Williams Field Services

Stewart Dew Point Hickory, PA

7-23-2012

A-Scan Baseline Inspection

Vessel No.: VST-690
Vessel Name: Liquid Storage Tank

P&ID No: STWT-P01-014A

DBI Incorporated
Lincoln Nebraska
4223 Progressive Avenue.Lincoln NE 68504.Telephone: 402-467-1818 Fax: 402-467-1766
Omaha Nebraska
2211 S. 156th Circle.Omaha NE 68130.Telephone:402-330-9612.Fax: 402-330-9640
Overland Park Kansas
11660 West 90th.Overland Park KS 66214.Telephone: 913-888-2321 Fax: 913-888-2351

Summary Report

Report Reviewed By: Mitchell Beres

API 510 #30888

Client: Williams Field Services
Location: Stewart Dew Point Hickory, PA

Vessel No.: VST-690
Vessel Name: Liquid Storage Tank

Inspection Date: 7-23-2012

Type of Inspection: A-Scan Baseline Inspection

Note: An A-Scan baseline inspection was performed on the VST-690 Liquid Storage Tank. The VST-690 Liquid Storage Tank meets MAWP of 50 psi with a remaining service life of 20+ years. The long and short term corrosion rates were determined using the nominal thickness of the vessel.

Next UT Inspection: **7/22/2017** **API 510 para. 6.4**

Next Visual Inspection: **7/22/2017**

								Short Term Corrosion	**Long Term Corrosion**	**Remaining Life**
	TNom	**Top**	**Bottom**	**North**	**South**	**East**	**West**	**Rate**	**Rate**	**(Years)**
Top Head	0.500			0.497	0.498	0.499	0.500	<1 mil	<1 mil	20+
TML 1	0.375			0.384	0.375	0.374	0.377	<1 mil	<1 mil	20+
TML 2	0.375					0.375		<1 mil	<1 mil	20+
TML 3	0.375					0.375		<1 mil	<1 mil	20+
TML 4	0.375					0.376		<1 mil	<1 mil	20+
TML 5	0.375					0.374		<1 mil	<1 mil	20+

Client: Williams Field Services
Location: Stewart Dew Point Hickory, PA

Vessel No.: VST-690
Vessel Name: Liquid Storage Tank

Vessel Parameters

Design Pressure (MAWP):	50 psi	Top Head Material:	SA-516-70
Design Temperature:	650 F	Top Head Type:	Flanged and Dished
Operating Pressure:	1 psi	Allowable Stress:	17,500
Operating Temperature:	70 F	Joint Efficiency:	1.0
Diameter: I.D or O.D	144" OD	Bottom Head Material:	SA-516-70
Length S/S:	15'	Bottom Head Type:	Flanged and Dished
Shell Material:	SA-516-70	Allowable Stress:	17,500
Allowable Stress:	17,500	Joint Efficiency:	1.0
Joint Efficiency:	1.0	Date Manufactured:	1990
Corrosion Allowance:	.0600	In Service Date:	1990

ASME CODE EDITION USED FOR CALCULATIONS
ASME Section VIII, Division 1. 1998 Edition

Paint Information

Average paint coating thickness:	N/A	Thickness measured with paint:	N/A
Paint Multiplier:	N/A	Thickness measured without paint:	N/A

Name Plate Information

U1A Available:	Yes	ASME stamp present on vessel:	Yes
Name Plate present:	Yes	Rubbing taken:	Digital Photo

