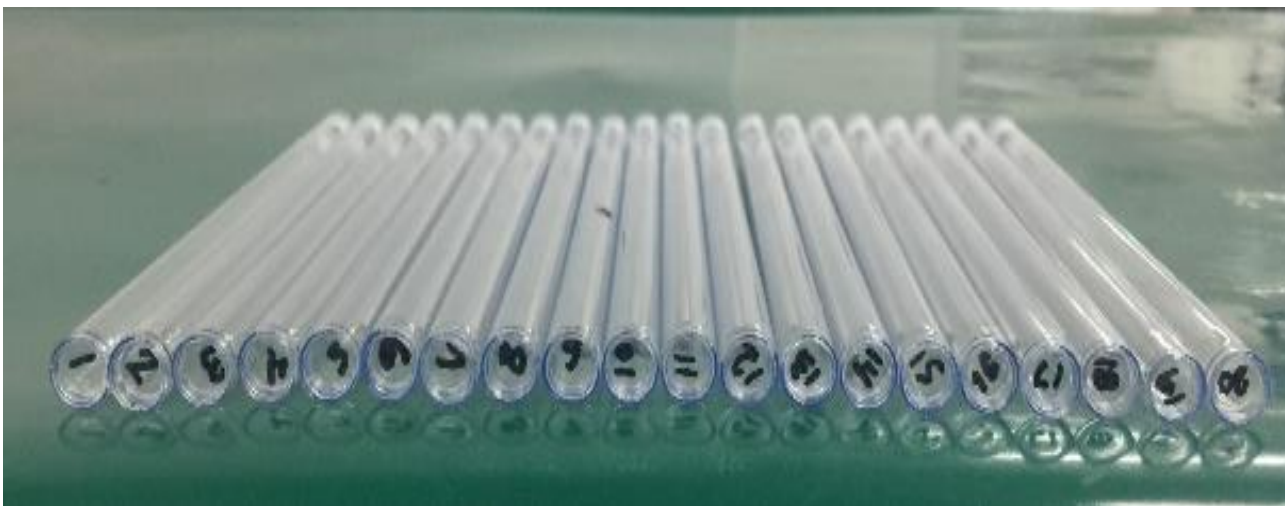
405001338 Needle

Background:

- Needles were marked as per below for identification :



Number marking on needle cap



Number marking on bottom of needle tube

405001338 Needle

Background:

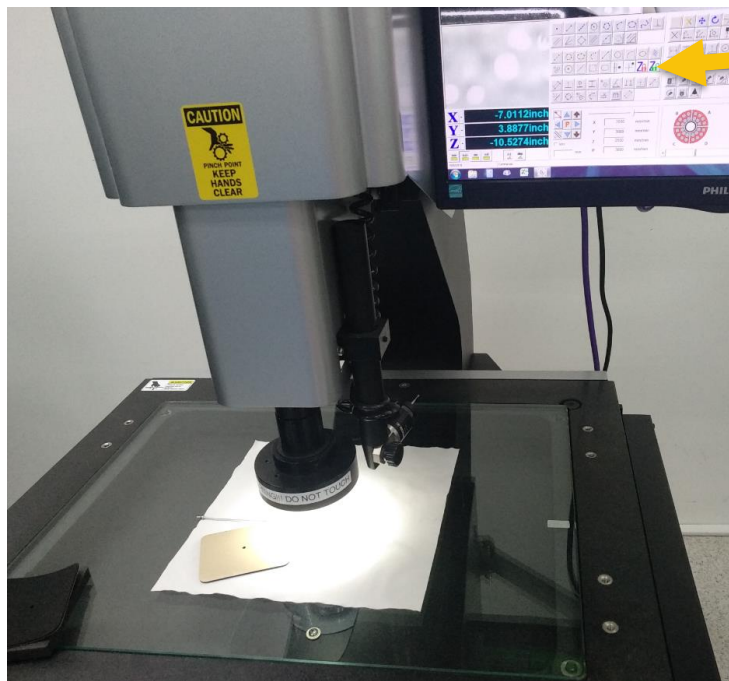
- Injector Subassembly marked as per below:



Number marking on Injector Subassembly based on Needle Sample # assembled to it

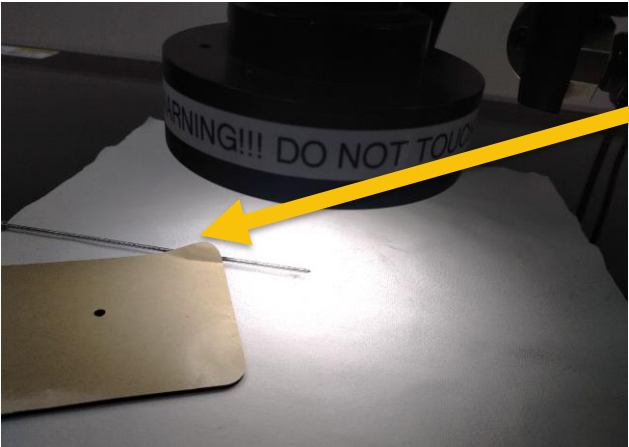
Smart scope Set-up, Magnification selection and Auto-Focus

Set-up:



Set-up – Overall view

Monitor display



Close up view

Needle (Sample)

Magnification:

MAGNIFICATION RATIO (CCD CAMERA)								
0.7	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5
20X	25X	40X	55X	70X	80X	100X	110X	120X
DSC INDUSTRIAL PTE LTD (MADE IN SINGAPORE) REACH US: (+65) 6861 1246 WEBSITE : WWW.DSCIND.COM.SG								

Able to choose a few magnifications, such as 20x, 40x, 100x, etc,

Auto-focus: Auto-focus function is used.