MID I RAS
A World of NDT Solutions
3985 Teal CT.
Benicia, CA. 94510
Phone 707/ 746-5870, Fax 707/ 746-8664

Page 4 Of 6

Date: 10/31/2011
Job No: 104329
P.O. No:
Traveler:
Service Code:

CERTIFICATE OF INSPECTION

Customer:
Street Address:
City: RICHMOND State: CA Zip:
Location: CUSA
Contact:
Project: F1550

Specification/Code:	Procedure:	Acceptance Criteria:
ASME SECT. V	100-PMI-001	

Additional Information: ANALYZER CHEVRON PMI

Item No.	PART DESCRIPTION OF MATERIAL	MILL CERT No.	Heat No.	COMPONENT ANALYSIS		DETAILED ELEMENT ANALYSIS							RESULTS	
				MATL SPECIFIED	MATL ACTUAL	UNS No.	FERRITE	NI	MO	FE	CR	MN	ACC	REJ
22	1177 Elbow			5CR	5 CR								✓	
	weld			"	"								✓	
	pipe												✓	
23	1176 pipe													
	weld													
	elbow													
24	1171 pipe													
	weld													
	elbow													
25	1165 elbow													
	weld													
	pipe													
26	1164 elbow													
	weld													
	weld					0418-006-087								
27	1163 elbow													
	weld													
	pipe													
28	1162 elbow													
	weld													
	pipe			5CR	5CR									

☑ Attached Documentation:

Technician & Date: 11/1/2011 Level Customer: Observer/Mgt. Review:

This report is not to be construed as a guarantee or warranty of the condition of the materials tested. Contam Inspection Inc. is not liable for any misinterpretation of results or conditions, or for any claims or losses attributable to performance of a test. These services are rendered without any warranty. Any liability is limited to the amount paid for the services at issue. All orders are subject to Contam Inspection Inc.'s Standard Terms and Conditions of Sale, which are available upon request.

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Page 5 Of 6

Date: 10/31/2011
Job No: 104329
P.O. No:
Traveler:
Service Code:

CERTIFICATE OF INSPECTION

Customer:
Location: CUSA
Street Address:
Contact:
City: RICHMOND State: CA Zip:
Project: F 1550

Specification/Code:	Procedure:	Acceptance Criteria:
ASME SECT. V	100-PMI-001	

Additional Information: ANALYZER CHEVRON PMI

Item No.	PART DESCRIPTION OF MATERIAL	MILL CERT No.	Heat No.	COMPONENT ANALYSIS		DETAILED ELEMENT ANALYSIS							RESULTS	
				MATL SPECIFIED	MATL ACTUAL	UNS No.	FERRITE	NI	MO	FE	CR	MN	ACC	REJ
29	1161 Elbow			5CR	5CR								✓	
	weld			"	"								✓	
	pipe												✓	
30	1160 pipe												✓	
	weld												✓	
	elbow												✓	
31	1148 pipe												✓	
	weld												✓	
	pipe												✓	
32	1152 pipe												✓	
	weld												✓	
	elbow												✓	
33	1159 pipe					0418-000-007							✓	
	weld												✓	
	elbow												✓	
34	1158 Elbow												✓	
	weld												✓	
	pipe												✓	
35	1157 weld												✓	
	pipe												✓	
	elbow			5CR	5CR								✓	
													✓	

☑ Attached Documentation:

Technician & Date: 11/1/2011 Level Customer: Observer/Mgt. Review:

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Page 6 Of 6

Date: 10/31/2011
Job No: 110H329
P.O. No:
Traveler:
Service Code:

CERTIFICATE OF INSPECTION

Customer:
Street Address:
City: RICHMOND State: CA Zip:
Location: CUSA
Contact:
Project: F1550

Specification/Code:	Procedure:	Acceptance Criteria:
ASME SECT. V	100-PMI-001	B31.3 Normal

Additional Information: ANALYZER CHEVRON PMI

Item No.	PART DESCRIPTION OF MATERIAL	MILL CERT No.	Heat No.	COMPONENT ANALYSIS		DETAILED ELEMENT ANALYSIS							RESULTS	
				MATL SPECIFIED	MATL ACTUAL	UNS No.	FERRITE	NI	MO	FE	CR	MN	ACC	REJ
36	1156 pipe			5CR	5CR								✓	
	weld			"	"								✓	
	elbow												✓	
37	1155 pipe												✓	
	weld												✓	
	elbow												✓	
38	1154 elbow												✓	
	weld												✓	
	pipe												✓	
39	1153 elbow												✓	
	weld												✓	
	pipe												✓	
40	1151 elbow												✓	
	weld												✓	
	pipe												✓	
41	1150 elbow												✓	
	weld												✓	
	pipe												✓	
42	1149 pipe												✓	
	weld												✓	
	elbow			5CR	5CR								✓	

