LIQUIDMETAL™
Industrial Solutions

Energy Center

Unit Z

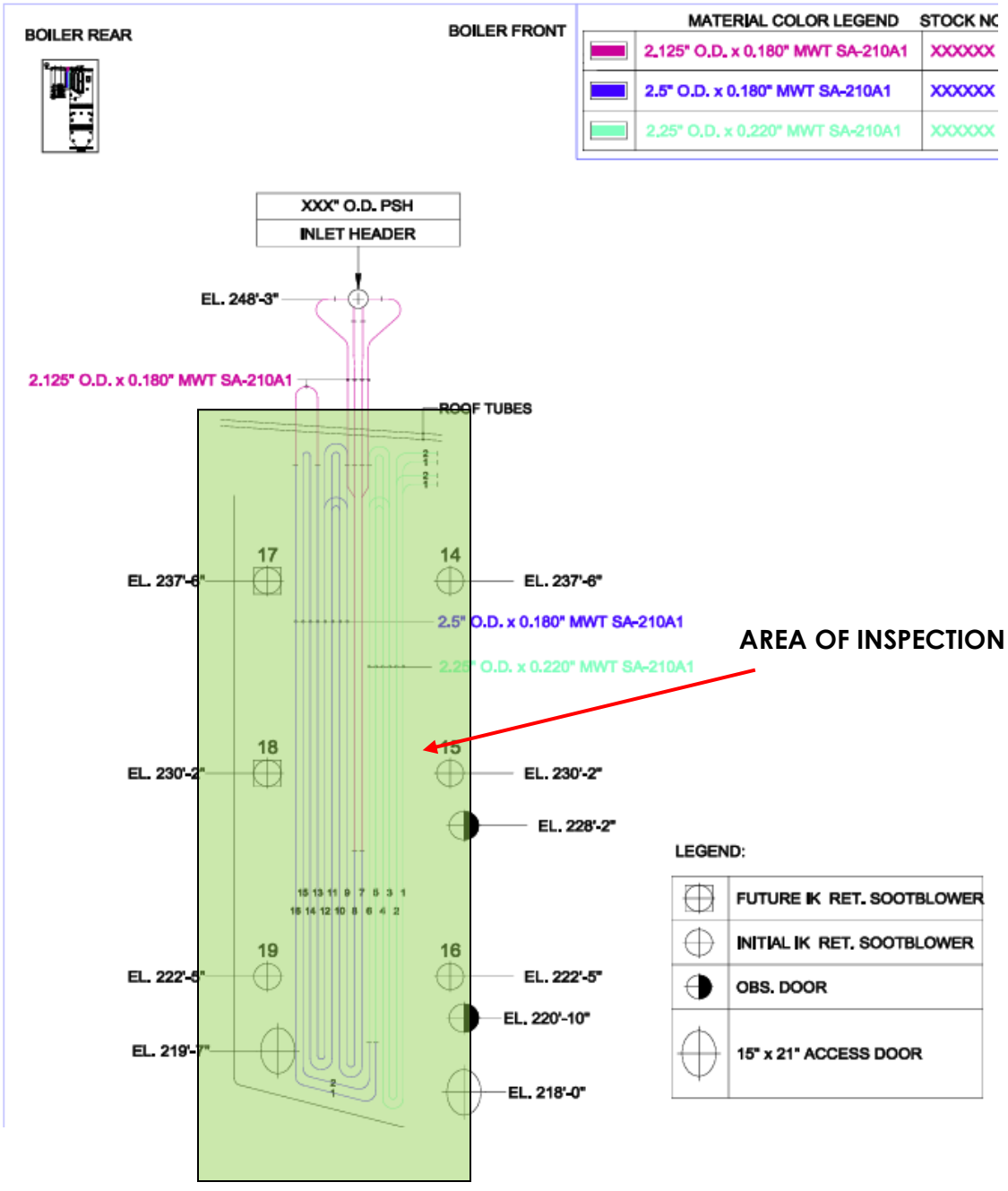
Primary Superheater Inlet Pendants Inspection Report

Spring Outage

Lead Inspector:
Area Inspectors:

Plant Engineer:

The Primary Superheater Inlet Pendants were counted boiler left to right (57 pendants) and tubes were counted from front to rear (16 tubes). In the SB-19 lane the last 3 tubes were shielded. Minor tube damage was noted at the bottom edge of the existing shields.



