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Inspection Order No. : IN-TJ-5301-10086-02
Boss No. : 1039943
Page No. : 1 of 13
Date of issue: Sep.13, 2014

INDEPENDENT QUALITY CONTROL REPORT

- **Description and Quantity of Commodity:** ERW steel pipes/ 3205pcs/for other details see the attached
- **Name & Address Of Buyer:** [REDACTED]
- **Name & Address Of Seller:** Changsha Hunan Steel Co.,LTD.
Hunan Steel Industrial Zone, Furong
Special District, Changsha City, Hunan, China
- **Inspection Date & Place:** Aug.25~27, 2014 in Tianjin City, China
Sep.9~10, 2014 in Cangzhou City, China
- **L/C No.:** 1451001400450 Date: 140719
- **P/O No.:** HNSCEWX14040DSL Date: June 23rd, 2014
- **Nature Of Inspection:**
 1. Quantity check by pieces;
 2. Visual quality inspection randomly;
 3. Packing and marking check randomly;
 4. Dimension check randomly;
 5. Witness lab test at mill.
 6. Thickness check of coating by digital indicator provided by mill,
 7. Documents Review of MTC, and coating record provide by mill.
- **Inspector:** Steven Hui & Marshall Yang

This is to report that we, SGS-CSTC (Tianjin) Co., Ltd. on Aug.25~27 and Sep.9~10, 2014 at the request of Changsha Hunan Steel Co.,LTD. conducted the following inspection:

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1st visit during Aug.25~27, 2014:

Inspection Finding:

1. Quantity check by piece:

During the inspection, quantity check by piece had been performed, the detail was as following:

Serial no.	Size (mm)	Steel grade	Quantity (pcs)
1	219.1×6.4×11900	GR.B	480
2	219.1×6.4×11900	GR. X42	18
3	114.3×3.6×11900	GR.B	1445
4	114.3×6.0×11900	GR.B	9
5	114.3×4.0×11900	GR. X42	1207
6	114.3×4.8×11900	GR. X42	46

2. Visual quality inspection randomly: (sample size: ANSI/ASQ Z1.4-2008, L-II, 316pcs totally)

During the inspection, visual quality check had been performed randomly and found all the pipes were no painting. The longitudinal seam of each pipe was continuous and smooth. The both ends of pipes were bevelled. No other defect (such as crack, pitting) was found on the surface of the pipes except slight rust on the internal surface of sampled pipes.

3. Packing and marking check randomly: (sample size: ANSI/ASQ Z1.4-2008, L-II, 316pcs totally)

3.1 Packing check:

During the inspection, packing check had been performed and found all the pipes were nude packing.

Note: supplier declared the protective capos for both ends will be fixed before shipment.

3.2 Marking check:

During the inspection, the following marking was painted on the outside surface of pipes by white paint:

05912(Pipe No.) 02(Heat No.) B (work shift)

One paper bar code was pasted on the inside surface of one end of each pipe:

G100805783 @02

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4. Dimension check randomly, including outer diameter, wall thickness, length, bevel degree and straightness of root face: (sample size: ANSI/ ASQ Z1.4-2008, s-4, 87pcs totally)

Total 87pcs of pipes were performed dimension check and the actual findings were as follows:

(Unit: mm)