Client: Williams Field Services
Location: Stewart Dew Point Hickory, PA

Vessel No.: VST-690
Vessel Name: Liquid Storage Tank

Vessel Data

Vessel Class:	2	Date Manufactured:	1990
Manufactures Serial #:	01725	In Service Date:	1990
Product in Vessel:	Drain	Date of ASME VIII Vessel Mfg. under:	1989
P&ID Drawing #:	014A	Code Cases:	N/A
P&ID Prepared By:	Laurel Mountain Midstream, LLC	Addenda:	A-89
Manufacturer:	Rama Fabrication	National Board Number:	610
Vessel Length S/S:	15'	Vessel Insulated:	Yes
Diameter I.D or O.D:	144" OD	Describe openings (if any):	N/A
No. of Shell Sections:	2	ANSI Flange Rating:	150 #
No. of Nozzles:	11	Vessel Orientation:	Vertical
Design Pressure (MAWP):	50 psi	Operating Pressure:	1 psi
Design Temperature:	650 F	Operating Temperature:	70 F
Top Head Type:	Flanged and Dished	Bottom Head Type:	Flanged and Dished
Top Head Material:	SA-516-70	Bottom Head Material:	SA-516-70
Top Head Weld Type:	Double Butt	Bottom Head Weld Type:	Double Butt
Shell Material:	SA-516-70	Shell Weld Type:	Double Butt
Radiography:	Full	Hydrostatic:	75 psi

Relief Valve Information

Relief Valve Tag Number:	690	Relief Valve Pressure Setting:	50 psi
Relief Valve Test Date:	9/10	Relief Valve Size:	4" x 6"

DBI, Inc. Quality Inspection and Consulting Services

Reliable...Responsive...Resourceful...Proactive

PRESSURE VESSEL EXTERNAL INSPECTION

Client:	Williams Field Services	Date Inspected:	7-23-2012
Location:	Stewart Dew Point Hickory, PA	Inspector(s):	Mike Troyer
Vessel No.:	VST-690		
Vessel Name:	Liquid Storage Tank	Signature:	

NAME PLATE

Item Inspected Yes No NA = Not Applicable	Yes	No	N/A	Comments:
Name Plate present & legible	☒	☐	☐	Good condition
National Board #	☒	☐	☐	610
Manufacturer	☒	☐	☐	Rama Fabrication
Serial #/ Year Built	☒	☐	☐	01725/ 1990
Repair or Rerate Name Plate	☐	☐	☒	N/A

FOUNDATION

Concrete condition (spalling, cracks)	☒	☐	☐	None noted
Foundation settling	☒	☐	☐	Appears level
Coating condition	☐	☐	☒	N/A
Cradle supports (moisture, cracks)	☒	☐	☐	None noted

SUPPORTS

Describe type (legs, saddle, etc.)	☒	☐	☐	Skirt
Corrosion, pitting (describe)	☒	☐	☐	None noted
Weld condition	☒	☐	☐	Good condition
Paint condition	☒	☐	☐	No paint failure noted
Anchor bolts (tightness & corrosion	☒	☐	☐	Appears tight
Insulation deterioration	☐	☐	☒	N/A

SHELL

Corrosion, pitting (describe)	☒	☐	☐	None noted
Bulges/ Blisters/ Deformations	☒	☐	☐	None noted
Weld condition	☒	☐	☐	Good condition
Paint condition	☒	☐	☐	No paint failure noted
Insulation deterioration	☒	☐	☐	None noted
Biological growth	☒	☐	☐	None noted
UT Measurements	☒	☐	☐	See autocad drawing

HEADS

Item Inspected Yes No NA = Not Applicable	Yes	No	N/A	Comments:
Corrosion, pitting (describe)	☒	☐	☐	None noted
Bulges/ Blisters/ Deformations	☒	☐	☐	None noted
Weld condition	☒	☐	☐	Good condition
Paint condition	☒	☐	☐	No paint failure noted
Insulation deterioration	☒	☐	☐	None noted
UT Measurements	☒	☐	☐	See autocad drawing

MANWAYS & NOZZLES

Corrosion, pitting (describe)	☒	☐	☐	None noted
Weld condition	☒	☐	☐	Good condition
Flange condition	☒	☐	☐	Good condition
Bolting condition	☒	☐	☐	Good condition
Repad condition	☐	☐	☒	N/A
Insulation deterioration	☒	☐	☐	None noted
UT Measurements	☒	☐	☐	See autocad drawing

