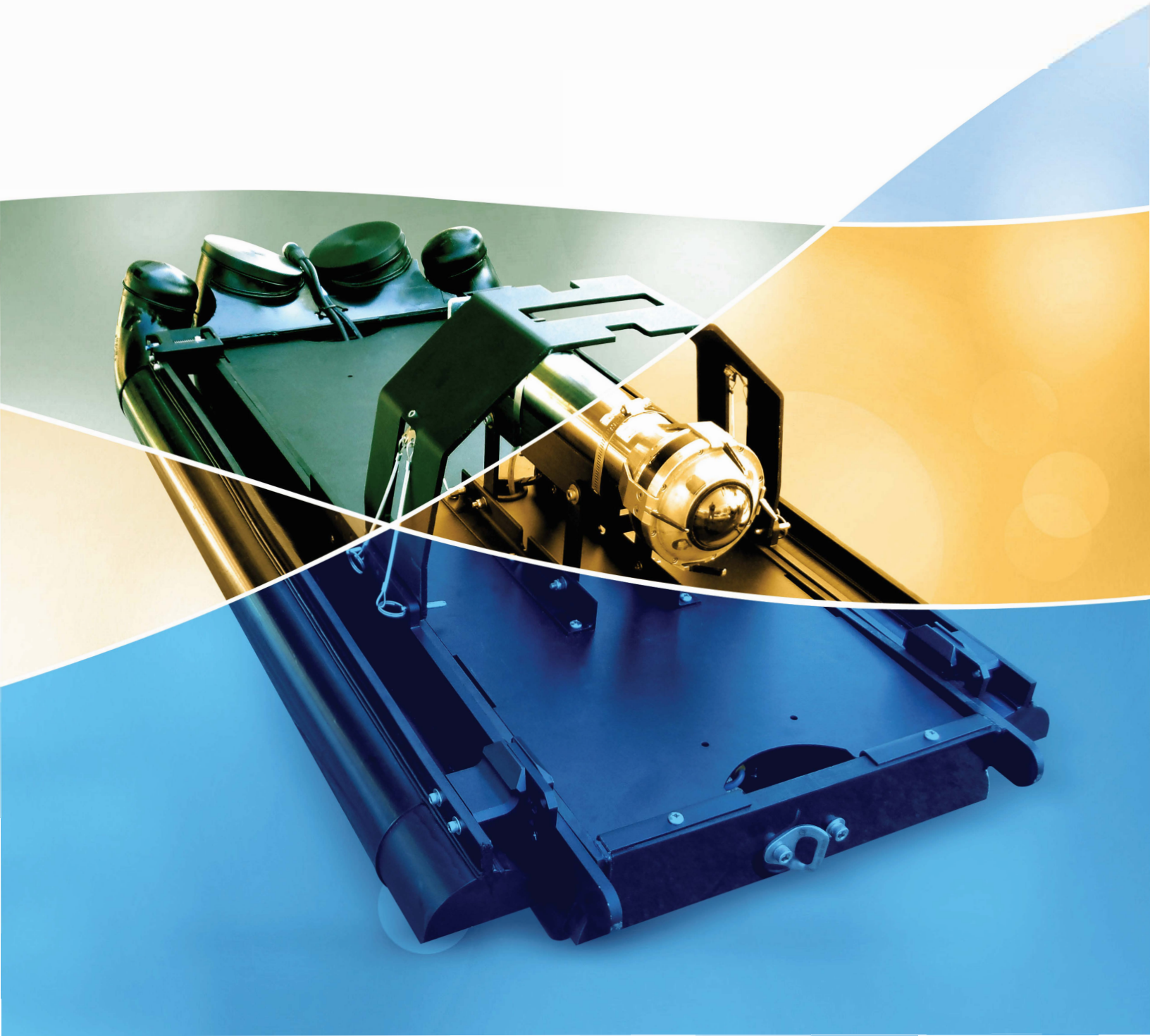
Pipeline Inspection Partners Corp.

CMS MappingServices

CUES

SolidFX

Inspection Report



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Inspection Information

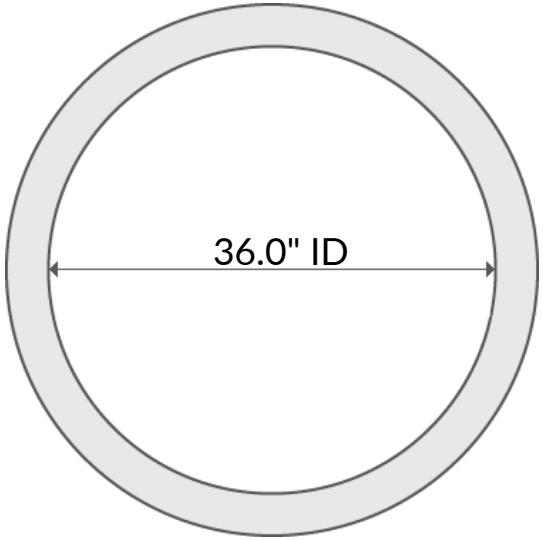
Transport

Mud Master

Sensor(s)

LIDAR
HD
SONAR

As-Built Dimensions



Inspection Details

Service Area:	
Segment Reference:	SMH-17759_SMH-17758
Upstream Manhole:	SMH-17759
Downstream Manhole:	SMH-17758
Direction:	Upstream
Distance:	479.6
Scan Date:	April 16, 2019
Operator Notes:	None
Processing Notes:	None

Document Details

Report Prepared	August 28, 2019
Source Reference	61019

Ovality Flat Graph(0'-200')

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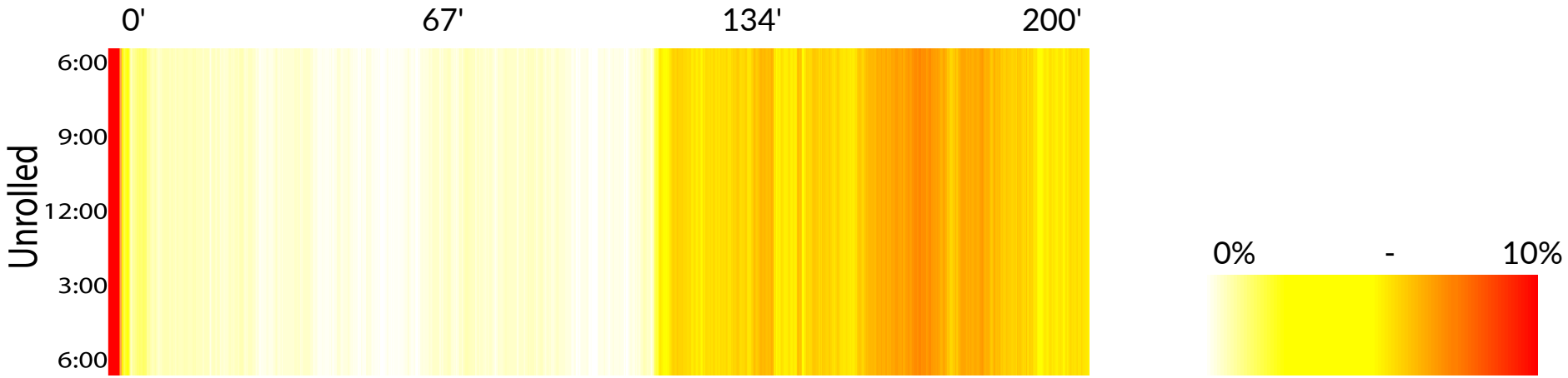
$$\text{Ovality} = \frac{\text{(Horizontal Diameter - Vertical Diameter)}}{\text{(Horizontal Diameter + Vertical Diameter)}}$$

Horizontal Diameter is width at maximum.
Vertical Diameter is 2 * Vertical Radius.
Vertical Radius is vertical distance from center of Horizontal Diameter to peak of circle



Ovality Flat Graph(200'-400')

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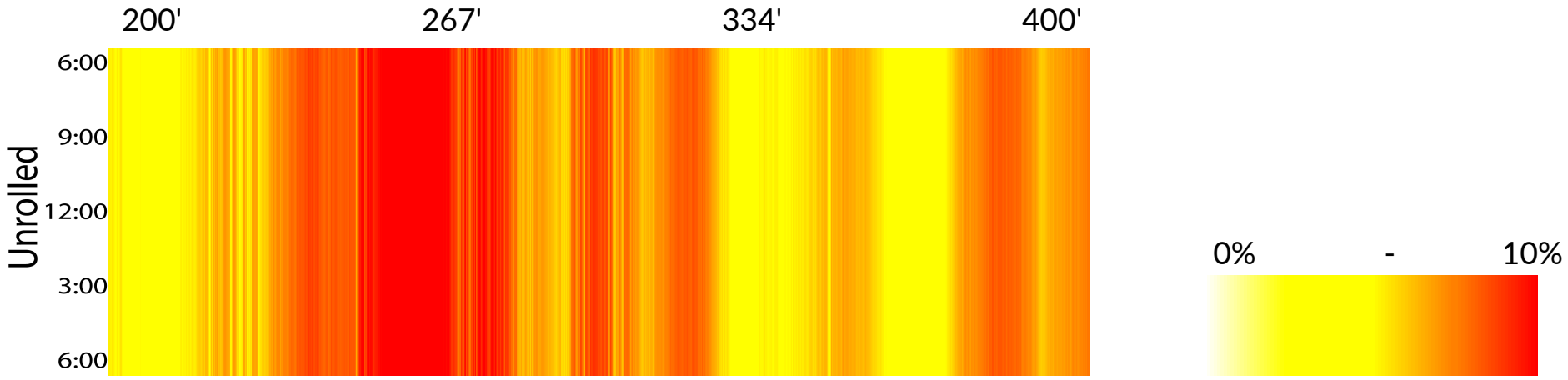
$$\text{Ovality} = \frac{\text{(Horizontal Diameter - Vertical Diameter)}}{\text{(Horizontal Diameter + Vertical Diameter)}}$$

Horizontal Diameter is width at maximum.
Vertical Diameter is 2 * Vertical Radius.
Vertical Radius is vertical distance from center of Horizontal Diameter to peak of circle



Ovality Flat Graph(400'-480.0')

