Appendix 8 to PISC II Report No. 3

Detailed illustration of the defects present in Plate No. 9

Remark
Sizing of defects has to be performed on the radiographic films
Positives are included for illustration purpose only

Programme for the Inspection of Steel Components
PLATE 9
DEFECT ENVELOPE COORDINATES

DEFECT Nr. 1
DEFECT ENVELOPE DIMENSIONS

\[ X_1 = 449 \text{ mm} \]
\[ Y_1 = 207 \text{ mm} \]
\[ Z_1 = 55 \text{ mm} \]

\[ X_2 = 460 \text{ mm} \]
\[ Y_2 = 281 \text{ mm} \]
\[ Z_2 = 68.5 \text{ mm} \]

\[ \Delta X = 11 \text{ mm} \]
\[ \Delta Y = 74 \text{ mm} \]
\[ \Delta Z = 13.5 \text{ mm} \]
Illustration of Defect Nr. 1

Macrograph at 234 and 232
PLATE 9
DEFECT ENVELOPE COORDINATES

DEFECT Nr. 2
DEFECT ENVELOPE DIMENSIONS

\[ X_1 = 439 \text{ mm} \quad X_2 = 456 \text{ mm} \quad \Delta X = 17 \text{ mm} \]
\[ Y_1 = 2768 \text{ mm} \quad Y_2 = 16 \text{ mm} \quad \Delta Y = 48 \text{ mm} \]
\[ Z_1 = 55 \text{ mm} \quad Z_2 = 65 \text{ mm} \quad \Delta Z = 10 \text{ mm} \]
Illustration of Defect Nr. 2

Macrograph at $Z = 62.5$

Macrograph at $Z = 59.5$
PLATE 9
DEFECT ENVELOPE COORDINATES

$X_1 = 443 \text{ mm}$
$Y_1 = 2553 \text{ mm}$
$Z_1 = 57.5 \text{ mm}$

$X_2 = 448 \text{ mm}$
$Y_2 = 2615 \text{ mm}$
$Z_2 = 65 \text{ mm}$

$\Delta X = 5 \text{ mm}$
$\Delta Y = 62 \text{ mm}$
$\Delta Z = 7.5 \text{ mm}$

CIRCUMFERENTIAL POSITION (Y DEGREES)
PLATE 9
DEFECT ENVELOPE COORDINATES

$X_1 = 432 \text{ mm}$  
$Y_1 = 2307 \text{ mm}$  
$Z_1 = 56 \text{ mm}$  

$X_2 = 456 \text{ mm}$  
$Y_2 = 2379 \text{ mm}$  
$Z_2 = 72 \text{ mm}$  

$\Delta X = 24 \text{ mm}$  
$\Delta Y = 72 \text{ mm}$  
$\Delta Z = 16 \text{ mm}$
Illustration of Defect Nr. 4

$X = 445$

$Y = 2330$

$Z = 50$

SECTION A

Macrograph at $Z = 61$
### Plate 9
DEFECT ENVELOPE COORDINATES

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>$X_1$</td>
<td>$411 \text{ mm}$</td>
<td>$X_2$</td>
<td>$414 \text{ mm}$</td>
</tr>
<tr>
<td>$Y_1$</td>
<td>$2085 \text{ mm}$</td>
<td>$Y_2$</td>
<td>$2115 \text{ mm}$</td>
</tr>
<tr>
<td>$Z_1$</td>
<td>$185 \text{ mm}$</td>
<td>$Z_2$</td>
<td>$197 \text{ mm}$</td>
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</tbody>
</table>

$\Delta X = 3 \text{ mm}$  
$\Delta Y = 30 \text{ mm}$  
$\Delta Z = 12 \text{ mm}$

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### Defect Nr. 5
DEFECT ENVELOPE DIMENSIONS

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![Defect Diagram](image-url)
$X_1 = 458 \text{ mm}$  
$Y_1 = 1900 \text{ mm}$  
$Z_1 = 3 \text{ mm}$

$X_2 = 482 \text{ mm}$  
$Y_2 = 1963 \text{ mm}$  
$Z_2 = 21 \text{ mm}$

$\Delta X = 4 \text{ mm}$  
$\Delta Y = 53 \text{ mm}$  
$\Delta Z = 18 \text{ mm}$
Illustration of Defect Nr. 6

Radiograph Direction Y

$+X = 445 -$

Macrograph at $Y = 1864.5$

$-X = 445 +$

$+Y = 1864 -$

Macrograph at $Z = 15$
$X_1 = 430 \text{ mm}$  
$Y_1 = 1594 \text{ mm}$  
$Z_1 = 51 \text{ mm}$  

$X_2 = 465 \text{ mm}$  
$Y_2 = 1670 \text{ mm}$  
$Z_2 = 80 \text{ mm}$  

$\Delta X = 35 \text{ mm}$  
$\Delta Y = 76 \text{ mm}$  
$\Delta Z = 29 \text{ mm}$
Illustration of Defect Nr. 7