Size		Outer diameter	Wall thickness	Length	Straightness of root face	Bevel degree(°)
219.1×6.4 GR.B	Required value	219.1±0.5%	6.4±10%	11900+10/-50	Max1.6	30+5/0
	Actual value	218.82~220.18	6.23~6.48	11887~ 11894	0.5~1.5	30~34
219.1×6.4 GR.X42	Required value	219.1±0.5%	6.4±10%	11900+10/-50	Max1.6	30+5/0
	Actual value	219.20~219.72	6.42~6.46	11886~11897	1.0~1.5	31~32
114.3×3.6 GR.B	Required value	114.3+1.6/-0.4	3.6±0.5	11900+10/-50	Max1.6	30+5/0
	Actual value	114.20~114.82	3.27~3.57	11883 ~11903	0~1.0	30~35
114.3×6 GR.B	Required value	114.3+1.6/-0.4	6.0±10%	11900+10/-50	Max1.6	30+5/0
	Actual value	114.72~114.90	6.00~6.09	11885~11890	0~0.5	31~33
114.3×4 GR.X42	Required value	114.3+1.6/-0.4	4.0±0.5	11900+10/-50	Max1.6	30+5/0
	Actual value	114.20~114.88	3.83~3.92	11884~11902	0~1.0	31~35
114.3×4.8 GR.X42	Required value	114.3+1.6/-0.4	4.8±0.5	11900+10/-50	Max1.6	30+5/0
	Actual value	114.10~114.70	4.55~4.75	11882~ 11893	0~1.0	31~33

Result: The required values of outer diameter, wall thickness, straightness of root face and bevel degree were specified in standard API 5L: 2009; the length required value according with contract, and the actual values were found to meet required values.

5. Witness lab test at mill's lab:

The two samples for 219.1×6.4 GR.B and 114.3×4.0 GR.X42 were offered by manufacturer, the chemical composition analysis and mechanical properties test were performed as per API 5L: 2009 and witnessed by SGS inspector, the detailed was as follows:

5.1 Chemical composition

Unit: %

	219.1×6.4 GR.B		114.3×4.0 GR.X42	
	Required value	Actual value	Required value	Actual value
C	≤0.24	0.173,0.180	≤0.24	0.087,0.089
Si	≤0.40	0.186,0.195	≤0.40	0.212,0.219
Mn	≤1.20	0.396,0.403	≤1.20	0.65
P	≤0.025	0.020,0.021	≤0.025	0.014,0.015

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S	≤0.015	0.011	≤0.015	0.0072,0.0075
V	V+Nb≤0.06	<0.0053	≤0.06	0.0026,0.0028
Nb			≤0.05	0.015,0.016
Ti	≤0.04	<0.0010	≤0.04	0.017
Cu	≤0.50	0.0092,0.010	≤0.50	0.0068,0.0075
Ni	≤0.30	0.023,0.024	≤0.30	0.023,0.024
Cr	≤0.30	0.025	≤0.30	0.022
Mo	≤0.15	0.0038,0.0039	≤0.15	0.0040,0.0041
CE II W	≤0.43	0.25,0.26	≤0.43	0.20,0.21

5.2 Mechanical properties

Items	219.1×6.4 GR.B		114.3×4.0 GR.X42		
	Required value	Actual value	Required value	Actual value	
Weld seam	Tensile strength Mpa	≥415	500	N/A	N/A
Base material	Yield strength Mpa	245~450	395	290~495	415
	Tensile strength Mpa	415~760	515	415~760	500
	Elongation %	≥26	32	≥23	31

Result: The required values were specified in API 5L: 2009, the actual values were found to meet the required values.

In accordance with Client's instructions, the Company's involvement has been limited to witnessing/observing a third party's intervention(s) at the third party's laboratory/test house or other facilities and installations used for the intervention(s). The Company's sole responsibility was to be present at the time of the third party's intervention(s) to forward the results, or confirm the occurrence, of the intervention(s). The Company is not responsible for the condition or calibration of apparatus, instruments and measuring devices used, the analysis methods applied the qualifications, actions or omissions of the third party's personnel or the analysis results.