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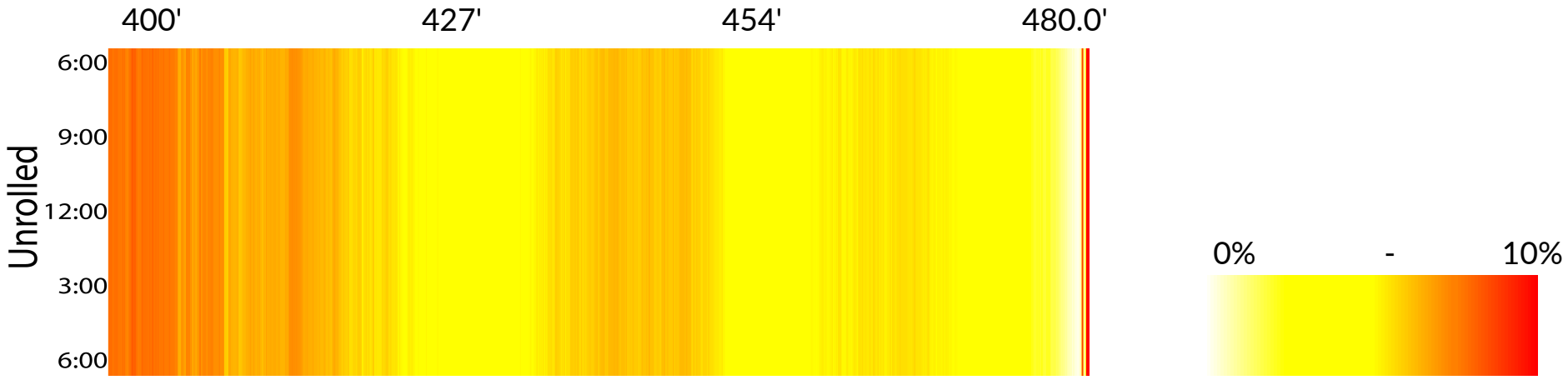
$$\text{Ovality} = \frac{\text{(Horizontal Diameter - Vertical Diameter)}}{\text{(Horizontal Diameter + Vertical Diameter)}}$$

Horizontal Diameter is width at maximum.
Vertical Diameter is 2 * Vertical Radius.
Vertical Radius is vertical distance from center of Horizontal Diameter to peak of circle



Pipe Ovality Graphs

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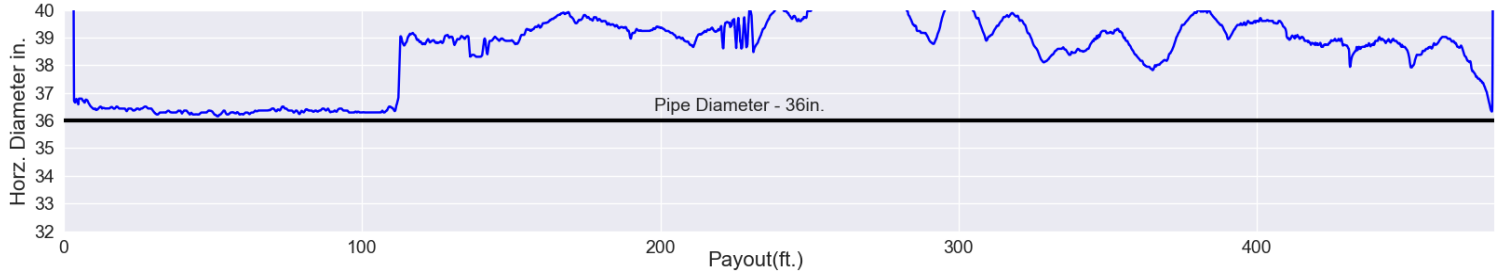
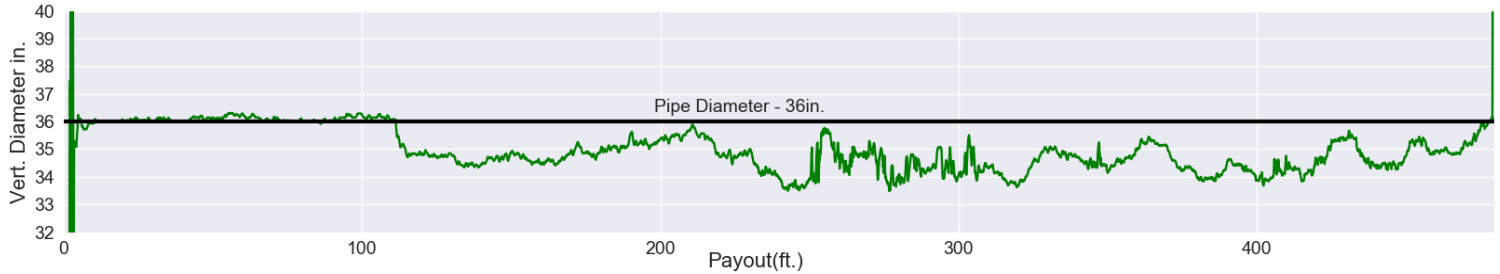




Summary Table

Payout	Type	Note	Ovality %	Horiz. Diam. (in.)	Vert. Diam. (in.)
2.7'	Max Ovality	Max Ovality	47.4	63.3"	34.2"
0.0'	Regular Interval	Start	181.8	53.3"	-2.1"
10.0'	Regular Interval		0.7	36.4"	35.9"
20.0'	Regular Interval		0.6	36.4"	36.0"
30.0'	Regular Interval		0.5	36.3"	36.0"
40.0'	Regular Interval		0.4	36.3"	36.0"
50.0'	Regular Interval		0.2	36.3"	36.1"
60.0'	Regular Interval		0.1	36.2"	36.3"
70.0'	Regular Interval		0.5	36.4"	36.0"
80.0'	Regular Interval		0.4	36.3"	36.0"

Summary Table

Payout	Type	Note	Ovality %	Horiz. Diam. (in.)	Vert. Diam. (in.)
90.0'	Regular Interval		0.4	36.3"	36.0"
100.0'	Regular Interval		0.1	36.3"	36.2"
110.0'	Regular Interval		0.5	36.5"	36.1"
120.0'	Regular Interval		5.4	38.8"	34.8"
130.0'	Regular Interval		5.7	39.0"	34.8"
140.0'	Regular Interval		5.3	38.3"	34.4"
150.0'	Regular Interval		5.4	38.9"	34.9"
160.0'	Regular Interval		6.7	39.4"	34.4"
170.0'	Regular Interval		6.5	39.7"	34.9"
180.0'	Regular Interval		6.2	39.6"	35.0"

Summary Table

Payout	Type	Note	Ovality %	Horiz. Diam. (in.)	Vert. Diam. (in.)
190.0'	Regular Interval		4.6	39.0"	35.5"
200.0'	Regular Interval		5.3	39.4"	35.4"
210.0'	Regular Interval		4.1	38.7"	35.7"
220.0'	Regular Interval		6.2	39.3"	34.7"
230.0'	Regular Interval		6.7	40.0"	35.0"
240.0'	Regular Interval		8.3	40.1"	33.9"
250.0'	Regular Interval		8.2	40.0"	33.9"
260.0'	Regular Interval		12.2	44.4"	34.7"
270.0'	Regular Interval		8.9	42.1"	35.3"
280.0'	Regular Interval		9.0	40.8"	34.0"

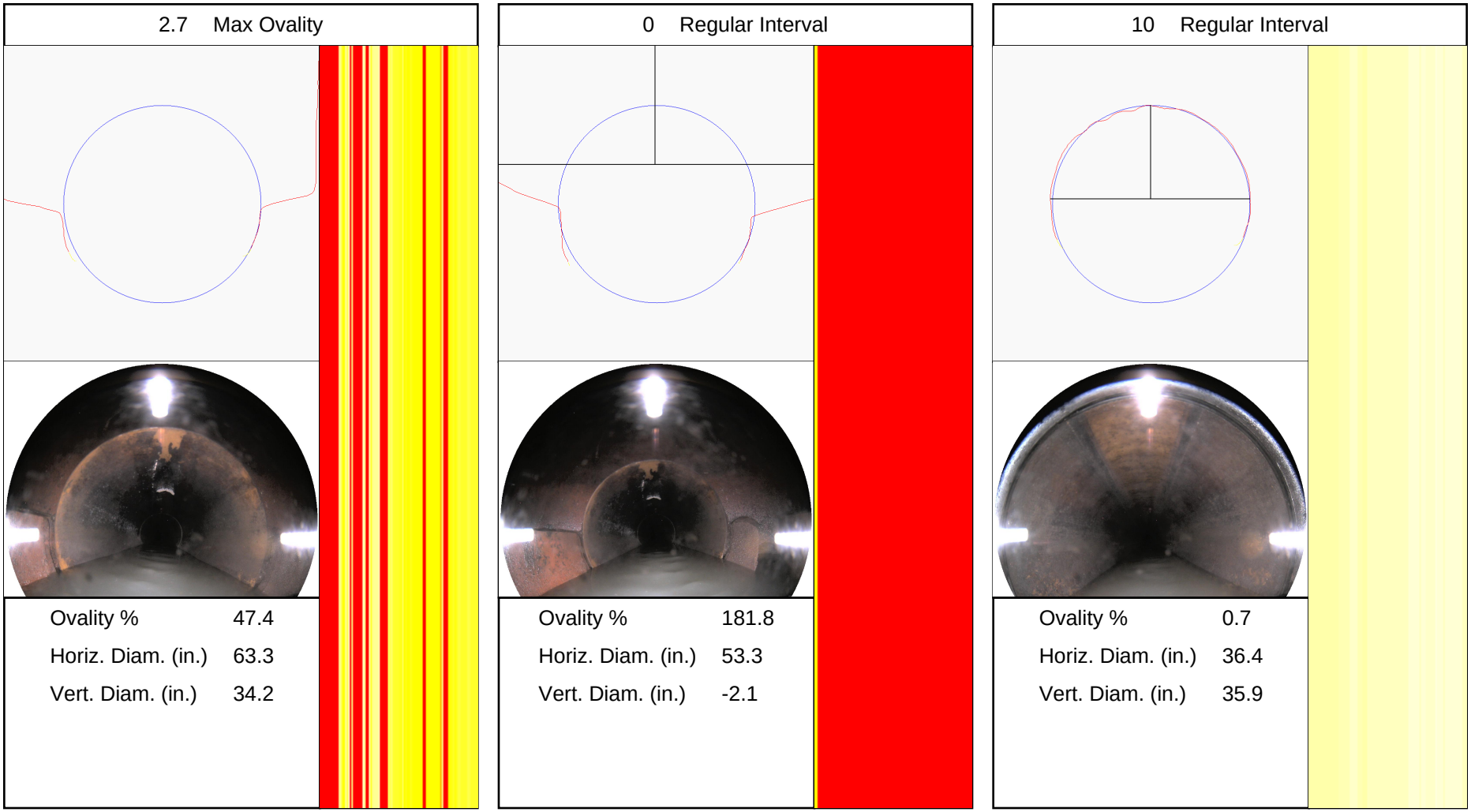
Summary Table

Payout	Type	Note	Ovality %	Horiz. Diam. (in.)	Vert. Diam. (in.)
290.0'	Regular Interval		6.3	39.0"	34.3"
300.0'	Regular Interval		8.6	40.5"	34.1"
310.0'	Regular Interval		6.4	39.0"	34.3"
320.0'	Regular Interval		8.3	39.8"	33.7"
330.0'	Regular Interval		4.5	38.2"	34.9"
340.0'	Regular Interval		5.3	38.6"	34.7"
350.0'	Regular Interval		6.8	39.2"	34.1"
360.0'	Regular Interval		4.5	38.3"	35.0"
370.0'	Regular Interval		4.2	38.2"	35.1"
380.0'	Regular Interval		8.1	39.9"	34.0"