0418-006-007

☑ Attached Documentation:

Technician & Date: 10/31/2011 Level Customer: Observer/Mgt. Review:

RT RTONARNICK II

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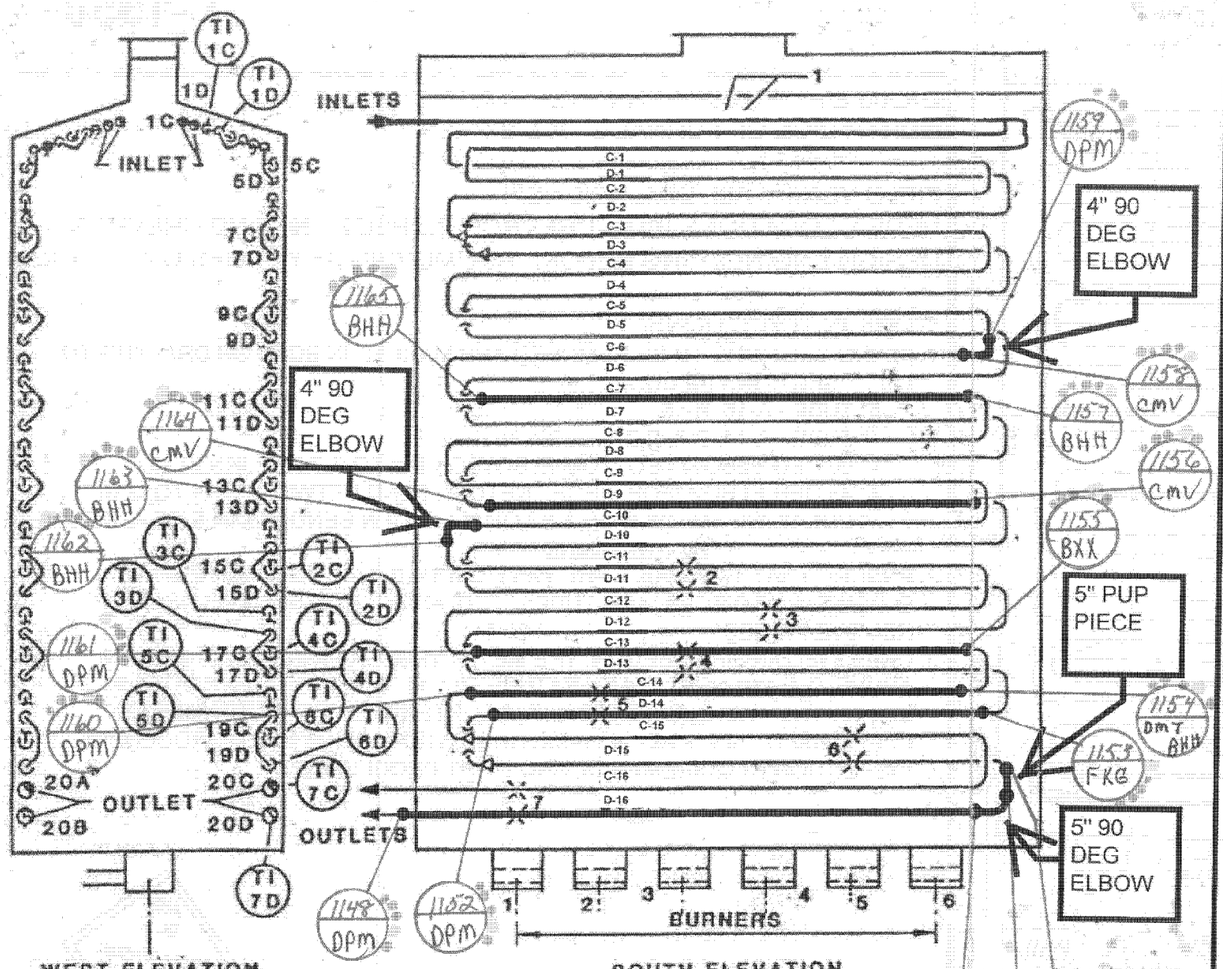
FLUE GAS

F-1550



TI	NORTH	TUBE	TI	SOUTH	TUBE
1A	15417	2A	1C	15431	2C
2A	15418	15A	2C	15432	15C
3A	15419	16A	3C	15433	16C
4A	15420	17A	4C	15434	17C
5A	15421	18A	5C	15435	18C
6A	15422	19A	6C	15436	19C
7A	15423	20A	7C	15437	20C
1B	15424	2B	1D	15438	2D
2B	15425	15B	2D	15439	15D
3B	15426	16B	3D	15440	16D
4B	15427	17B	4D	15441	17D
5B	15428	18B	5D	15442	18D
6B	15429	19B	6D	15443	19D
7B	15430	20B	7D	15444	20D