APPURTENANCES

Grounding (tightness & corrosion)	☒	☐	☐	Ground connection is tight
Gauges, Sight glass (damage)	☒	☐	☐	No damage noted
Relief Valve #/ Size/ Set Pressure	☒	☐	☐	690/ 4" x 6"/ 50 psi

LADDERS, STAIRS, PLATFORMS

Corroded, Broken Parts	☐	☐	☒	N/A
Paint condition	☐	☐	☒	N/A
Wear (ladder rungs, stair treads)	☐	☐	☒	N/A
Handrails secure	☐	☐	☒	N/A
Flooring condition	☐	☐	☒	N/A
Tightness (bolts, tie down clips)	☐	☐	☒	N/A
Attachment welds	☐	☐	☒	N/A
Corrosion, pitting (describe)	☐	☐	☒	N/A

ADDITIONAL COMMENTS:

FORM U-1A MANUFACTURERS' DATA REPORT FOR PRESSURE VESSELS
(Alternate Form for Single Chamber, Completely Shop-Fabricated Vessels Only)
as required by the provisions of the ASME Code rules, Section VIII, Division 1

1. Manufactured and certified by Rama Fabrication, Inc., 2310 Prospect, Odessa, Texas 79762 (name and address of manufacturer)
2. Manufactured for Exxon Company, U.S.A., P.O. Box 1600, Midland, Texas 79702 (name and address of purchaser)
3. Location of Installation West Chalkley 21 Mi SE of Lake Charles, Louisianna (name and address)
4. Type: Vertical (horiz. or vert., tank) | 01725 (mfr's. serial no.) | --- (CRN) | D-2584-01 (drawing no.) | 610 (Nat'l. Bd. no.) | 1990 (year built)
5. The chemical and physical properties of all parts meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE. The design, construction and workmanship conform to ASME Code, Section VIII, Division 1: 1989 (year)
   A89 (addenda (date)) | --- (Code Case no.) | --- (special service per UG-120(d))
6. Shell: SA-516-70 (mat'l. (spec. no., grade)) | .375 (nom. thickness (in.)) | .0600 (corr. allow. (in.)) | 11' - 11 1/4" (dia. ID (ft. & in.)) | 15' - 0" (length (overall) (ft. & in.))
7. Seams: DBW (long. (welded, dbl., sngl. lap, butt)) | Full (RT (spot or full)) | 100% (eff. (%)) | --- (HT temp. (°F)) | --- (time (hr.)) | DBW (girth (welded, dbl., sngl., lap, butt)) | Full (RT (spot, partial, or full)) | 2 (no. of courses)
8. Heads: (a) SA-516-70 (mat'l. (spec. no., grade)) (b) SA-516-70 (mat'l. (spec. no., grade))

	Location (top, bottom, ends)	NOM Thickness	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure (convex or concave)
(a)	Top	.500	.0600	138	8.75	---	---	---	---	Concave
(b)	Bottom	.500	.0600	138	8.75	---	---	---	---	Concave

If removable, bolts used (describe other fastenings): --- (mat'l., spec. no., gr., size, no.)

9. MAWP: 50 (psi) at max. temp. 650 (°F). Min design metal temp. -20 (°F) at 50 (psi). Hydro., ~~pneu. or comb.~~ test pressure 75 (psi).
10. Nozzles, inspection and safety valve openings:

Purpose (inlet, outlet, drain, etc.)	No.	Dia or Size	Type	Mat'l	Nom. Thickness	Reinforcement Mat'l.	How Attached	Location
Inlet	1	16"	CL150RFWN	SA-106B	.500	1/4"SA-516-70	Welded	Shell
Outlet	1	16"	CL150RFWN	SA-106B	.500	Inherent	Welded	Head
Drain	1	4"	CL150RFWN	SA-106B	.337	Inherent	Welded	Head
Manway	1	18"	CL150RFWN	SA-106B	.500	3/8"SA-516-70	Welded	Shell