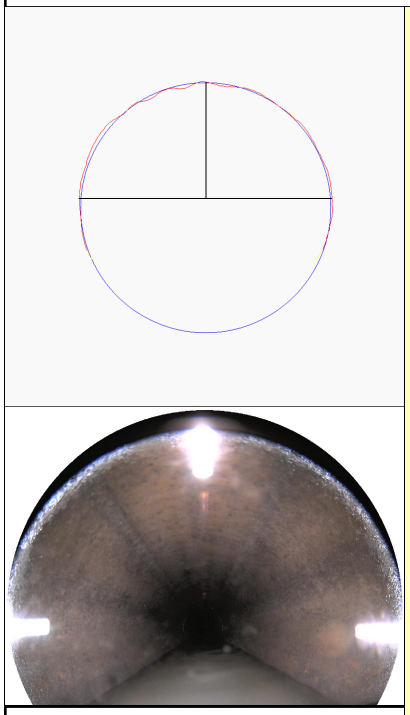
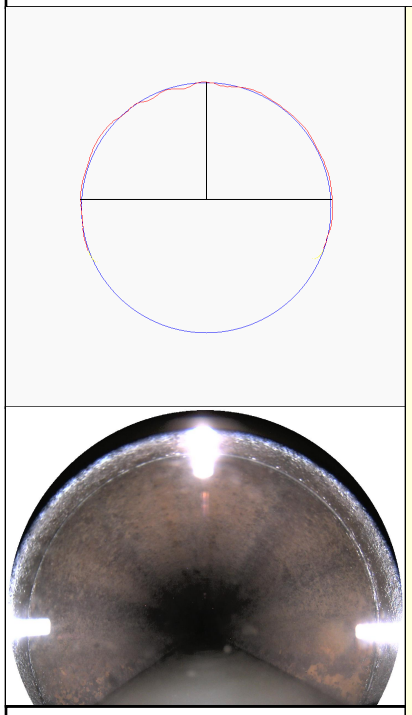
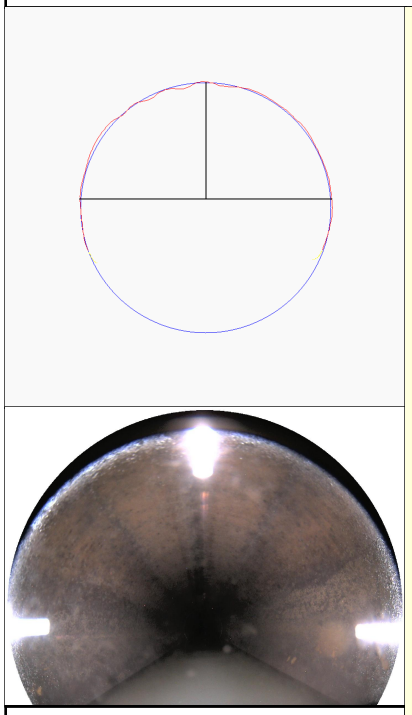
Summary Table

Payout	Type	Note	Ovality %	Horiz. Diam. (in.)	Vert. Diam. (in.)
390.0'	Regular Interval		6.2	39.1"	34.5"
400.0'	Regular Interval		7.8	39.6"	33.9"
410.0'	Regular Interval		6.5	39.1"	34.3"
420.0'	Regular Interval		5.7	38.7"	34.5"
430.0'	Regular Interval		4.6	38.7"	35.3"
440.0'	Regular Interval		6.1	38.9"	34.4"
450.0'	Regular Interval		5.3	38.6"	34.7"
460.0'	Regular Interval		5.2	38.7"	34.9"
470.0'	Regular Interval		4.1	38.3"	35.3"
479.6'	Regular Interval	End	13.7	51.1"	67.3"

Distributed Cross-Sections



Distributed Cross-Sections

20 Regular Interval		30 Regular Interval		40 Regular Interval	
					
Ovality %	0.6	Ovality %	0.5	Ovality %	0.4
Horiz. Diam. (in.)	36.4	Horiz. Diam. (in.)	36.3	Horiz. Diam. (in.)	36.3
Vert. Diam. (in.)	36.0	Vert. Diam. (in.)	36.0	Vert. Diam. (in.)	36.0

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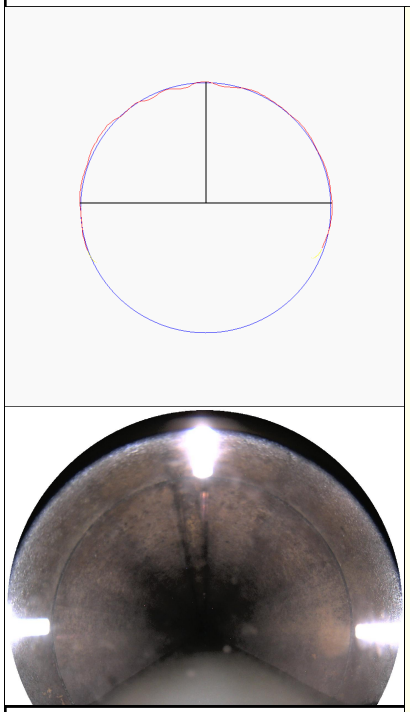
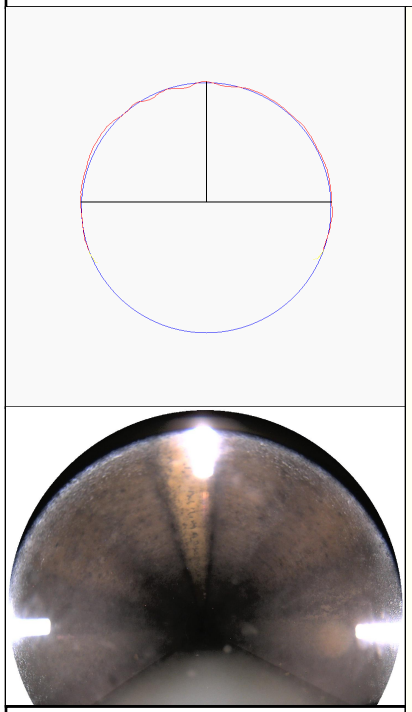
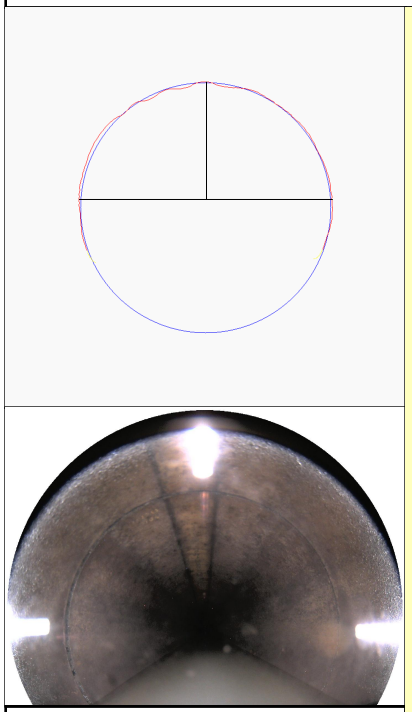
Distributed Cross-Sections

50 Regular Interval		60 Regular Interval		70 Regular Interval	
					
Ovality %	0.2	Ovality %	0.1	Ovality %	0.5
Horiz. Diam. (in.)	36.3	Horiz. Diam. (in.)	36.2	Horiz. Diam. (in.)	36.4
Vert. Diam. (in.)	36.1	Vert. Diam. (in.)	36.3	Vert. Diam. (in.)	36.0

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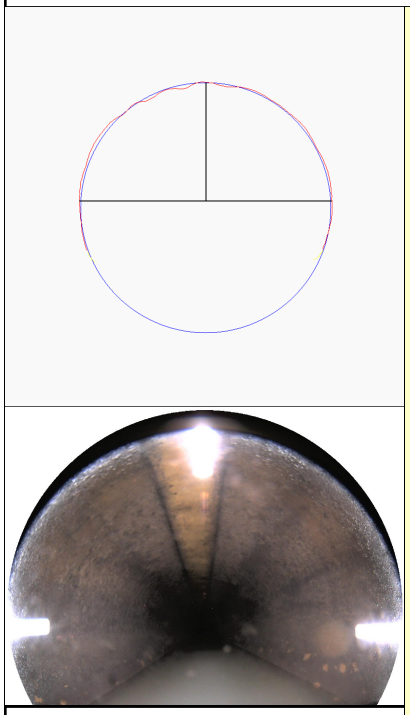
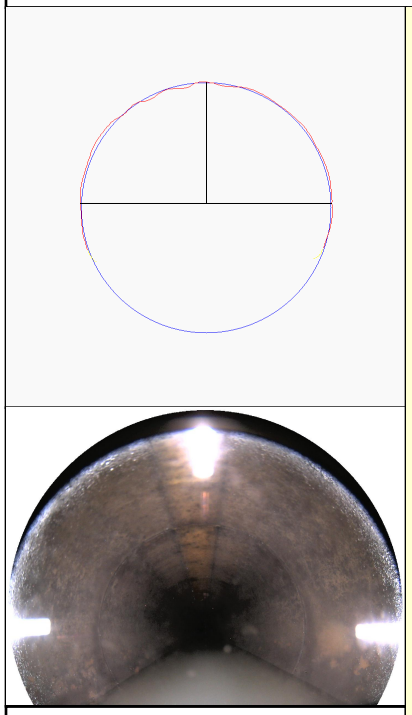
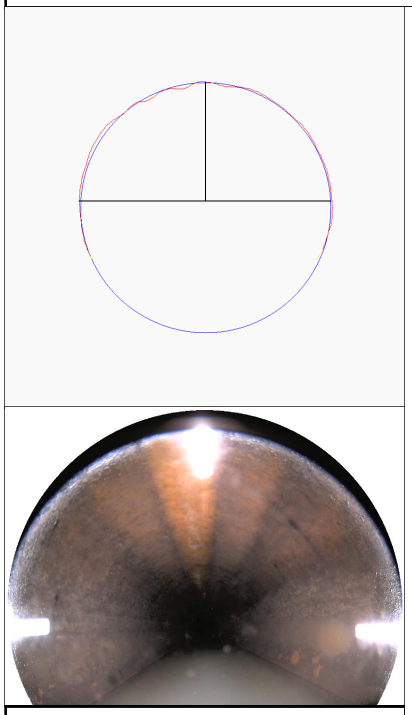
Distributed Cross-Sections