Macrograph at $Z = 64$

Macrograph at $Z = 66$
Illustration of Defect Nr. 7

Macrograph of defect 7 at $Z = 64$

Detail of Macrograph at $Z = 64 \times 40$

Detail of Macrograph at $Z = 64 \times 40$
PLATE 9
DEFECT ENVELOPE COORDINATES

DEFECT Nr. 8
DEFECT ENVELOPE DIMENSIONS

\[ X_1 = 434 \text{ mm} \quad X_2 = 463 \text{ mm} \quad \Delta X = 29 \text{ mm} \]
\[ Y_1 = 1373 \text{ mm} \quad Y_2 = 1443 \text{ mm} \quad \Delta Y = 70 \text{ mm} \]
\[ Z_1 = 53 \text{ mm} \quad Z_2 = 72 \text{ mm} \quad \Delta Z = 19 \text{ mm} \]
PLATE 9
DEFECT ENVELOPE COORDINATES

$X_1 = 429 \text{ mm}$

$Y_1 = 1131 \text{ mm}$

$Z_1 = 52 \text{ mm}$

$X_2 = 467 \text{ mm}$

$Y_2 = 1216 \text{ mm}$

$Z_2 = 86 \text{ mm}$

$\Delta X = 38 \text{ mm}$

$\Delta Y = 85 \text{ mm}$

$\Delta Z = 34 \text{ mm}$

DEFECT Nr. 9
DEFECT ENVELOPE DIMENSIONS
PLATE 9
DEFECT ENVELOPE COORDINATES

\[ X_1 = 429 \text{ mm} \quad X_2 = 468 \text{ mm} \quad \Delta X = 39 \text{ mm} \]
\[ Y_1 = 904 \text{ mm} \quad Y_2 = 968 \text{ mm} \quad \Delta Y = 64 \text{ mm} \]
\[ Z_1 = 53 \text{ mm} \quad Z_2 = 81.5 \text{ mm} \quad \Delta Z = 28.5 \text{ mm} \]
Illustration of Defect Nr. 10

Macrograph at Z = 66

Macrograph at Z = 64
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Value</th>
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<tbody>
<tr>
<td>$X_1$</td>
<td>417 mm</td>
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<tr>
<td>$Y_1$</td>
<td>639 mm</td>
</tr>
<tr>
<td>$Z_1$</td>
<td>146.5 mm</td>
</tr>
<tr>
<td>$X_2$</td>
<td>420 mm</td>
</tr>
<tr>
<td>$Y_2$</td>
<td>677 mm</td>
</tr>
<tr>
<td>$Z_2$</td>
<td>162 mm</td>
</tr>
<tr>
<td>$\Delta X$</td>
<td>3 mm</td>
</tr>
<tr>
<td>$\Delta Y$</td>
<td>38 mm</td>
</tr>
<tr>
<td>$\Delta Z$</td>
<td>15.5 mm</td>
</tr>
</tbody>
</table>

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**Diagram:**

- The diagram shows a plot with measurements in millimeters along the axes.
- The axis labels and units are not specified in the text.
- The data points are marked with numerical identifiers, possibly indicating defect numbers or locations.
- The scale on the axes is not provided, making it difficult to accurately interpret the distances.
PLATE 9
DEFECT ENVELOPE COORDINATES

$X_1 = 455$ mm  
$Y_1 = 450$ mm  
$Z_1 = 4$ mm

$X_2 = 463$ mm  
$Y_2 = 517$ mm  
$Z_2 = 27$ mm

$\Delta X = 8$ mm  
$\Delta Y = 67$ mm  
$\Delta Z = 23$ mm

DEFECT Nr. 12
DEFECT ENVELOPE DIMENSIONS
Illustration of Defect Nr. 12
Illustration of Defect Nr. 12

+ Z = 25 -

Y = 466

+ X = 445 -

+ Y = 466 -
Illustration of Defect Nr. 12

- $X = 445 +$
  Radiograph Direction $Y +$

- $Z = 25$

+ $X = 445 -$
  Radiograph Direction $Y -$

- $X = 445 +$
  Macrograph at $Y = 491$

+ $X = 445 -$

- $X = 445 +$
  Macrograph at $Y = 449$

+ $Y = 466 -$
  Macrograph at $Z = 20$
$X_1 = 456 \text{ mm}$  \hspace{1cm} $X_2 = 457 \text{ mm}$  \hspace{1cm} $\Delta X = 1 \text{ mm}$

$Y_1 = 131 \text{ mm}$  \hspace{1cm} $Y_2 = 135 \text{ mm}$  \hspace{1cm} $\Delta Y = 4 \text{ mm}$

$Z_1 = 63 \text{ mm}$  \hspace{1cm} $Z_2 = 66 \text{ mm}$  \hspace{1cm} $\Delta Z = 3 \text{ mm}$
PLATE 9
DEFECT ENVELOPE COORDINATES