TI POINTS FOR A&B PASSES ARE LOCATED IN THE SAME POSITION AS SHOWN FOR C & D PASSES

DX200-E1 - F-1550 - FURNACE TUBE REPLACEMENT
SOUTH SIDE OF FURNACE - C & D PASS

FIELD VERIFY ALL DIMENSIONS!!!
VERIFY LOCATIONS WITH CHEVRON INSPECTIONS AND CHEVRON DESIGN ENGINEERING BEFORE REOMOVING ANY TUBES OR FITTINGS.

WORK INSTRUCTIONS

1. PIPING SECTIONS TO BE REMOVED ARE MARKED IN BOLD ON DRAWING TO LEFT. SECTIONS INLCUDE:
   - 5" TUBE - D-16
   - 5" ELBOW - BOTTOM ELBOW ON D-15 TO D-16 RETURN BEND
   - 5" PUP PIECE - MIDDLE OF D-15 TO D-16 RETURN BEND
   - 4" TUBE - C-14, C-13, C-7, D-14, D-9
   - 4" ELBOW - BOTTOM ELBOW ON C-5 TO C-6 RETURN BEND, TOP ELBOW ON C-10 TO C-11 RETURN BEND
2. ENSURE THAT THE TUBES ARE WELL SUPPORTED , CUT AND REMOVE ELBOWS, PUP PIECES, AND TUBES. CUT ALONG EXISTING WELDS TO REMOVE PIECES.
3. ONCE WELDING HAS BEGUN, THE METAL TEMPERATURE MUST REMAIN ABOVE THE PREHEAT TEMPERATURE (450 F). IF TEMPERATURE DROPS BELOW THE PREHEAT TEMPERATURE, INTERMEDIATE PWHT MUST BE PERFORMED. SEE EWO INSTRUCTIONS STEP 4.5 FOR WELD PROCEDURE, INSPECTION REQUIREMENTS, AND PWHT PROCEDURE.