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Primary Superheater Inlet Pendants (SB-19/REAR)

Priority 1

Item 1

There are (31) straight tubes experiencing moderate to severe sootblower erosion from SB-19 on the pendants listed below and 2 loops were severely eroded with UT's <60% remaining wall thickness.

Pendant	Tube	UT	Pendant	Tube	UT
2	4	0.124"	**45**	4	0.128"
7	6	0.123"	**46**	6	0.130"
10	5	0.127"	**47**	5	0.118"
11	6	0.125"	**48**	5	0.126"
11	7	0.130"	**49**	5	0.114"
13	4	0.124"	**52**	3	0.135"
18	4	0.128"	**52**	4	0.117"
19	7	0.128"	**53**	3	0.120"
23	4	0.135"	**53**	4	0.137"
24	5	0.130"	**53**	5	0.121"
25	4	0.108"	**54**	5	0.133"
25	4	0.140"	**55**	Loop #1-ISB	0.083"
27	4	0.130"	**55**	Loop #2-ISB	0.100"
27	5	0.134"	**55**	3	0.061"
31	5	0.130"	**55**	4	0.086"
32	5	0.087"	**55**	5	0.104"
32	6	0.125"	**56**	3	0.120"
38	5	0.077"	**56**	4	0.125"
39	4	0.124"	**56**	5	0.134"
40	6	0.128"	**57**	3	0.119"
42	4	0.131"	**57**	7	0.136"
43	5	0.131			

NOTE: Shields were previously installed on the last 3 tubes and some of the erosion on tube 3 was located directly under the shield.

Repair Recommendation: Once the alignment bar was removed and (32) areas of severe erosion was centered in the IK-19 lane. Install (30) 5' straight dutchman with location noted in table above.

Action Taken:

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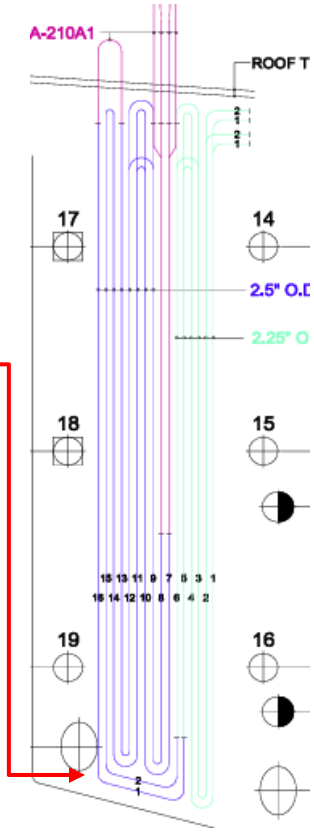
Primary Superheater Inlet Pendants (SB-19/REAR)

Priority 1

Item 2

There are (57) areas of moderate to severe sootblower erosion located on the underside of the rear alignment bar lugs were moderate on pendants 1-20 and severely eroded on pendant 21-57 (tube 16/last tube). This is due to the SB-19 lance channeling under alignment bar.

Note: The alignment bars were removed to gain access allowing additional inspections to be able to obtain a better depth of the SB erosion.



Repair Recommendation: Install (57) 2” x 2” padwelds on the rear of tube 16 (last tube) located underneath the alignment lugs due to IK -19.

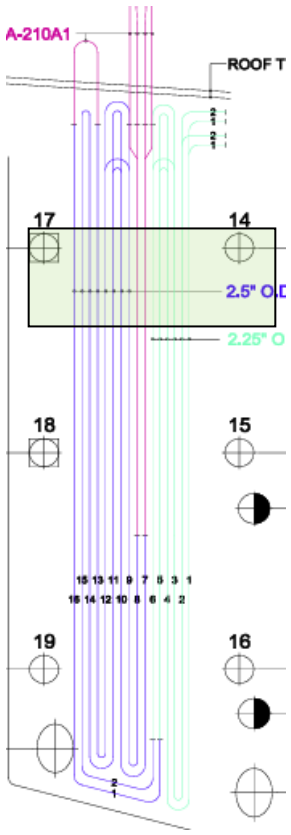
Action Taken:

Primary Superheater Inlet Pendants (SB-14/FRONT)

Priority 1

Item 3

There are (12) areas experiencing moderate to severe sootblower erosion from (SB-14) located on the front side of the primary superheater inlet pendants at the roof (Scaffold level 4/Top). The thickness readings ranged from 0.154" to 0.107" of the original 0.220" MWT.