11. Supports: Skirt Yes (yes or no) Lugs 2 (no.) Legs --- (no.) Other 3/8"SA-516-70 (describe) Attached Head, Welded (where & how)
12. Remarks: Manufacturers' Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report: 144" OD F & D Heads S/N 2542-1,2 Ft. Worth F&D Head Co. "U" (name of part, item number, mfr's. name and identifying stamp)

Vessel Exempt Per UG-20(f) — Pressure Relief per UG-125 N[illegible]e (39)
Non-Lethal Service
U-4 Attahced (1) — U-2(A) Attached (1)

CERTIFICATE OF SHOP COMPLIANCE

We certify that the statements made in this report are correct and that all details of design, material, construction, and workmanship of this vessel conform to the ASME Code for Pressure Vessels, Section VIII, Division 1. "U" Certificate of Authorization no. 7022 expires 10-20, 1993
Date 11-14-90 Name Rama Fabrication, Inc. (manufacturer) Signed [signature] (representative)

CERTIFICATE OF SHOP INSPECTION

Vessel constructed by Rama Fabrication, Inc. at 2310 Prospect, Odessa, Texas 79762.
I, the undersigned, holding a valid commission issued by The National Board of Boiler and Pressure Vessel Inspectors and the state or province of Texas and employed by The Hartford Steam Boiler I & I Co.
of Conn. have inspected the component described in this Manufacturers' Data Report on 11-14, 1990 and state that, to the best of my knowledge and belief, the manufacturer has constructed this pressure vessel in accordance with the ASME Code Section VIII, Division 1. By signing this certificate neither the inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in the Manufacturers' Data Report. Furthermore, neither the inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.
Date 11-14, 1990 Signed O.M. Bamm (Authorized Inspector) Commissions NB6022 Tex 566 (Nat'l. Bd. (incl. endorsements) state, prov. and no.)

This form may be obtained from The National Board of Boiler and Pressure Vessel Inspectors, 1055 Crupper Ave., Columbus, OH 43229 NB-16 Rev. 9

FORM U-4 MANUFACTURERS' DATA REPORT SUPPLEMENTARY SHEET

as required by the provisions of the ASME Code rules, Section VIII, Division 1

2/3

1. Manufactured and certified by Rama Fabrication, Inc., 2310 Prospect, Odessa, Texas 79762 (name and address of manufacturer)

2. Manufactured for Exxon Company, U.S.A., P.O. Box 1600, Midland, Texas 79702 (name and address of purchaser)

3. Location of installation West Chalkley 21 Mi SE of Lake Charles, Louisianna (name and address)

4. Type: Vertical (horiz., vert., tank, etc.) | 01725 (mfr's serial no.) | --- (CRN) | D-2584-01 (drawing no.) | 610 (Nat'l. Bd. no.) | 1990 (year built)

Data Report Item Number	Remarks							
10								
Anode	1	4"	CL150RFWN	SA-106-B	.337	14/"SA-516-70	Welded	Shell
LSH,LLC,LSL	6	2"	CL150RFWN	SA-106-B	.218	Inherent	Welded	Shell
L.G.	6	3/4"	CPLG	SA-105	6000#	Inherent	Welded	Shell

Date 11-14-90 Name Rama Fabrication, Inc. (manufacturer) Signed Steve Niemann (representative)

Date 11-14-90 Signed O. M. Bauman (Authorized Inspector) Commissions NB 6022, TX 5566 (Nat'l. Bd. (incl. endorsements) state, prov. and no.)

