

BNSF Oklaunion TX Ethanol Derailment 1-8-2022

Report date 4-11-22r1

Date:	3-16-2022
Location:	Trinity Saginaw #25
Attendees:	Vernon Walker -FRA, Trinity-Ron Lawler, Luis Espinosa & Robert McGinley
Subject:	Post Derailment -Valve Inspection/Teardown

Summary 2

Valves were removed from 4 cars CRDX 300077, CRDX 300110, TILX 731762, and TILX 731739 in various conditions of fire/heat damage. The valves were initially placed on a test bench and air tested, documented on applicable forms EXB-011 for valves and EXB-015 for PRDs and then torn down and photographed through each step of the teardown process.

The majority of valves exhibited leaking at very low pressure and could not be pressured up due to the amount of leakage. When torn down the gaskets and o-rings were either disintegrated or had a residue from what was a gasket or O-ring. The BOV from TILX 731762 didn't have fire damage indications as other valves exhibited and temperature it was exposed was considerably less than other valves. However it still started leaking at low pressure around 9 psi.



Car location to fire damage.

TILX 731762 (66) Jamesbury 9150 RR 2" Top valve







Valve would not hod any pressure or make bubbles due to size of leakage.



1570E flange gasket disintegrated. Spiral wound body gasket disentigrated.



Top and bottom xtreme seats only reside remainning. Stem packing disintegrated.



		RAIL. As-Ree		ed S				t Ins	pectio			-	
		ber: TILX 731762		-	3. Inspect				-	_ 5.Cc	mmodity:	Ethang	1
2. Rep	porting	Facility TRN 5 Ng 2	STX	XU	4. Inspect	tion Da	te: <u>3-</u>	16-7	L				
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5. Equi	pmen	t Type: D BOV-Ball Gauging Device (G.D.)							VRV			ve 🗌 Angle	e valve
7 84	for a fee			nermo	well (T.W.) 9. Model N								Right
		irer: Jamesburg		-	9. Wodel N	umber.	4150	DKK	- 1157	- 11.	Equipment		B-End
		ire Date:			10. Serial I								B-End
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		Low Pressure Tes				_					sure Testi		
		ch Test Pressure:	. 2		psig				Test Pre		Nr		psig
		Test Passed	□ Ye		No	1			est Pass Seat Lea			Yes	No No
		e Seat Leak e Stem Leak			No				Stem Lea			Yes Yes	
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Ball Valve	32.	Upper Ball Seat			/	1						missi.	sland
->	33.	Lower Ball Seat			<u> </u>	4						missin	3 184310
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Plug Valve	36.	Face Plate											
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e e	42.	Stem O-ring				1	1						
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F.P.	60.	Bottom Sealing Surface							1			100000000000000000000000000000000000000	
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	1	Appd: Roy Rogers			1	Date: 5	1					ate: 2/12/2	016 Rev

CRDX 300077 (56) Jamesbury 9150 RR 3" Top valve









Valve would not hold pressure to test.



Seat residue on ball.



Seat residue in bottom of body. Stem packing residue in bottom1/2.



<table-cell-rows> тв</table-cell-rows>	INITY	RAIL. As-Re	ceiv	ved S	Service	Equir	men	t Insi	oectio	n Rer	oort	
1. Car	Num	ber: CROX 3000	77		3. Inspect	or:	415			5.Co	ommodity:	Ethanol
2. Rep	porting	Facility: TRA SAS 2	ST	1××1	4. Inspect	ion Da	te: 3-	16-2	2	_		
e Equi		t Type: 🗍 воv-ваш			Service Eq					Value	Needle Val	ve 🗌 Angle Valve
6. Equi	pmen	Gauging Device (G.D.)				Mar			VRV			
7 Man	ufactu	Irer: Smaller		menno	9. Model N				VICV		Equipment	
		re Date: NA			10 Sorial I	Jumbor	1100		276			A-End B-End
		089013			Bench							
PH	K E	Low Pressure Tes	ting		Bench		lie iea	ung 🛓	н	igh Pres	sure Testi	ing
12	Bend	ch Test Pressure:	ung	5	psig	+	18.	Bench	Test Pre		IVA	psig
		Test Passed		Yes	No	1			est Pass			Yes No
14	. Valv	e Seat Leak		Yes	No	1	20.	Valve	Seat Lea	ak		Yes No
15	. Valv	e Stem Leak	7	Yes	No	1	21.	Valve	Stem Le	ak		Yes No
16	. Valv	e Face Plate/Body Leak	1	Yes	No	1			Face Pla		Leak	Yes No
17	. Valv	e Plug/Cap Leak	1	Yes	No	1	23.	Valve	Plug/Cap	o Leak		Yes No
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		form is Required for Each	Serv	ice Eq	uipment	c	DO 1		Mechanical Damage		Improper Seal Orientation	1570 melted
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	33.	Lower Ball Seat		A								
		Plug Valve Seat		1		1		2012			0.0238212115945	
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Va		Retainer	1	1000		1		1 No. 10				
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D _	40.	Cam	1									
		Flange Seal	Ļ		_	l	ļ					
Needle Valve	42.	Stem O-ring	1			1]
Va	43.	Needle Seat	L			1						
	44.	Plug/Stem O-ring										
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T.W.		G.D. Tube	+									
G.D.	51.	Nozzle Seal Surface	t		<u> </u>	+	t				ALL PROPERTY.	
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Manway	54. 55.	Bolts Hinge	1	1	1	1						and a second second second second second second second second second second second second second second second
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VRV	58.	Spring	_	+		4						
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TILX 731762 (66) Jamesbury 9150 RR 3" Top valve







Valve would not hold pressure to test.