80 Regular Interval		90 Regular Interval		100 Regular Interval	
					
Ovality %	0.4	Ovality %	0.4	Ovality %	0.1
Horiz. Diam. (in.)	36.3	Horiz. Diam. (in.)	36.3	Horiz. Diam. (in.)	36.3
Vert. Diam. (in.)	36.0	Vert. Diam. (in.)	36.0	Vert. Diam. (in.)	36.2

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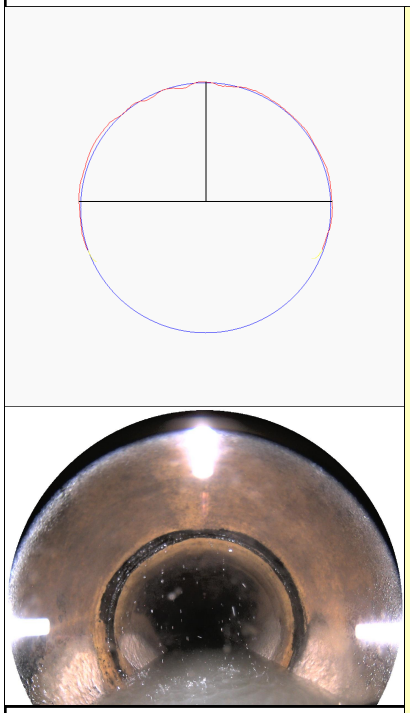
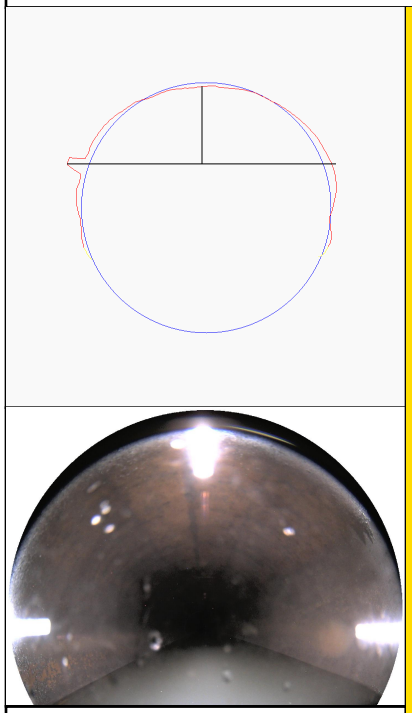
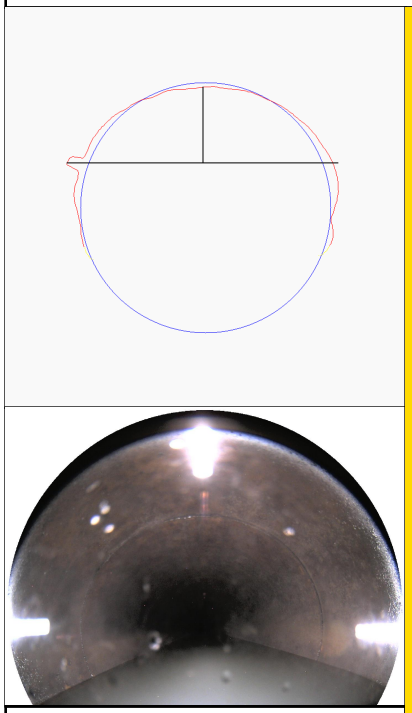
Distributed Cross-Sections

110 Regular Interval		120 Regular Interval		130 Regular Interval	
					
Ovality %	0.5	Ovality %	5.4	Ovality %	5.7
Horiz. Diam. (in.)	36.5	Horiz. Diam. (in.)	38.8	Horiz. Diam. (in.)	39.0
Vert. Diam. (in.)	36.1	Vert. Diam. (in.)	34.8	Vert. Diam. (in.)	34.8

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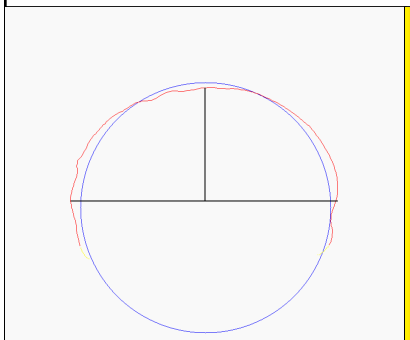
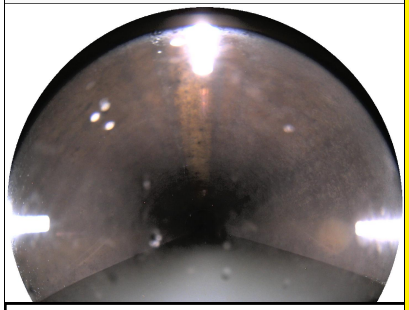
Distributed Cross-Sections