This form may be obtained from The National Board of Boiler and Pressure Vessel Inspectors, 1055 Crupper Ave., Col's. OH 43229 NB-67 Rev. 2

FORM U-2A MANUFACTURERS' PARTIAL DATA REPORT (ALTERNATIVE FORM)

NB 610

A Part of a Pressure Vessel Fabricated by One Manufacturer for Another Manufacturer
as required by the provisions of the ASME Code rules, Section VIII, Division 1

1. Manufactured and certified by Fort Worth F & D Head Co., 3040 Peden Rd., Fort Worth, TX 76179
(name and address of manufacturer)

2. Manufactured for Rama Fabrication, Inc., 2310 Prospect St., Odessa, TX 79760
(name and address of purchaser)

3. Location of installation Same
(name and address)

4. Type: _____ (horiz. or vert., tank) SN-2542-1,2 (mfr's. serial no. of part) _____ (CRN) WO-2542 (drawing no.) _____ (Nat'l. Bd. no.) 1990 (year built)

5. The chemical and physical properties of all parts meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE. The construction, and workmanship conform to ASME Code, Section VIII, Division 1: 1989 (year)
A-89 (addenda (date)) _____ (Code Case no.) _____ (special service per UG-120(d))

6. (a) Drawing prepared by Fort Worth F&D Head Co. (b) Description of part inspected (2) 144"OD x 1/2"Nom.,
7. Postweld heat treatment: temperature None °F. Time /Flanged & Dished Head
8. Shell _____ (mat'l. (spec. no., grade)) _____ (nom. thickness (in.)) _____ (corr. allow. (in.)) _____ (dia. (I.D. (ft. & in.)) _____ (length (overall) (ft. & in.)) _____ (no. of courses)

9. Seams: Dbl. Butt Welded (long.) Full (RT) 100 (eff. (%)) _____ (girth) _____ (RT)

10. Heads: (a) SA-516- Grade 70, Carbon Steel (mat'l. (spec. no. grade)) (b) _____ (mat'l. (spec. no. grade))

	Location (top, bottom, ends)	Minimum Thickness	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure (convex or concave)
(a)		.403"		138"	8.75"					
(b)										

If removable, bolts used (describe other fastenings): _____ (mat'l. spec. no., gr., size, no.)

11. MAWP _____ (psi) at max. temp. _____ (°F) Min. design metal temp.: _____ (°F) at _____ (psi) Test press.: _____ (hydro, pneu., or comb.)(psi) in the _____ (position)

12. Nozzles and Inspection openings:

Purpose (inlet, outlet, drain, etc.)	Number	Dia. or Size	Type	Material	Nominal Thickness	Reinforcement Material	How Attached	Location

13. Supports: Skirt _____ Lugs _____ Legs _____ Other _____ Attached _____

14. Remarks: Fort Worth F & D Head Company performed no design function. These heads were formed cold and satisfy the requirements of UCS-79(d) & UG-81(a).

CERTIFICATE OF SHOP COMPLIANCE

We certify that the statements made in this report are correct and that all details of material, construction, and workmanship of this vessel part conform to the ASME Code for Pressure Vessels, Section VIII, Division 1.

"U" Certificate of Authorization no. 10,625 expires 09-07- 1993

Date 10-22-90 Name Fort Worth F & D Head Company (manufacturer) Signed _____ (representative)