Pendants	Tb	UT	Repair/Comments
Scaffold Level # 4 (top)			
48	5	Eroded Hole in Shield	Install 36" Shield
49	5	Eroded Hole in Shield	Install 36" Shield
50	4	Eroded Hole in Shield	Install 36" Shield
51	3	0.107"	Install 4' dutchman
52	5	0.115"- 0.130"	Install 4' dutchman
53	3	Eroded Hole in Shield	Install 36" Shield
53	4	0.115"- 0.130"	Install 4' dutchman
56	3	Eroded Hole in Shield	Install 36" Shield
Scaffold Level # 2/3			
3	3	N/A	Install 4' dutchman
3	7	N/A	Install 4' dutchman
55	5	N/A	Install 4' dutchman
55	6	N/A	Install 4' dutchman

Tube Material: 2.25" O.D. x 0.220" MWT SA-210 A1

Repair Recommendation: Install (7) 4' dutchmen on the pendants listed in the table above. Install (5) 36" straight shield on the rear of tubes (3, 4, or 5) due to IK -14.

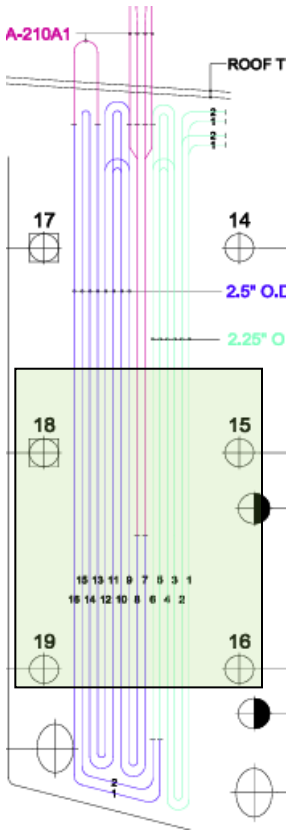
Action Taken:

Primary Superheater Inlet Pendants (SB-15 & SB-16 / FRONT)

Priority 1

Item 4

There are (5) areas / tubes experiencing moderate to severe sootblower erosion from (SB-15 & SB-16) located on the front side of the primary superheater inlet pendants (Scaffold level 2/3). The thickness readings appear to be <70% with lowest UT reading of 0.140" of the original 0.220" MWT.

