



INSPECTION REPORT

To:	xxxxxxx	Attn:	xxxxxxx
From:	Troika Inspection Service Co., Ltd	Report Date:	xxxxxxx

Project No.:	: xxxxxxxx
Vendor Name	: xxxxxxxx
Factory Name	: xxxxxxxx
Factory Address	: xxxxxxxx
Order No. / PO No.	: xxxxxxxx
Product description:	: pipe
Inspection Date:	: xxxxxxxx

1.0 Scope of Inspection:

(Brief description of details of inspections, tests etc. carried out/witnessed)

Equipment description:	SA 213 TP304/304L Seamless tube	
I.T.P. line number	Inspection Activity	Results
xxxxxxx	Visual inspection / witness point	<input checked="" type="checkbox"/> Accepted without deviation <input type="checkbox"/> Accepted with deviation <input type="checkbox"/> Reject
xxxxxxx	Dimensional inspection / witness point	<input checked="" type="checkbox"/> Accepted without deviation <input type="checkbox"/> Accepted with deviation <input type="checkbox"/> Reject
xxxxxxx	Hydro test / witness point	<input checked="" type="checkbox"/> Accepted without deviation <input type="checkbox"/> Accepted with deviation <input type="checkbox"/> Reject
xxxxxxx	NDT test / Witness point	<input checked="" type="checkbox"/> Accepted without deviation <input type="checkbox"/> Accepted with deviation <input type="checkbox"/> Reject

2.0 Reason for visit

The purpose of this visit is to carry out the Eddy current test, mechanical test, PMI check and visual and dimension inspection for 6 items of seamless pipe listed in PO XXXX according to purchaser order and specification.

3.0 Documentation used

DOCUMENT NUMBER	REV. No.	TITLE	Approval Status
XXXXXXXXX	X	QCP, Plan	By purchaser
XXXXXXXXX	X	Purchase Order	By purchaser
ASME SA 213/A 213M	X	Specification for seamless ferritic and austenitic alloy-steel boiler super-heater, and heat-exchanger tubes	By purchaser

4.0 Details of inspection performed

4.1 Visual Inspection:

The inspector checked the status of the order in the shop listed as below:



4.1.1 Quantity Inspection:

All 490 pcs of seamless tubes are packed in 6 wooden box with certificate of fumigation; details of packing list as below:

Case No.	size	quantity	Total quantity
1	31.75*2.11*11500 mm	85 pcs	85 pcs
2	31.75*2.11*9700 mm	59 pcs	84 pcs
	31.75*2.11*10680 mm	25 pcs	
3	31.75*2.11*10680 mm	84 pcs	84 pcs
4	31.75*2.11*9700 mm	1 pc	72 pcs
	31.75*2.11*10680 mm	11 pcs	
	31.75*2.11*10020 mm	60 pcs	
5	31.75*2.11*11500 mm	35 pcs	85 pcs
	31.75*2.11*11000 mm	50 pcs	
6	31.75*2.11*11500 mm	10 pcs	80 pcs
	31.75*2.11*11000 mm	70 pcs	

Remark: The inspector randomly selected wooden box 2 to verify the quantity and size in the box; They were accordance with it listed in the packing list;

4.1.2 Packing:

The tubes barely stowed and wrapped with plastic film then put into the wooden box with certificate of fumigation and sealed;

4.1.3 Marking:

a) Marking on the wooden box :

On the wooden box they marked with international transport mark; the mark of fumigation; and seller will stick the shipping mark on the wooden box,

The shipping mark: CUSTOMER: XXX
ORDER NO: XXXXXX
MATERIAL : TP304/304L
SIZE:
QTY: PCS
CASE NO.: #
27HZD1103072

b) The mark on the tube:

Supplier's logo ASME SA213 TP304/304L 31.75 X 2.11 (M.W) X Length mm Heat No. Bath No. SMLS CD LINDE P.O. No. XXXXXX

Remark: as we reported before the manufacturer painted the marking on the tube instead of the method mentioned in the document XXXX rev.1 item A2 the marking method shall be electrochem. Etching or engraving with vibrograph or laser marking or with holid/ chloride free pain.

4.1.4 Visual quality inspection

During inspection tubes were visually checked by the inspector; Visual inspection items were following:

- a. No oil and obvious discoloration on pipe surface;
- b. No harmful defects on pipe surface, for example: crack, deep nick etc;



- c. No obvious burrs on end face;
- d. The end face was cut neatly;
- e. The pipe was straight by visual checking.