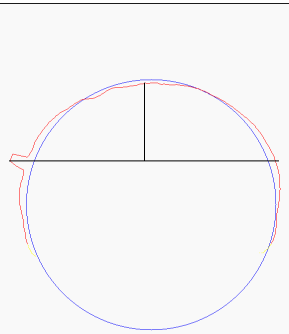
140 Regular Interval

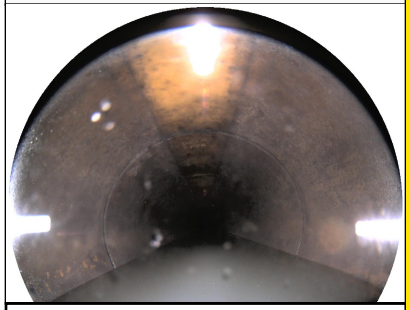




Ovality %	5.3
Horiz. Diam. (in.)	38.3
Vert. Diam. (in.)	34.4

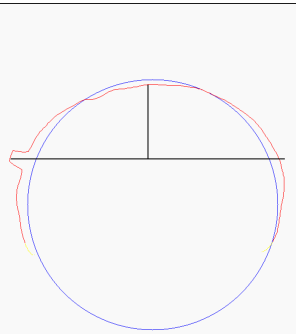
150 Regular Interval

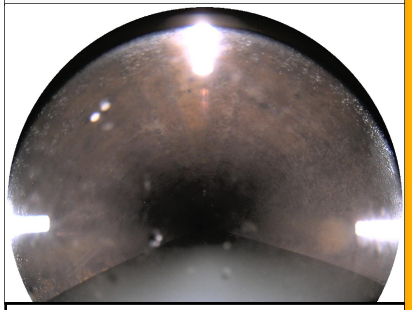




Ovality %	5.4
Horiz. Diam. (in.)	38.9
Vert. Diam. (in.)	34.9

160 Regular Interval





Ovality %	6.7
Horiz. Diam. (in.)	39.4
Vert. Diam. (in.)	34.4

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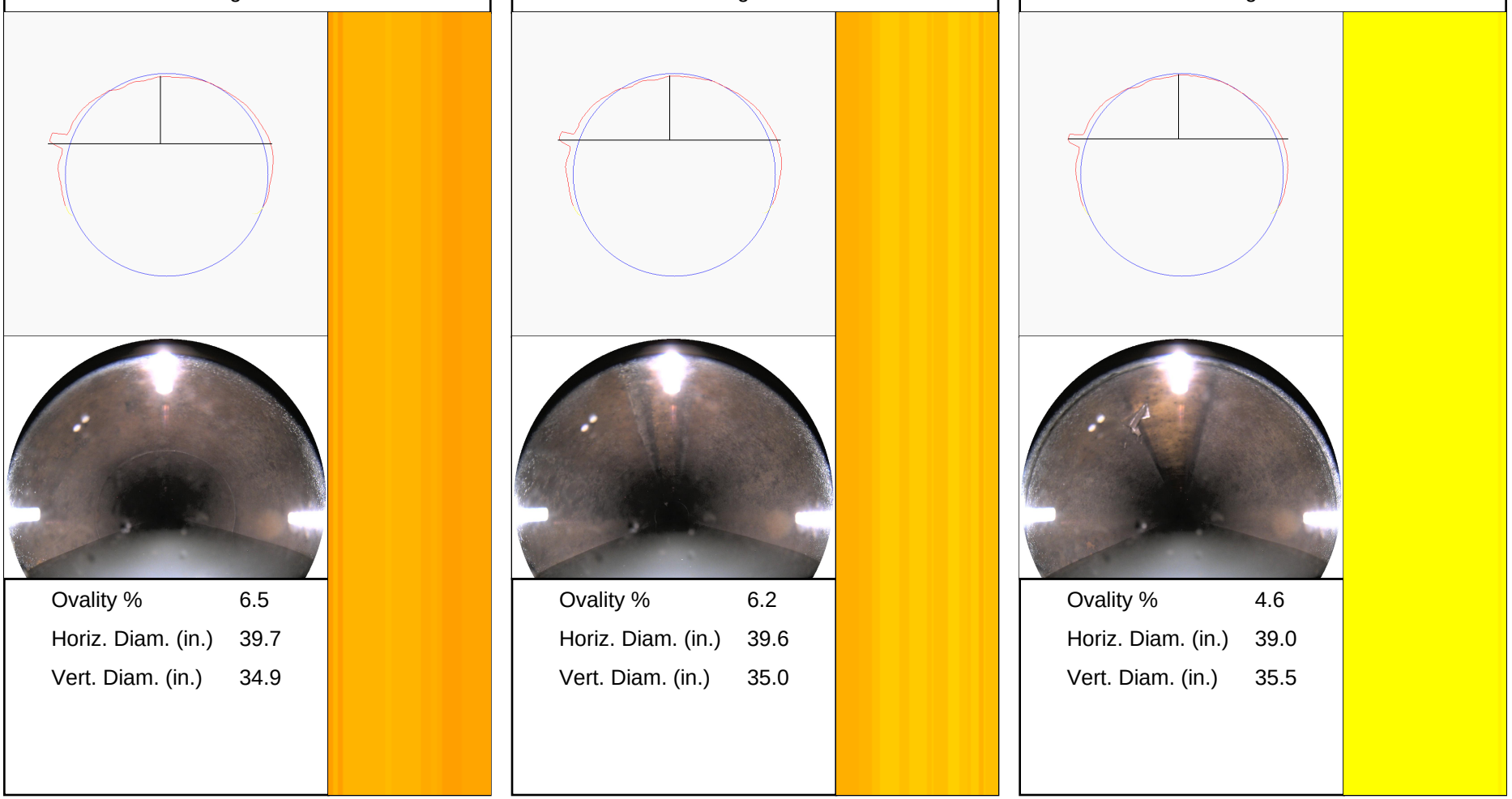
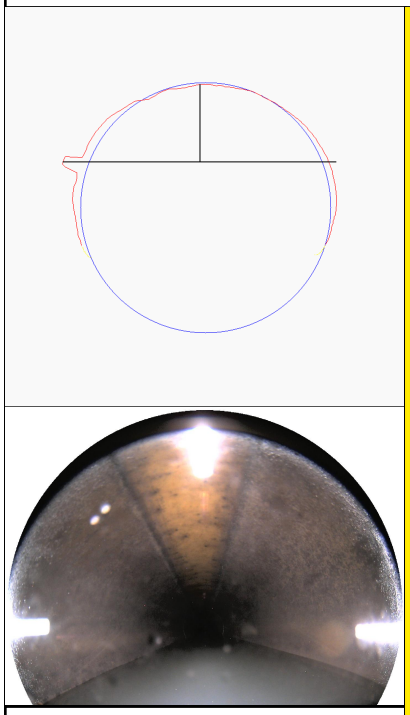
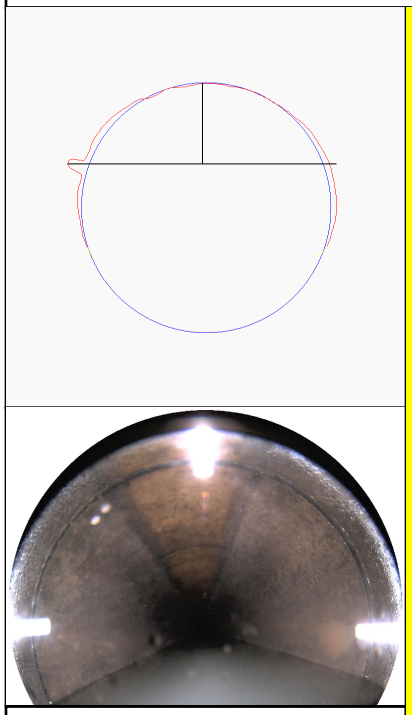
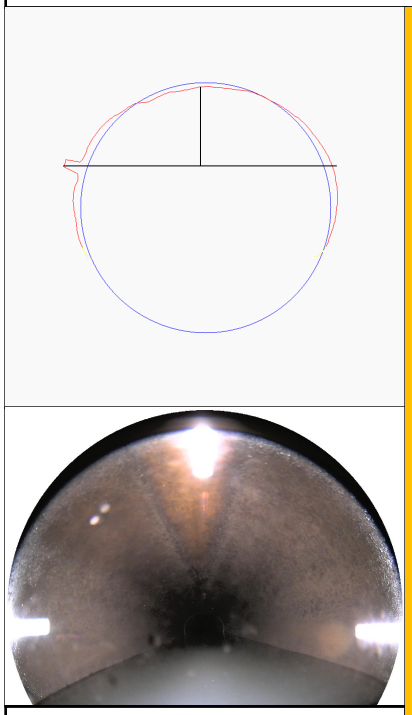
Distributed Cross-Sections

170 Regular Interval		180 Regular Interval		190 Regular Interval	
Ovality %	6.5	Ovality %	6.2	Ovality %	4.6
Horiz. Diam. (in.)	39.7	Horiz. Diam. (in.)	39.6	Horiz. Diam. (in.)	39.0
Vert. Diam. (in.)	34.9	Vert. Diam. (in.)	35.0	Vert. Diam. (in.)	35.5



Distributed Cross-Sections

200 Regular Interval		210 Regular Interval		220 Regular Interval	
					
Ovality %	5.3	Ovality %	4.1	Ovality %	6.2
Horiz. Diam. (in.)	39.4	Horiz. Diam. (in.)	38.7	Horiz. Diam. (in.)	39.3
Vert. Diam. (in.)	35.4	Vert. Diam. (in.)	35.7	Vert. Diam. (in.)	34.7

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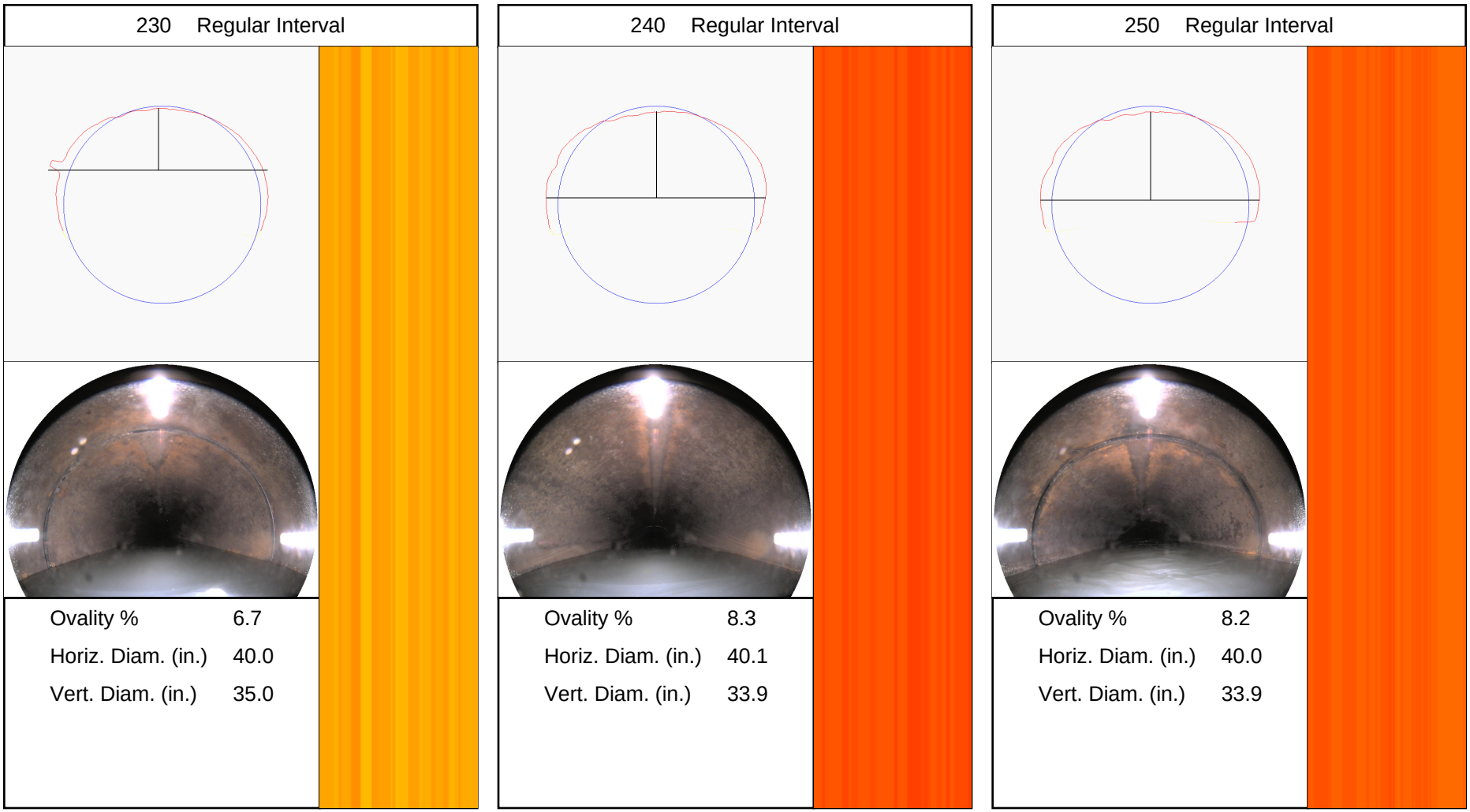
Distributed Cross-Sections

230 Regular Interval		240 Regular Interval		250 Regular Interval	
Ovality %	6.7	Ovality %	8.3	Ovality %	8.2
Horiz. Diam. (in.)	40.0	Horiz. Diam. (in.)	40.1	Horiz. Diam. (in.)	40.0
Vert. Diam. (in.)	35.0	Vert. Diam. (in.)	33.9	Vert. Diam. (in.)	33.9