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6. Equipment verification record:

Name	Equipment No.	Model/specification	Calibrated effectively period
Vernier caliper	G14156	0~500mm	2010.06.21~2010.12.20
Micrometer	YL04	0~25mm	2010.06.21~2010.12.20
Steel tape	1*;2*	0~30m	2010.07.04~2011.01.03
Square gauge	0808142	(500×250)mm	2010.07.08~2011.07.07
Weld gauge	CJ-H5	40mm	2010.07.06~2011.07.05
Tensile tester	051	WAW-600C	2009.11.02~2010.11.01
Spectrometer	06000259	SPECTROMAXx	2008.10.13~2010.10.12

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7. Referred photos:



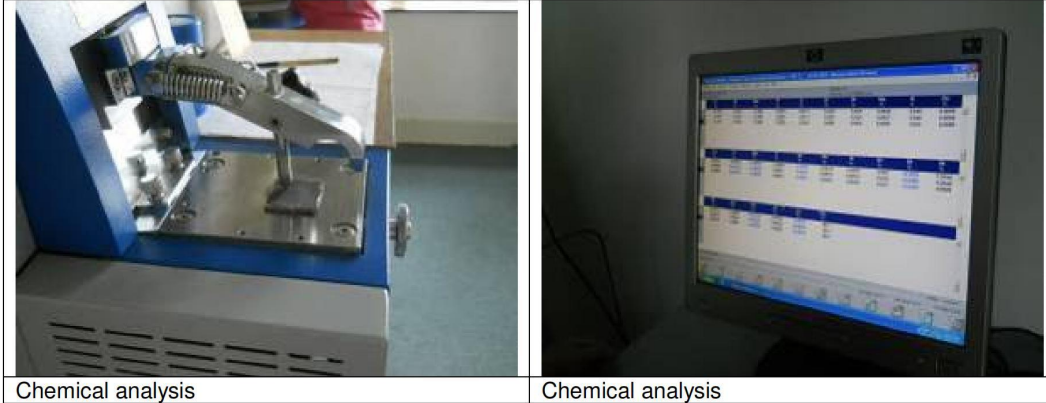
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<p>Dimension check</p>	<p>Dimension check</p>
	
<p>Samples</p>	<p>Samples</p>
	
<p>Tensile test</p>	<p>Tensile test</p>

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Chemical analysis

Chemical analysis

2nd visit on Sep.9~10, 2014:

Inspection Finding:

8. Quantity check by bundle and inner piece tally of master bundle randomly: (sample size: ANIS/ASQ Z1.4-2008, S-4, calculate by bundle)

Serial no.	specification	Steel grade	Quantity (bundles)	Quantity (Pcs)	Inner pieces of master bundles
1	219.1×6.4×11900	GR.B	58	464	8
2	219.1×6.4×11900	GR. X42	2	10	5
3	114.3×3.6×11900	GR.B	96	1437	15
5	114.3×4.0×11900	GR. X42	61	1207	20
6	114.3×4.8×11900	GR. X42	3	46	15

9. Visual quality inspection randomly: (sample size: ANSI/ASQ Z1.4-2008, L-II, 311pcs totally)

During the inspection, the pipes were selected randomly for visual quality check, both ends of pipe were bevelled and protected with plastic caps, root face was found on the bevelled end. All the pipes were found with 3PE coating, no obvious defect of visual quality was found on site.

10. Packing and marking check randomly: (sample size: ANSI/ASQ Z1.4-2008, L-II, 311pcs totally)

10.1 Packing check:

The pipes were packed in bundle.

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10.2 Marking check:

Below marking was painted on the pipes:

<API logo>**API 5L PSL2 GR.B** (or X 42) ***mm (outer diameter) X*** (wall thickness) mm**X11900mm**
 *** (heat no.) *** (pipe no.) **HNSSIEWx10040DSL**

11. Thickness check of coating (sample size: ANIS/ASQ Z1.4-2008, S-4, 84pcs totally)

Size	Inspect quantity	(Unit: mm)	
			3PE Thickness
219.1×6.4 GR.B	13	Required value	Min 2.0
		Actual value	1.9~2.2
219.1×6.4 GR. X42	2	Required value	Min 2.0
		Actual value	2.0~2.1
114.3×3.6 GR.B	32	Required value	Min 1.8
		Actual value	1.7~2.1
114.3×4.0 GR. X42	32	Required value	Min 1.8
		Actual value	1.7~2.1
114.3×4.8 GR. X42	5	Required value	Min 1.8
		Actual value	1.7~2.0

Applied standard: DIN30670-1991

Result: According to specification of DIN30670-1991, along any 1m length of pipe, the coating thickness may be up to 10% less than the minimum required, provided the thinner area does not cover more than 5 cm²; the actual value was found to meet the required value.