During inspection manufacturer promised to pickle 10 pcs again for they were obviously dirty on the surface;

4.1.5 Documents review:

- a) Heat treatment record

The heat treatment records were supplied by manufacturer; total 515 pcs of tubes were heat treated and there are total 9 lot number; heat temperature: 1065°C ~1077°C; heat treatment time: 16 minutes (hold time is around 10 minutes); then rapid cooled by water; details refer to attached heat treatment report;

- b) Reviewed the dimension record

The inspector reviewed the dimension inspection record and they recorded heat no , heat treatment number, checked quantity, outside diameter, thickness, length, acceptable quantity, from the record we found total 490 pcs were checked by the manufacturer; details refer to attached size report;

- c) Reviewed the hydrostatic test record

The inspector reviewed the hydrostatic test record; total 544 pcs were tested and all of them were acceptable; the test medium is water; test press 7 Mpa, test time > 5 s; details refer to attached hydrostatic test record;

- d) Reviewed Eddy current test record

The inspector reviewed the eddy current test record; total 538 pcs were tested and all of them were acceptable; the type of apparatus is ECT-308E and it is certificated by shanghai institute of measurement and testing technology on Aug. 24,2010; the operator: XXX qualified level I for ET and Assessor: XXX qualified level II for ET details refer to attached ET test record;

- e) Review chemical composition test report

The inspector reviewed the chemical composition test report: Details refer to attached Chemical composition test report;

Grade	TP304/304L	Heat number	YX1101622	Heat treatment No.	ZA1102078	Product Std.	ASME SA213	
C ≤0.035 %	Mn ≤2.00%	Si ≤1.00%	P ≤0.045%	S ≤0.030%	Ni 8.0~12.0%	Cr 18.0~20.0%	Mo	N
0.021	0.69	0.36	0.037	0.004	8.08	18.57	0.14	0.057

- f) Review mechanical test report

The inspector reviewed the mechanical test report and found there are total 9 test report; The manufacturer tested the samples per heat treatment no. And they tested the tensile test, drift expanding test, flattening test, hardness test, intergranular corrosion and metallographic test; the test result is acceptable, also three samples were done the impact test (-196°C); details referer to attached mechanical test report;

4.2 Dimension check

The inspector randomly selected 25 pcs from the finished 490 pcs tubes to check the OD, WT, Ovality at both ends+middle and Length, found they were within tolerance except the red one.

Size	Standard dimension	Actual dimension (mm)								
		31.68	31.70	31.69	31.71	31.68	31.70	31.71	31.70	
31.75*2.11*11500	OD 31.75±0.15mm	31.69	31.67	31.68	31.70	31.68	31.66	31.68	31.70	
		31.68	31.67	31.70	31.68	31.65	31.68	31.68	31.70	
		31.69	31.68	31.68	31.70	31.70	31.68	31.70	31.68	
		31.68	31.70	31.69	31.69					



	WT 2.11 (-0,+0.422)	2.26	2.35	2.32	2.26	2.28	2.25	2.30	2.28	2.30
		2.30	2.29	2.29	2.26	2.25	2.28	2.30	2.28	2.30
		2.23	2.32	2.30	2.34	2.33	2.30	2.31	2.29	2.28
		2.28	2.28	2.27	2.27	2.32	2.28	2.30	2.27	2.27
	Length 11500 (-0,+3)	11503	11502	11503	11503	11503	11503			
	Ovality ≤ 2%	0.06%	0.06%	0.06%	0.03%	0.06%	0.06%	0.06%	0.06%	0.03%
		0.06%	0.09%	0.06%	0.03%	0.03%	0.06%	0.06%	0.06%	0.00%
31.75*2.11*9700	OD 31.75±0.15mm	31.73	31.70	31.69	31.70	31.71	31.71	31.72	31.70	
		31.71	31.70	31.69	31.71	31.70	31.69	31.69	31.70	
		31.70	31.69							
	WT 2.11 (-0,+0.422)	2.28	2.29	2.28	2.26	2.28	2.30	2.29	2.27	2.29
		2.25	2.26	2.26	2.28	2.30	2.28	2.31	2.30	2.28
	Length 9700 (-0,+3)	9703	9703	9703						
	ovality ≤ 2%	0.09%	0.03%	0.0%	0.06%	0.03%	0.06%	0.03%	0.03%	0.03%
31.75*2.11*10680	OD 31.75±0.15mm	31.70	31.72	31.70	31.69	31.71	31.71	31.65	31.70	
		31.73	31.72	31.70	31.71	31.68	31.68	31.71	31.69	
		31.66	31.68	31.70	31.68	31.65	31.70	31.70	31.69	
		31.68	31.70	31.71	31.72	31.70	31.71	31.72	31.72	
		31.72	31.68	31.68	31.70					
	WT 2.11 (-0,+0.422)	2.27	2.26	2.28	2.27	2.30	2.32	2.34	2.24	2.32
		2.22	2.34	2.28	2.39	2.37	2.36	2.29	2.30	2.31
		2.31	2.28	2.26	2.27	2.32	2.33	2.31	2.34	2.29
		2.25	2.25	2.27	2.30	2.28	2.27	2.28	2.29	2.26
	Length 10680 (-0,+3)	10683	10682	10683	10683	10682	10682			
	ovality ≤ 2%	0.06%	0.03%	0.0%	0.16%	0.03%	0.03%	0.0%	0.03%	0.06%
		0.06%	0.16%	0.03%	0.06%	0.03%	0.03%	0.0%	0.13%	0.06%
31.75*2.11*10020	OD 31.75±0.15mm	31.68	31.70	31.68	31.65	31.70	31.71	31.70	31.71	
		31.68	31.68	31.68	31.70	31.67	31.69	31.69	31.70	
		31.70	31.70							
	WT 2.11 (-0,+0.422)	2.27	2.25	2.25	2.31	2.32	2.32	2.25	2.21	2.23
		2.20	2.21	2.20	2.21	2.22	2.25	2.18	2.20	2.21
	Length 10020 (-0,+3)	10024	10022	10023						
	Ovality ≤ 2%	0.06%	0.09%	0.03%	0.03%	0.0%	0.06%	0.06%	0.03%	0.0%
31.75*2.11*11000	OD 31.75±0.15mm	31.69	31.71	31.68	31.72	31.71	31.68	31.68	31.70	
		31.68	31.69	31.76	31.68	31.75	31.71	31.66	31.71	
		31.73	31.73	31.71	31.72	31.63	31.62	31.71	31.72	
		31.69	31.78	31.70	31.70	31.74	31.69	31.66	31.66	
		31.71	31.74	31.68	31.73					
	WT 2.11 (-0,+0.422)	2.31	2.37	2.26	2.31	2.31	2.29	2.21	2.28	2.36
		2.23	2.26	2.19	2.28	2.31	2.32	2.25	2.35	2.22
		2.24	2.31	2.36	2.19	2.26	2.24	2.19	2.26	2.21
		2.25	2.32	2.34	2.23	2.30	2.24	2.28	2.25	2.23
	Length 11000 (-0,+3)	11003	11003	11003	11003	11003	11002			
	Ovality ≤ 2%	0.06%	0.12%	0.09%	0.06%	0.03%	0.25%	0.12%	0.15%	0.00%