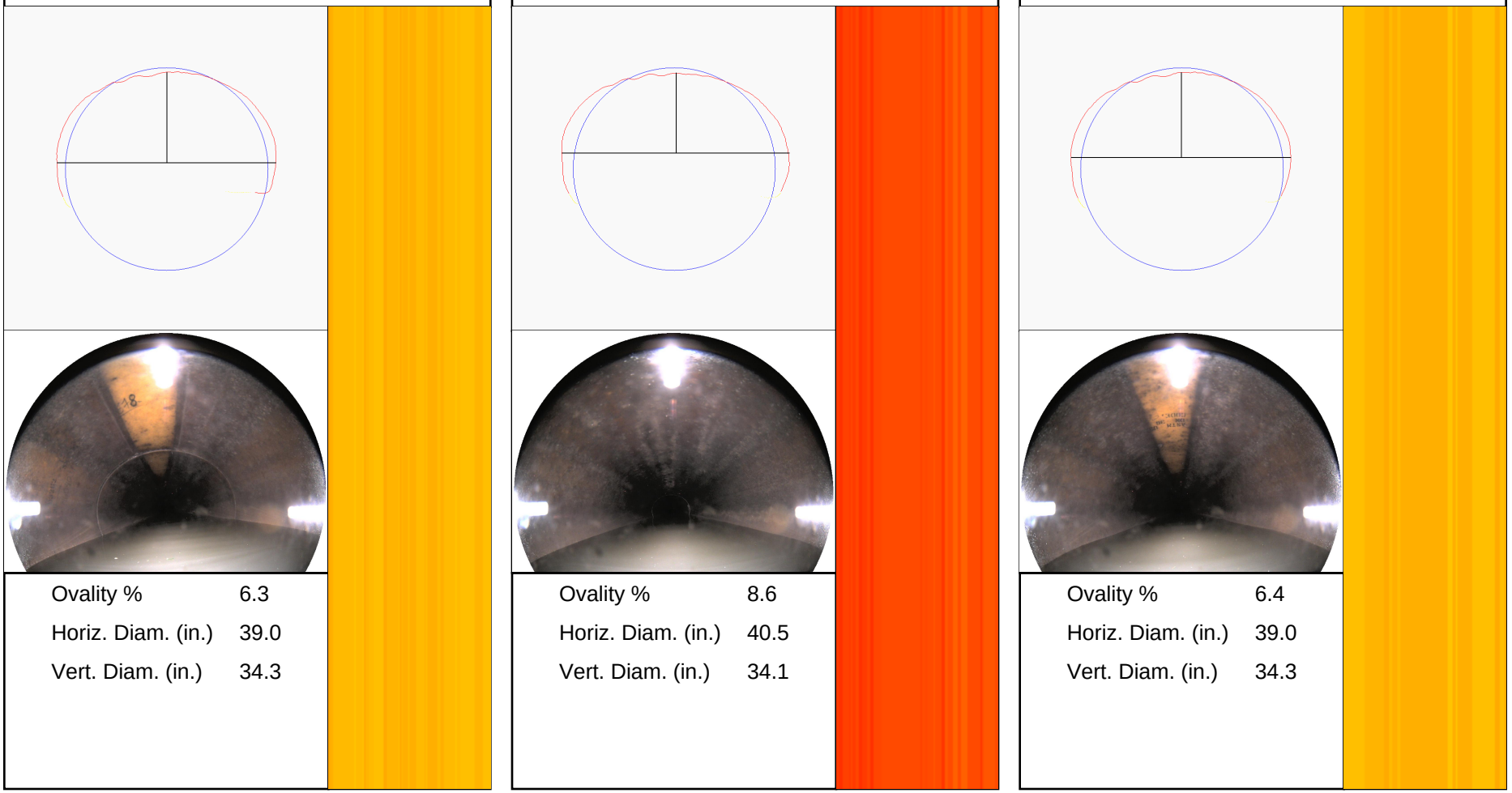


Distributed Cross-Sections

260 Regular Interval		270 Regular Interval		280 Regular Interval	
Ovality %	12.2	Ovality %	8.9	Ovality %	9.0
Horiz. Diam. (in.)	44.4	Horiz. Diam. (in.)	42.1	Horiz. Diam. (in.)	40.8
Vert. Diam. (in.)	34.7	Vert. Diam. (in.)	35.3	Vert. Diam. (in.)	34.0

Distributed Cross-Sections

290 Regular Interval		300 Regular Interval		310 Regular Interval	
Ovality %	6.3	Ovality %	8.6	Ovality %	6.4
Horiz. Diam. (in.)	39.0	Horiz. Diam. (in.)	40.5	Horiz. Diam. (in.)	39.0
Vert. Diam. (in.)	34.3	Vert. Diam. (in.)	34.1	Vert. Diam. (in.)	34.3



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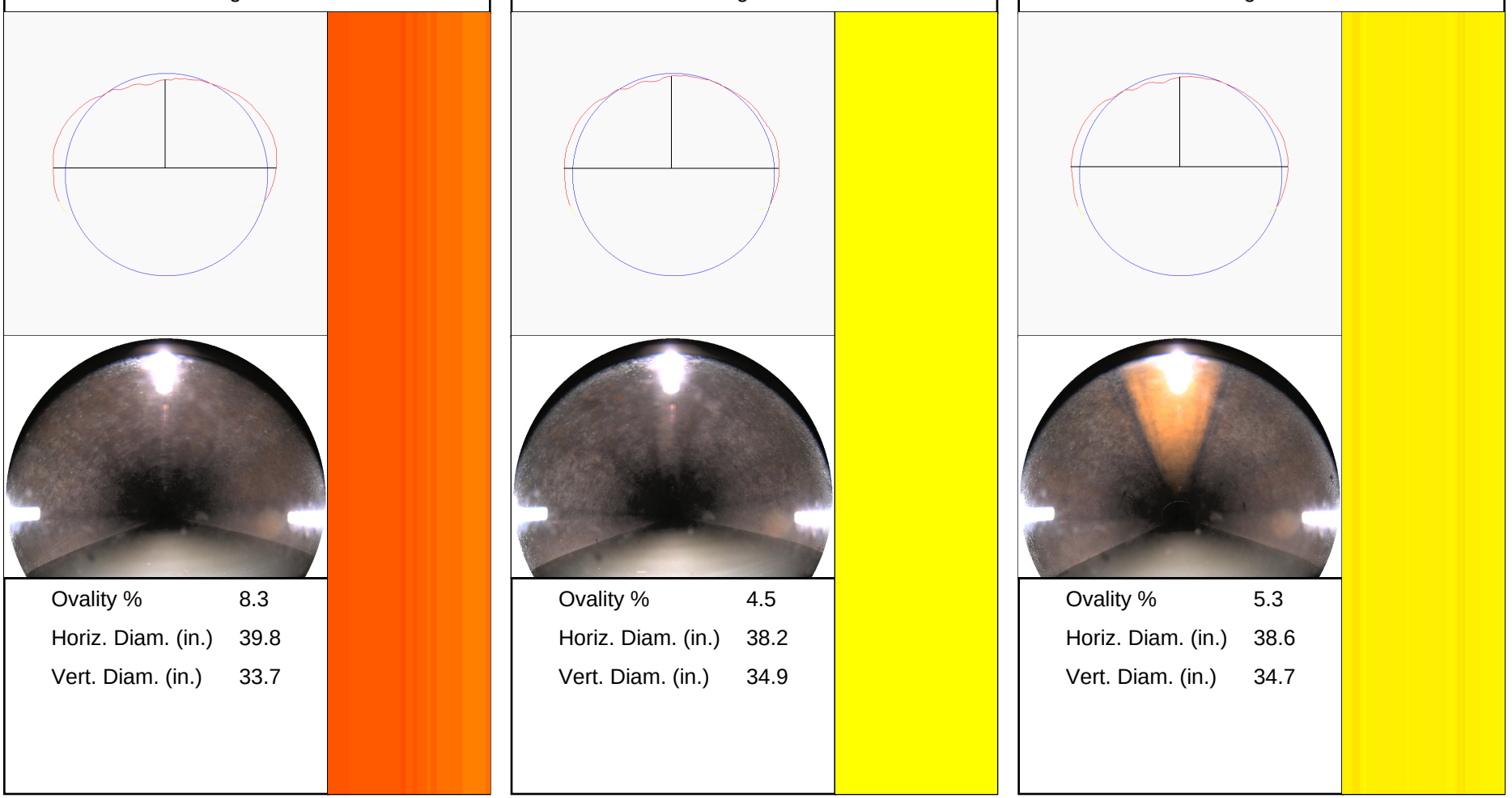
Distributed Cross-Sections

320 Regular Interval		330 Regular Interval		340 Regular Interval	
Ovality %	8.3	Ovality %	4.5	Ovality %	5.3
Horiz. Diam. (in.)	39.8	Horiz. Diam. (in.)	38.2	Horiz. Diam. (in.)	38.6
Vert. Diam. (in.)	33.7	Vert. Diam. (in.)	34.9	Vert. Diam. (in.)	34.7



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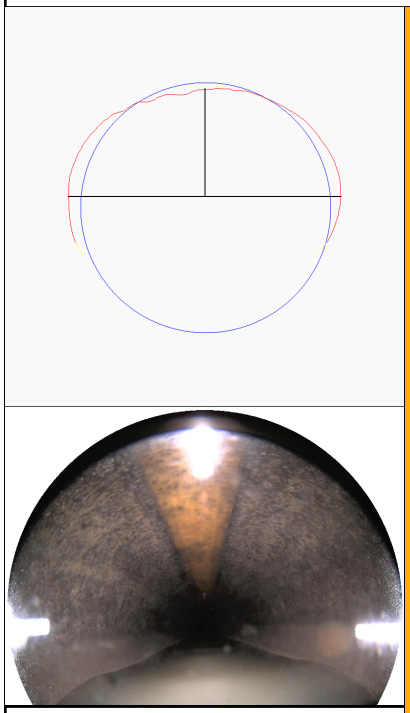
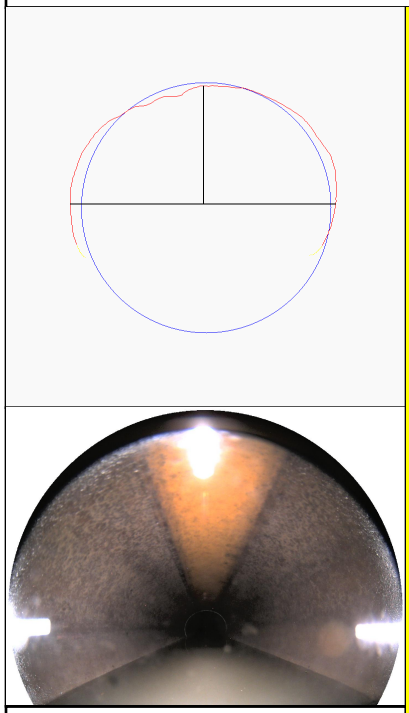
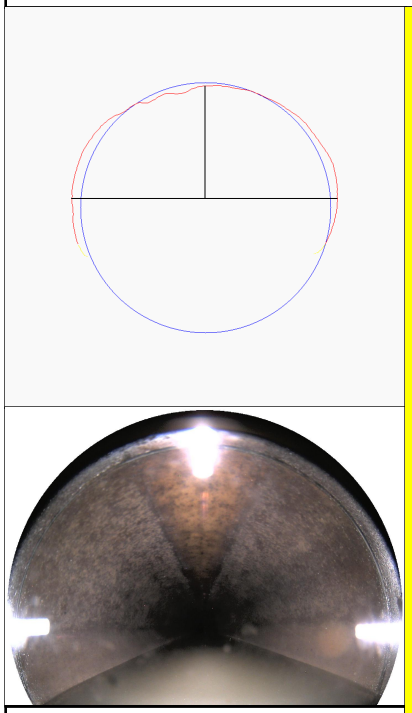
Distributed Cross-Sections