12. Documents Review of MTC and coating record provide by mill.

12.1 MTC (certificate No.: XGFF-100908) was provided by manufacture and reviewed by SGS-CSTC inspector, that indicated blasting grade, coating film thickness, bond strength, continuity, impact strength, percentage elongation at failure and indentation hardness was conformed to DIN30670-1991

12.2 Inspection report was provided by manufacturer submitted and reviewed by SGS-CSTC inspector, the test item, including the visual check, thickness of FBE, thickness of adhesive, total thickness, bond strength and continuity, the result was OK.

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13. Equipment verification record:

Outside equipment:

Name	Equipment No.	Model/specification	Calibrated effectively period
coating thickness gauge	6430002	N/A	2014.5.16~2015.3.1

14. Referred photos:



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Marking check

Packing check

THIS REPORT ONLY REFLECTED OUR ACTUAL FINDINGS. THE INSPECTION WAS DONE TO THE BEST OF OUR KNOWLEDGE AND ABILITY AND WITH DUE CARE. THE FINDINGS ARE VALID AS FOR TIME AND PLACE OF INSPECTION.

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CONTINUE OF THE DESCRIPTION OF THE GOODS:

THIS INCLUDES LONGITUDINAL SPECIFICATION HIGH FREQUENCY WELDED STEEL PIPES (HFW) THROUGH 3" TO POINT AND STEEL PIPES UP TO 3" AND 3" AT ALL ACCORDING TO THE API 5L SPECIFICATION, THE LAST 44TH ISSUE OF OCTOBER 2013.

MATERIAL THAT IS DEFINED IN THIS SPECIFICATION IS IN ACCORDANCE WITH API 5L PSL2 MATERIAL SPECIFICATION X-42(N), AND GRADE B (N)

2. PRODUCTION PROCESS**2.1 BARREL**

PIPE SUPPLIED UNDER THIS SPECIFICATION SHOULD BE MADE IN ACCORDANCE WITH ITEMS FROM THE WORKS OF 8TH APL 5L SPECIFICATIONS AND LONGITUDINAL WELDED JOINT FACTOR MUST BE ONE(1).

2.2 MATERIAL

STEEL WILL BE MADE IN ELECTRICAL OVEN OR ONE OF THE PROCESSES IN OXYGEN FURNACE FOR MELTING METAL. STEEL MUST BE WITHOUT OXIDE, MINIMUM TOUGHNESS 30 J AT 0 DEGREES C. STEEL SHOULD MEET THE SPECIFICATION API 5L MATERIAL X-42, AND GRADE B

2.3 DIMENSIONS, WEIGHT AND TOLERANCE TO THE API 5L PART 9:11**2.3.1 THE EXTERNAL DIAMETER AND CURVE**

DEVIATION FROM THE OUTER DIAMETER AND CURVE SHOULD BE LIKE IN TABLE 10, API 5L STANDARD, THE LATEST ISSUE

2.3.2 THE THICKNESS OF PIPE WALL STANDARD API 5L, LATEST EDITION.**2.3.3 THE ENDS OF THE TUBE**

TUBE SHOULD BE DELIVERED TO THE SLOPED AREAS AT AN ANGLE 30 DEGREES WITH THE DEVIATION OF +5 MAXIMUM AND MINIMUM OF 0 DEGREES AND THE SURFACE SHOULD BE SMOOTH AND SATISFYING WITH NO TRACE OF MACHINING IN ORDER TO ALLOW VISUAL CONTROL LAYERS. ROOT PROCESS BURNER WITH AUTOMATIC BURNER HEIGHT ADJUSTMENT UP TO 1.59 MM AND DEVIATION +0.8 MM, -0 MM.