		0.03%	0.03%	0.03%	0.27%	0.00%	0.15%	0.00%	0.09%	0.15%
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Remark: 1. the inspector checked the OD in cross section;
 2. the inspector checked the WT at three point per end;
 3. the inspector checked the straighten by visual inspection;

4.3 Witnessed the Eddy current test

During this visit the inspector randomly selected 25 pcs of tubes and witnessed the Eddy current test; the test result was acceptable; the type of apparatus is ECT-308E and it is certificated by shanghai institute of measurement and testing technology on Aug. 24,2010; the operator:XXX qualified level I for ET;

4.4 Witness the mechanical test

During visit the inspector witnessed one sample (heat treatment no. ZA1102078) for mechanical test (tensile test, drift expanding test, hardness test, flattening test); the test result is acceptable; details refer to attached mechanical test report;

4.5 PMI check

The inspector randomly selected 9 pcs for PMI check, the result listed as below:

Chemical composition (Wt %)

	Cr	Mn	Ni	Fe	Cu	W	Nb	Mo
	18.0-20.0	≤ 2.0	8.0-12.0	Just reported				
1	18.80	0.59	8.30	70.87	0.62	0.00	0.00	0.12
2	18.42	0.96	7.97	71.07	0.63	0.03	0.00	0.17
3	18.09	0.64	7.93	71.95	0.68	0.06	0.00	0.15
4	18.06	1.04	7.45	72.00	0.67	0.08	0.00	0.14
5	18.07	0.64	8.44	71.25	0.36	0.00	0.00	0.16
6	18.15	0.81	8.30	71.53	0.42	0.03	0.00	0.16
7	18.27	1.21	8.26	70.57	0.46	0.00	0.00	0.17
8	18.57	0.56	7.64	71.34	0.96	0.10	0.00	0.13
9	18.89	0.50	8.54	70.80	0.51	0.01	0.00	0.14

5.0. Result of Inspection

Accepted without deviation Accepted with deviation Reject

6.0. Quality Records reviewed and attached:

-
- Chemical composition test report
- Heat treatment record
- Dimension record
- Hydrostatic test record
- Mechanical test report
- Eddy current test record
- Mill test certificate unstamped and signed



- Packing list

7.0 Progress Status

All 490 pieces of seamless pipes were finished packing and they were ready for delivery.

8.0 Next Forecasted Inspection Date:

TBA;

9.0 Attendees

- Mr. XXX supplier inspector
- Mr. XXX TIS inspector on behalf of XXX

Any deviation & PUNCH attached : Yes <input type="checkbox"/> No, <input checked="" type="checkbox"/>	Punch No.: NA
IRN attached : Yes <input checked="" type="checkbox"/> No, <input type="checkbox"/>	IRN No.: XXXX

10. Photo Report



The packed tubes;

The inner packing condition;

<p>ET test</p> 	<p>ET test result;</p> 
<p>PMI test;</p> 	<p>PMI result;</p> 
<p>Mechanical test;</p> 	<p>Mechanical test</p> 
<p>Dirty tubes;</p>	<p>Wooden box with certificate of fumigation;</p>



<p>Prepared by : xxxxx</p> <p>Signed: xxxxxx</p> <p>Date: xxxxx</p>	<p>Reviewed by : xxxxxxx</p>
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TIS Sample Report