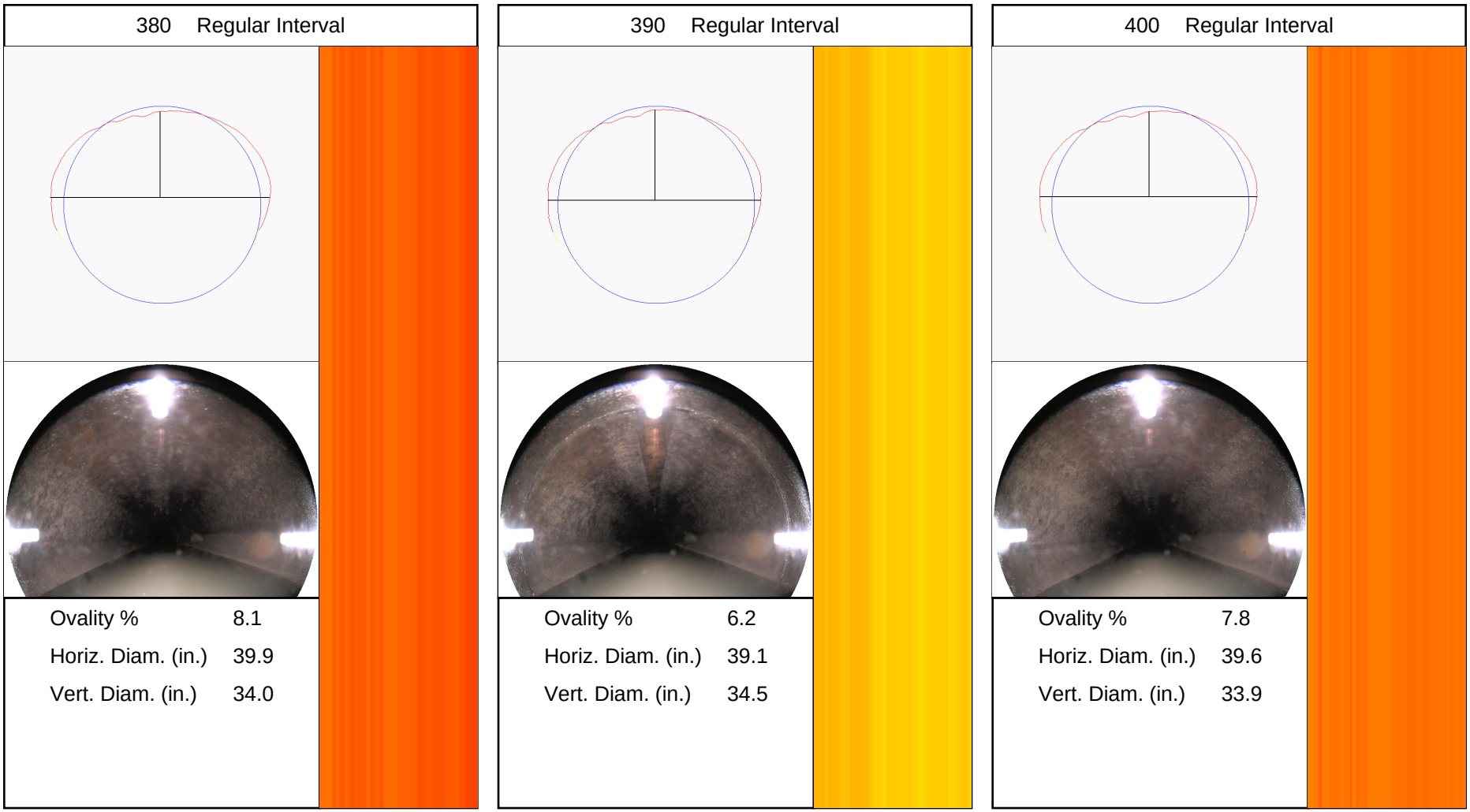
350 Regular Interval		360 Regular Interval		370 Regular Interval	
					
Ovality %	6.8	Ovality %	4.5	Ovality %	4.2
Horiz. Diam. (in.)	39.2	Horiz. Diam. (in.)	38.3	Horiz. Diam. (in.)	38.2
Vert. Diam. (in.)	34.1	Vert. Diam. (in.)	35.0	Vert. Diam. (in.)	35.1

Anytown, USA
Inspected April 16, 2019

SMH-17759
SMH-17758

Distributed Cross-Sections

380 Regular Interval		390 Regular Interval		400 Regular Interval	
Ovality %	8.1	Ovality %	6.2	Ovality %	7.8
Horiz. Diam. (in.)	39.9	Horiz. Diam. (in.)	39.1	Horiz. Diam. (in.)	39.6
Vert. Diam. (in.)	34.0	Vert. Diam. (in.)	34.5	Vert. Diam. (in.)	33.9

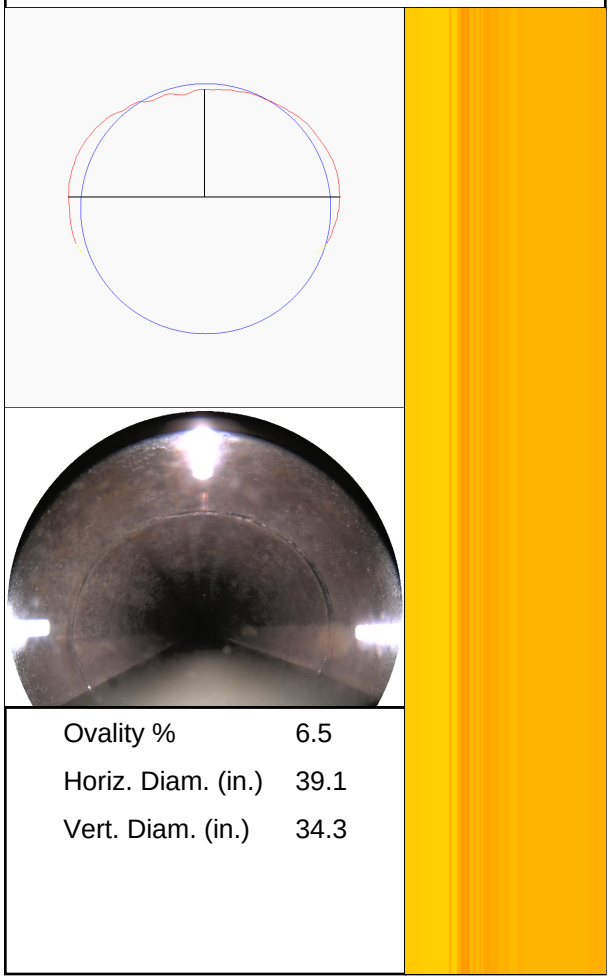


Anytown, USA
Inspected April 16, 2019

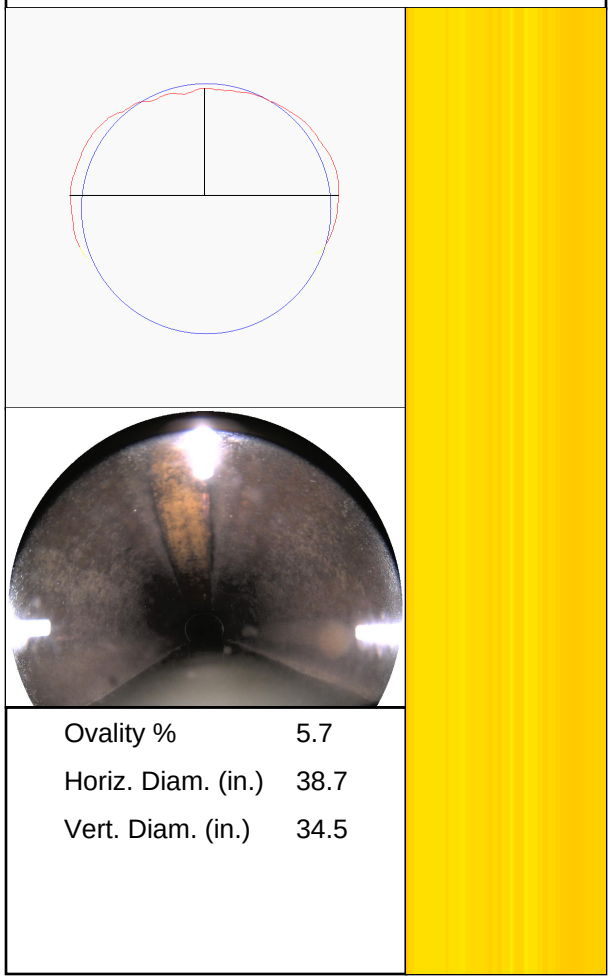
SMH-17759
SMH-17758

Distributed Cross-Sections

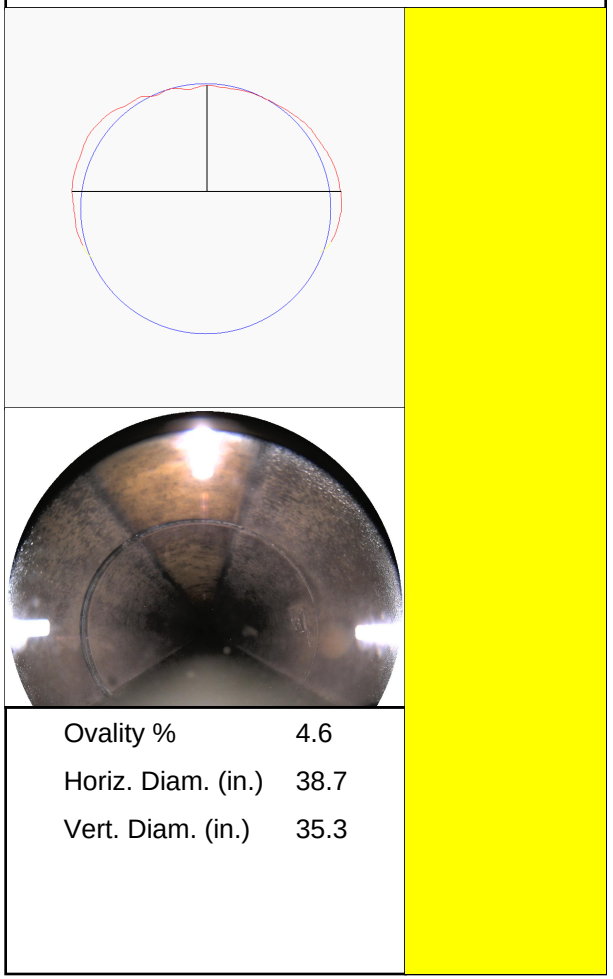
410 Regular Interval	
Ovality %	6.5
Horiz. Diam. (in.)	39.1
Vert. Diam. (in.)	34.3