2.3.4 LENGTH

NOMINAL LENGTH OF PIPE WILL BE 11.9 METERS IN ACCORDANCE WITH API SPECIFICATION 5L, TABLE 12, A TUBE UP TO 3" AND 3" CAN BE DELIVERED AND A SHORTER TUBE WITH THE WRITTEN CONSENT OF INVESTOR.

2.3.5 CONNECTIONS

IT WILL NOT BE ACCEPTED TUBES MADE OF TWO OR MORE SHORT PIECES OF PIPE.

2.3.6 WEIGHT

WEIGHT PIPE TO THE POINT THAT THE 9:14 STANDARD API 5L, LATEST EDITION.

3. CHEMICAL PROPERTIES**.1 CHEMICAL COMPOSITION**

CHEMICAL COMPOSITION OF TUBE MATERIAL, X42, GRADE B, ACCORDING TO API 5L TABLE 5, THE LAST EDITION, WHICH WAS GIVEN TO THE CHEMICAL

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COMPOSITION OF PSL2 PIPE WALL THICKNESS LESS THAT 25.0 MM

3.2 CONTROL ANALYSIS

CONTROL ANALYSIS IS PROVIDED FOR EACH BATCH OF STEEL.

4. MECHANICAL PROPERTIES

MECHANICAL PROPERTIES SHOULD CORRESPOND TO THE VALUES GIVEN IN TABLE 7 STANDARD API 5L, LATEST EDITION

5. ELIGIBILITY CRITERIA

FACTORY INSPECTIONS AND TESTING OF PIPES SHOULD BE IN ACCORDANCE WITH PART 9 STANDARD API 5L.

BUYER RESERVES THE RIGHT TO APPOINT A REPRESENTATIVE WHO WILL CONDUCT INSPECTION AND ATTEND ALL STAGES OF PRODUCTION AND TESTING OF STARTING THE DELIVERY OF STEEL PIPE MANUFACTURER TUBE TO PREPARE FOR DELIVERY. PIPE MANUFACTURER SHALL INFORM THE CUSTOMER ABOUT THE BEGINNING OF THE PRODUCTION PIPE AND SUBMIT A PLAN OF PRODUCTION.

6. TAGGING

MARKING SHALL BE ACCORDING TO API 5L STANDARD PART OF THE 11TH

7. ISOLATION

7.1 FACTORY INSULATION

FACTORY INSULATION REFERS TO THE DELIVERY OF PREINSULATED TUBES. THIS SPECIFICATION STIPULATES THAT THE FACTORY INSULATION MADE OF LOW DENSITY POLYETHYLENE LDPE LABELS IN ACCORDANCE WITH DIN 30 670, ISOLATION IS A NORMAL TYPE(N) AND NORMAL THICKNESS(N).

7.2 PROTECTION OF ALL PIPES

PROTECTION OVER THE PIPE FACTORY INSULATED PIPE SHALL BE PERMANENT AND NOT TO INTERFERE WITH THE PROCESS OF WELDING PIPES AND IS EASILY REMOVED WITHOUT CHEMICAL ASSETS BEFORE APPLYING INSULATION ON THE GROUND. AT THE ENDS OF PIPES SHALL BE PLACED PROTECTIVE CAPS THAT DO NOT DAMAGE THE PIPE MATERIAL.

8. TRANSPORT TUBE

TRANSPORT TUBES SHOULD BE IN ACCORDANCE WITH THE 19TH PART API 5L, LATEST EDITION. ALL ADDITIONAL REQUIREMENTS AND INFORMATION REGARDING THE TRANSPORT TUBE ACCORDING TO API RP 5L1 AND API RP 5LW.

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