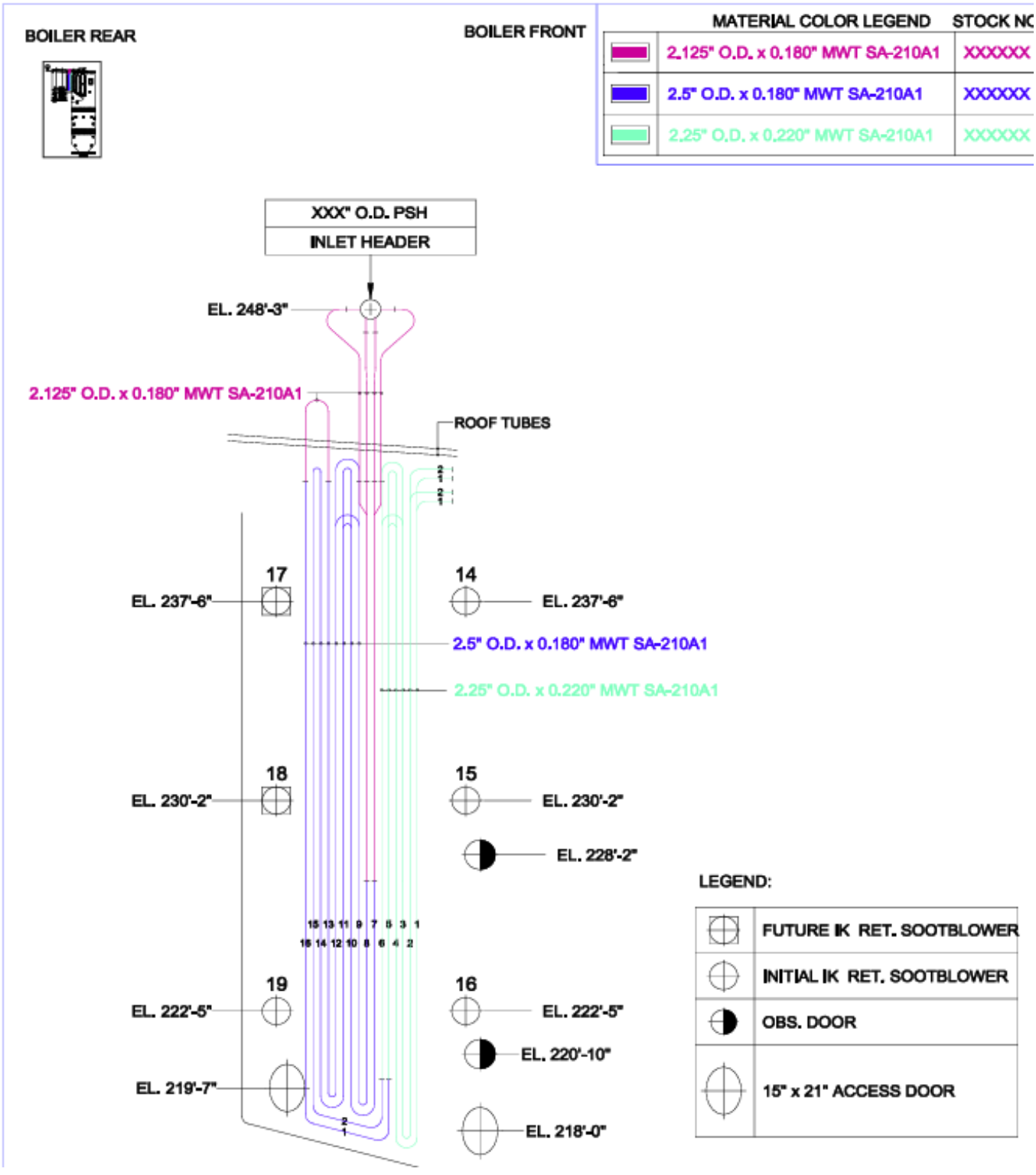


Pendants	Tb	UT	Repair/Comments
Scaffold Level # 2/3			
3-25	7	Moderate / Severe Erosion (0.140")	Spread pendants to gain access.
49	3	0.164"	
51	3	N/A	
52	3-4	N/A	
53	3-5	N/A	

Tube Material: 2.25" O.D. x 0.220" MWT SA-210 A1

Repair Recommendation: Once the racked pendants are let loose call for a re-inspected.

Action Taken:


BOILER REAR
BOILER FRONT
MATERIAL COLOR LEGEND
STOCK NO
2.125" O.D. x 0.180" MWT SA-210A1
XXXXXX
2.5" O.D. x 0.180" MWT SA-210A1
XXXXXX
2.25" O.D. x 0.220" MWT SA-210A1
XXXXXX
XXX" O.D. PSH
INLET HEADER
EL. 248'-3"
2.125" O.D. x 0.180" MWT SA-210A1
ROOF TUBES
17
EL. 237'-6"
14
EL. 237'-6"
2.5" O.D. x 0.180" MWT SA-210A1
2.25" O.D. x 0.220" MWT SA-210A1
18
EL. 230'-2"
15
EL. 230'-2"
EL. 228'-2"
19
EL. 222'-5"
16
EL. 222'-5"
EL. 220'-10"
EL. 219'-7"
EL. 218'-0"
LEGEND:
FUTURE IK RET. SOOTBLOWER
INITIAL IK RET. SOOTBLOWER
OBS. DOOR
15" x 21" ACCESS DOOR

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