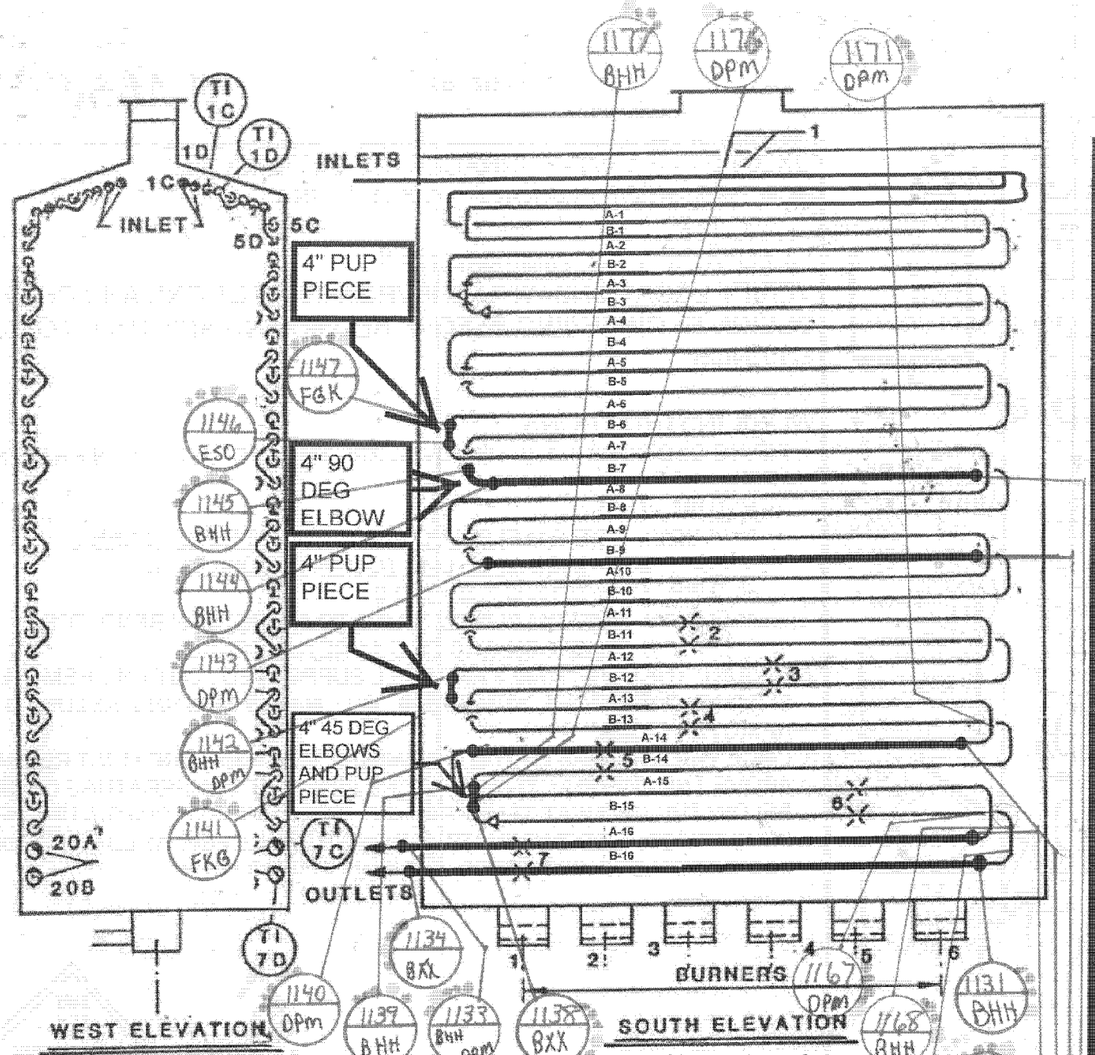
0418-006-007

AWS QC 1
RALPH C. WORSHAM
04070171
CWI

JV WPS
05H04-B31.3

F-1550 VACUUM COLUMN FURNACE
PLANT 15, RLOP HEAVY NEUTRAL HYDROCRACKER

B-251262-02 C&D



TI	NORTH	TUBE	TI	SOUTH	TUBE
1A	15417	2A	1C	15431	2C
2A	15418	15A	2C	15432	15C
3A	15419	16A	3C	15433	16C
4A	15420	17A	4C	15434	17C
5A	15421	18A	5C	15435	18C
6A	15422	19A	6C	15436	19C
7A	15423	20A	7C	15437	20C
1B	15424	2B	1D	15438	2D
2B	15425	15B	2D	15439	15D
3B	15426	16B	3D	15440	16D
4B	15427	17B	4D	15441	17D
5B	15428	18B	5D	15442	18D
6B	15429	19B	6D	15443	19D
7B	15430	20B	7D	15444	20D

TI POINTS FOR A&B PASSES ARE LOCATED IN THE SAME POSITION AS SHOWN FOR C & D PASSES

DX200-E1 - F-1550 - FURNACE TUBE REPLACEMENT
NORTH SIDE OF FURNACE - A & B PASS

FIELD VERIFY ALL DIMENSIONS!!!
VERIFY LOCATIONS WITH CHEVRON INSPECTIONS AND CHEVRON DESIGN ENGINEERING BEFORE REOMOVING ANY TUBES OR FITTINGS.

WORK INSTRUCTIONS

1. PIPING SECTIONS TO BE REMOVED ARE MARKED IN BOLD ON DRAWING TO LEFT. SECTIONS INLCUDE:
   - 5" TUBE - A-16, B-16
   - 4" TUBE - A-14, B-9, B-7
   - 4" 90 DEG ELBOW - BOTTOM ELBOW ON B-6 TO B-7 RETURN BEND
   - 4" 45 DEG ELBOW/PUP PIECE - RETURN BEND BETWEEN B-14 TO B-15
   - 4" PUP PIECE - MIDDLE OF A-6 TO A-7 RETURN BEND, MIDDLE OF A-12 TO A-13 RETURN BEND
2. ENSURE THAT THE TUBES ARE WELL SUPPORTED , CUT AND REMOVE ELBOWS, PUP PIECES, AND TUBES. CUT ALONG EXISTING WELDS TO REMOVE PIECES.
3. ONCE WELDING HAS BEGUN, THE METAL TEMPERATURE MUST REMAIN ABOVE THE PREHEAT TEMPERATURE (450 F). IF TEMPERATURE DROPS BELOW THE PREHEAT TEMPERATURE, INTERMEDIATE PWHT MUST BE PERFORMED. SEE EWO INSTRUCTIONS STEP 4.5 FOR WELD PROCEDURE, INSPECTION REQUIREMENTS, AND PWHT PROCEDURE.

AWS QC 1 RALPH C. WORSHAM 06078171 CWI

JV WPS

05H04 - B31.3

F-1550 VACUUM COLUMN FURNACE
PLANT 15, RLOP HEAVY NEUTRAL HYDROCRACKER

B-251262-01 A&B