$X_1 = 451 \text{ mm}$  $X_2 = 452 \text{ mm}$  $\Delta X = 1 \text{ mm}$

$Y_1 = 635 \text{ mm}$  $Y_2 = 645 \text{ mm}$  $\Delta Y = 10 \text{ mm}$

$Z_1 = 39 \text{ mm}$  $Z_2 = 45 \text{ mm}$  $\Delta Z = 6 \text{ mm}$

DEFECT NR. 17
DEFECT ENVELOPE DIMENSIONS

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[Diagram showing defect positions and dimensions with coordinates and dimensions listed above.]
Illustration of Defect Nr. 17

Detail of macrograph Section A, x40

Detail of macrograph Section B, x40
PLATE 9
DEFECT ENVELOPE COORDINATES

\[ \begin{align*}
X_1 &= 462 \text{ mm} \\
Y_1 &= 2262 \text{ mm} \\
Z_1 &= 75 \text{ mm}
\end{align*} \]

\[ \begin{align*}
X_2 &= 463.5 \text{ mm} \\
Y_2 &= 2273 \text{ mm} \\
Z_2 &= 78 \text{ mm}
\end{align*} \]

\[ \begin{align*}
\Delta X &= 1.5 \text{ mm} \\
\Delta Y &= 11 \text{ mm} \\
\Delta Z &= 3 \text{ mm}
\end{align*} \]

DEFECT Nr. 18
DEFECT ENVELOPE DIMENSIONS

\[ \text{Diagram showing defect envelope coordinates and dimensions.} \]
PLATE 9
DEFECT ENVELOPE COORDINATES

$X_1 = 438 \text{ mm}$
$Y_1 = 108 \text{ mm}$
$Z_1 = 60 \text{ mm}$

$X_2 = 439 \text{ mm}$
$Y_2 = 115 \text{ mm}$
$Z_2 = 66 \text{ mm}$

$\Delta X = 1 \text{ mm}$
$\Delta Y = 7 \text{ mm}$
$\Delta Z = 6 \text{ mm}$
Illustration of Defect Nr. 19

$+x=445-$

$+y=116.5-$

$-z=60+$

SECTION A
\[ X_1 = 456 \text{ mm} \quad Y_1 = 2554 \text{ mm} \quad Z_1 = 6 \text{ mm} \]
\[ X_2 = 458 \text{ mm} \quad Y_2 = 2559 \text{ mm} \quad Z_2 = 9.5 \text{ mm} \]
\[ \Delta X = 2 \text{ mm} \quad \Delta Y = 5 \text{ mm} \quad \Delta Z = 3.5 \text{ mm} \]
Illustration of Defect Nr. 20

\[ x = 445 \]

\[ y = 2563 \]

\[ z = 0 \]

SECTION A
PLATE 9  
DEFECT ENVELOPE COORDINATES

\[ X_1 = 452 \text{ mm} \]
\[ Y_1 = 2004 \text{ mm} \]
\[ Z_1 = 10 \text{ mm} \]

\[ X_2 = 458 \text{ mm} \]
\[ Y_2 = 2014 \text{ mm} \]
\[ Z_2 = 14 \text{ mm} \]

\[ \Delta X = 6 \text{ mm} \]
\[ \Delta Y = 10 \text{ mm} \]
\[ \Delta Z = 4 \text{ mm} \]

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CIRCUMFERENTIAL POSITION (\( Y \) DEGREES)
**Plate No. 9**

Inner radius cracks in plate No. 9.

<table>
<thead>
<tr>
<th>Defect</th>
<th>Angular position (°)</th>
<th>DX (mm)</th>
<th>DY (mm)</th>
<th>DZ (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>90</td>
<td>94</td>
<td>1.5</td>
<td>112</td>
</tr>
<tr>
<td>2</td>
<td>225</td>
<td>34</td>
<td>1</td>
<td>53</td>
</tr>
<tr>
<td>3</td>
<td>315</td>
<td>33</td>
<td>1</td>
<td>53</td>
</tr>
</tbody>
</table>
Illustration of Defect Nr. 1
Inner radius cracks in plate No. 9.

<table>
<thead>
<tr>
<th>Defect</th>
<th>Angular position (°)</th>
<th>DX (mm)</th>
<th>DY (mm)</th>
<th>DZ (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>90</td>
<td>94</td>
<td>1,5</td>
<td>112</td>
</tr>
<tr>
<td>2</td>
<td>225</td>
<td>34</td>
<td>1</td>
<td>53</td>
</tr>
<tr>
<td>3</td>
<td>315</td>
<td>33</td>
<td>1</td>
<td>53</td>
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Inner radius cracks in plate No. 9.

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<tr>
<th>Defect</th>
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<td>225</td>
<td>34</td>
<td>1</td>
<td>53</td>
</tr>
<tr>
<td>3</td>
<td>315</td>
<td>33</td>
<td>1</td>
<td>53</td>
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</table>
Illustration of Defect Nr. 3

\[ \theta = 315^\circ \]

51
Illustration of Defect Nr. 3