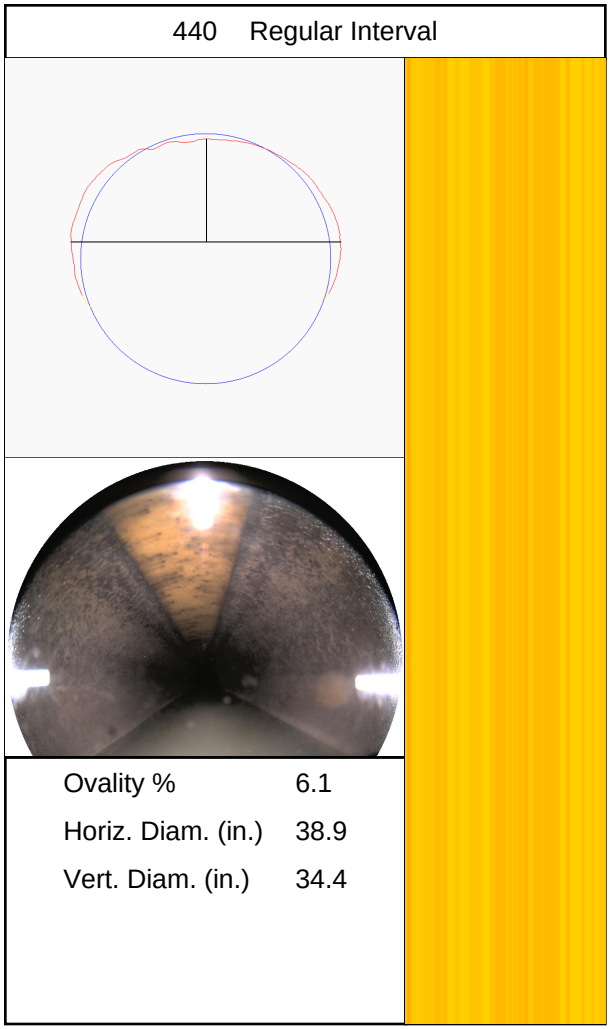
420 Regular Interval	
Ovality %	5.7
Horiz. Diam. (in.)	38.7
Vert. Diam. (in.)	34.5

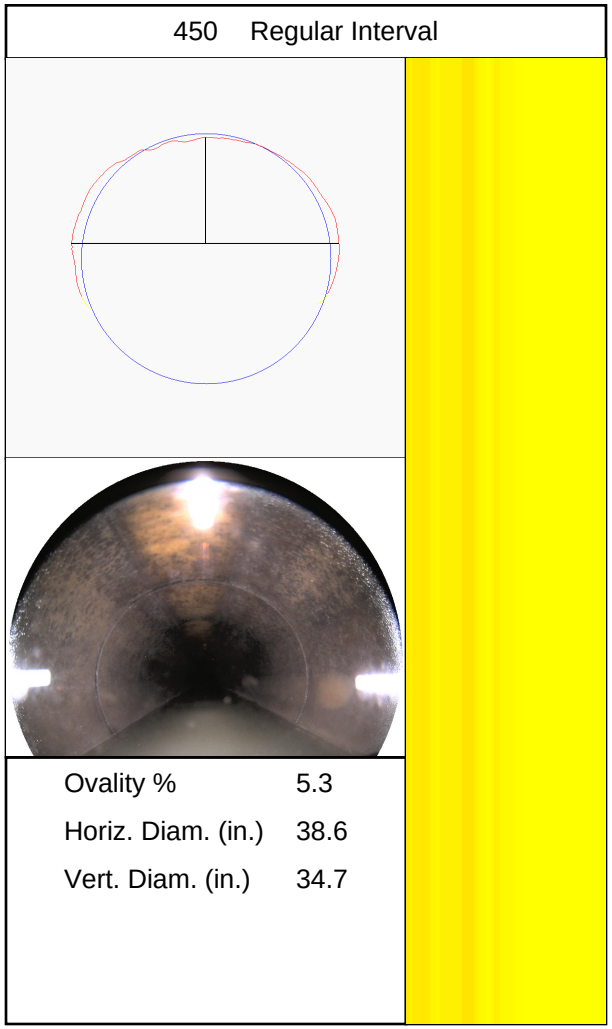


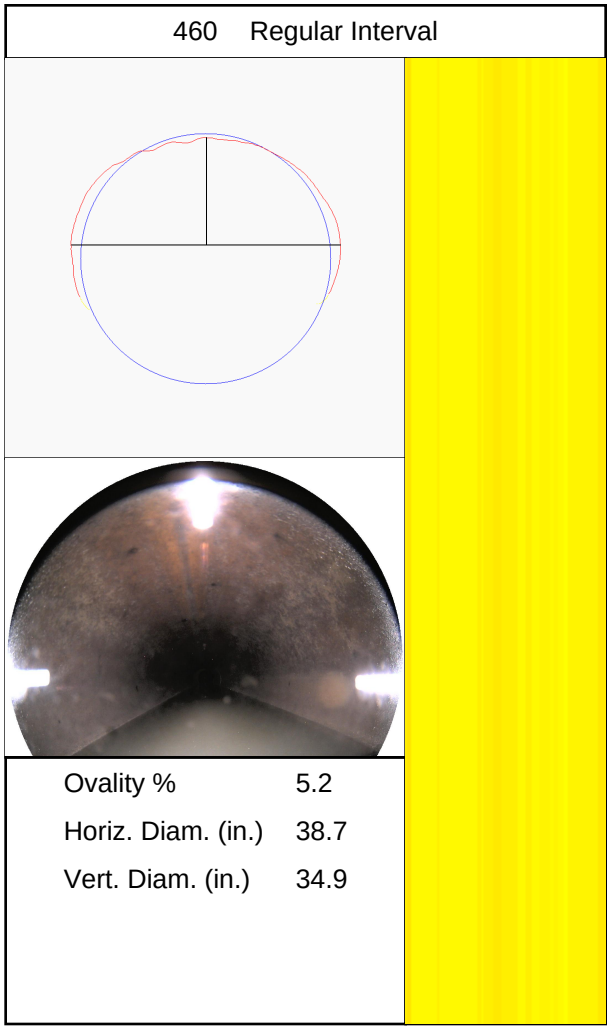
430 Regular Interval	
Ovality %	4.6
Horiz. Diam. (in.)	38.7
Vert. Diam. (in.)	35.3



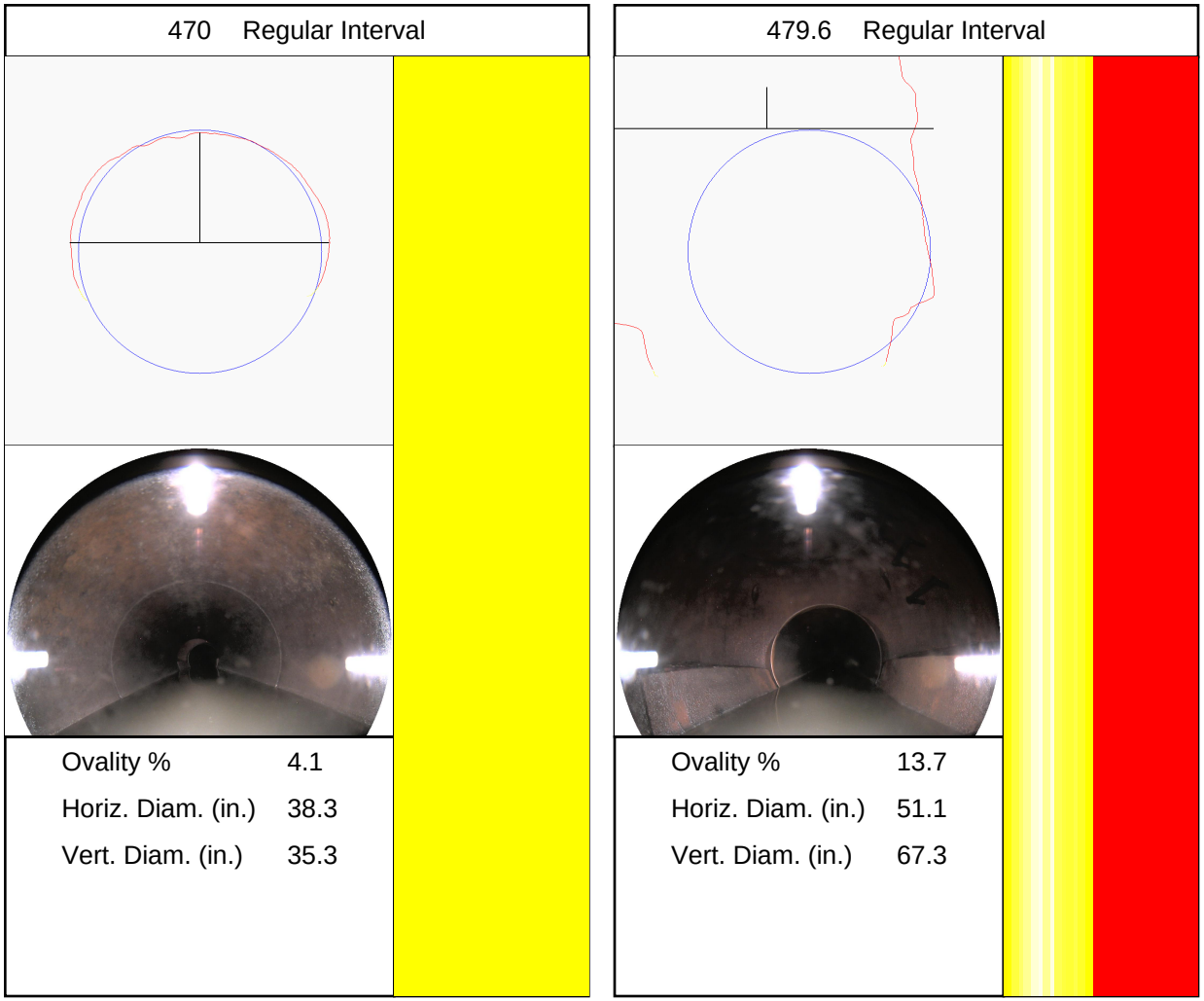
Distributed Cross-Sections







Distributed Cross-Sections



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It is the sole responsibility of the client in regards to the following: Interpretation of the MSI data results provided within this report; evaluation of the pipeline segment; any remedial/rehabilitation procedures or processes; post MSI inspection decisions and processes such as additional investigations and/or subsequent cleaning operations.

Some information provided and utilized within this report for this specific pipeline segment such as distance and dimensions may incorporate or have been provided by others. Because this information may not always be accurate and complete the project engineer should confirm this information through their own assessments in regards to such information.