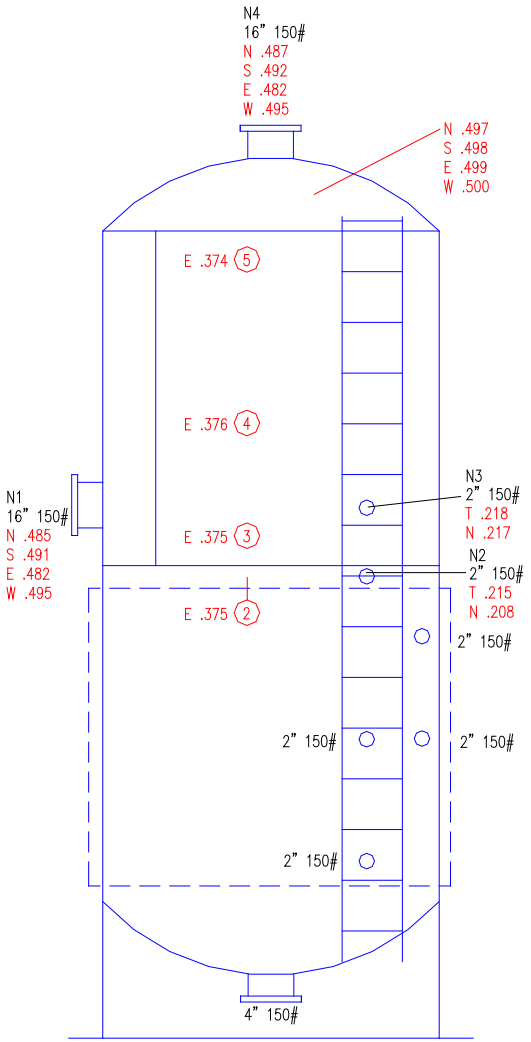
CERTIFICATE OF SHOP INSPECTION

I, the undersigned, holding a valid commission issued by The National Board of Boiler and Pressure Vessel Inspectors and the state or province of Texas and employed by Employers Casualty Company of Dallas, TX have inspected the pressure vessel part described in this Manufacturers' Data Report on 10-15, 1990 and state that to the best of my knowledge and belief, the manufacturer has constructed this part of a pressure vessel in accordance with the ASME Code Section VIII, Division 1. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel part described in the Manufacturers' Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

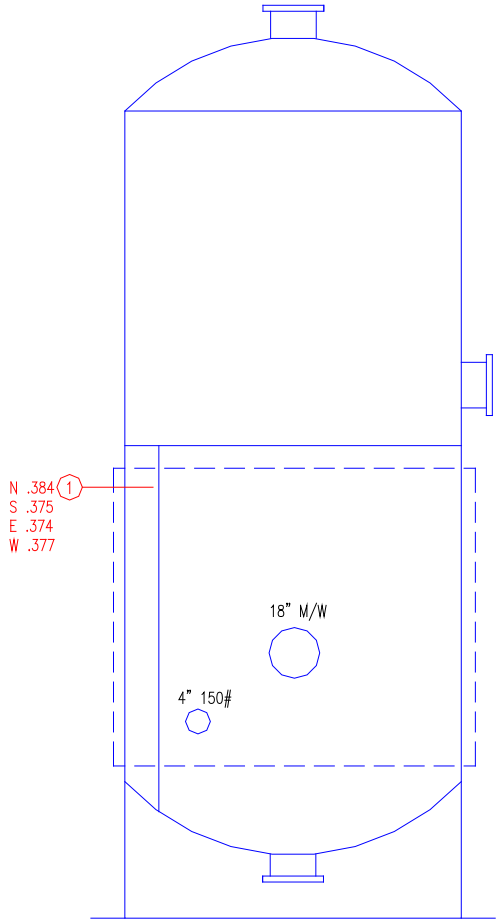
Date 10-22, 1990 Signed _____ (Authorized Inspector) Commissions _____ (Nat'l. Bd. (incl. endorsements) state, prov. and no.)

This form may be obtained from The National Board of Boiler and Pressure Vessel Inspectors, 1055 Crupper Ave., Columbus, OH 43229

NB-132
Rev. 9



EAST SIDE



WEST SIDE

NOTES

1. P&ID NO: STWT-P01-014A
2.
3.
4.
5.
6.

CLIENT: Williams Field Services	**DBI, Incorporated** 5330 N. 57th Street Lincoln, Nebraska 68507	
LOCATION: Stewart Dew Point Hickory. PA		
INSPECTION DATE: 7-23-2012	ACAD DWG. FILE: VST-690	
VESSEL No: VST-690	DWN BY: MCS	CKD BY:
VESSEL ID: Liquid Storage Tank	MECHANICAL INTEGRITY INSPECTION	