Only residue of seats remaining



Stem packing has disintegrated.



TR	NITY	RAIL, As-Re	ceived S	Service	Equip	omen	t Ins	oectio]
1. Car	Num	ber: TILX 73176	2	3. Inspect	or: L	4:5			5.Cc	ommodity:	Ethan	10	
2. Rep	orting	Facility: Tro Smg 2	S TXXV	4. Inspect	ion Da	te: 3-	16-2	2	_				
				ervice Eq					_				
6. Equi	pmen	t Type: D BOV-Ball Gauging Device (G.D.)	BOV-Plu			Ball Valv		Top Plug VRV		Needle Val Fittings Pla	ve 🗌 Angl	e Valve	
7 Man	ufactu	Irer: Jonesburg		9. Model N				3 "		Equipment		Right	
		ire Date: NA		10. Serial I							A-End	B-End	
AA C		182108								I LSO			-
for the de-		Low Pressure Tes	ting	Bench	l		ung				ing NA		
12	Bend	ch Test Pressure:	0	psig	1	18.	Bench	Test Pre			NA	psig	-
		Test Passed	☐ Yes	No No				est Pass			☐ Yes		
14	Valv	e Seat Leak	Yes	No		20.	Valve	Seat Lea	ık		Yes		
15	Valv	e Stem Leak	Yes	No				Stem Lea			Yes	No No	
1 ACC 1		e Face Plate/Body Leak	Yes	No 🟅	l	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		Face Pla		Leak	Yes	No No	
17.	Valv	e Plug/Cap Leak	Yes	No	<u> </u>			Plug/Cap	b Leak		Yes	No No	-
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		form is Required for Each	Service Eq	uipment	5	eq	-	Mechanical Damage		Improper Seal Orientation			
Compo		instructions for Accept/R	alaat aritaria		Corrosion	Scratched	Cracked	Mechanic Damage	Chemical Damage	ope	1		
Refer to	5 10111	Instructions for Accept/R	-		L LO	cra	rac	am	am	eal	L		
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		Plug/Stem O-ring	NA		1	1							1
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Plug Valve	37.	Retainer	Letter Later		1			10000					
br	38.	Cage			1								
L L	39. 40.	Spring Cam	and a set of										
	41.	Flange Seal		100000000000000000000000000000000000000		1. S. S. S. S.	1000						
Needle Valve	42.	Stem O-ring	T		1	1		[1]
Val	43.	Needle Seat	1000		1 23.875	1 Strates				Section Section			
	44.	Plug/Stem O-ring	† 1		1	1]		-
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An		Face Plate Face Plate O-ring	0.00		1000	ASCI UN	100000	017/05/33				and the second second	
	48.	Flange Seal			<u> </u>	<u> </u>				127462			_
T.W.	49.	T.W. Tube			_	_		l					-
G.D.	51.	G.D. Tube Nozzle Seal Surface	+		+	+							-
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EWL	53.	Ears		1									
Manway	54. 55.	Bolts Hinge											
_	56.	Lugs	last last set										
	57.	O-ring	L		1						L		-
VRV	58.	Spring	+		+	+							-
	60.	Valve Sealing Surfaces Bottom Sealing Surface	100 00000					1000			01101245		
F.P.	61.	Nozzle Sealing Surface											
-	62.	Threaded Connections	4			145/22		1		Constant Section		016	ļ
EXB-01	1 .	Appd: Roy Rogers		Issue	Date: 5	/15/20	12			Rev. D	ate: 2/12/2	2016 Rev.	A

CRDX 300077 (56) Jamesbury 9150 2"









TR		RAIL. As-Re	ceive	d S	Service E	Equip	men	t Ins	pectio	n Rep	oort	
1. Car	Num	ber: CROX 300077	1		3. Inspecto					5.C	ommodity:	Ethanol
2. Rep	orting	Facility: Ten Sag 7	5 77									
		-			ervice Equ							ve Angle Valve
6. Equi	pmen	t Type: D BOV-Ball Gauging Device (G.D.)				Top Mar	Ball Valv		Top Plug VRV	Valve		
7				ermo								
		rer: Jamesbury			9. Model N					- 11.	Equipment	Left Right
8. Man	ufactu	re Date: NA			10. Serial N				. 10		Location.	A-End B-End
			time.		Bench F	ressu	ire Tes !	ting		ich Pro	ssure Test	ing
12	Ben	Low Pressure Tes	o		psig		18	Bench	Test Pre		ssure rest	NA psig
		Test Passed	☐ Yes	_	No				Test Pass			Yes No
		e Seat Leak	Yes		No				Seat Lea			
		e Stem Leak	Yes		No		21.	Valve	Stem Lea	ak		Yes No
		e Face Plate/Body Leak	Yes		/ No		22.	Valve	Face Pla	te/Body	Leak	Yes No
		e Plug/Cap Leak	Yes		No				Plug/Cap			Yes No
					alve Tearc	lown a	and Ins	pecti	on			
A Sepa	arate F	orm is Required for Each	Service				1		Mechanical Damage	_	L 5	1
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			Acce	opt	Reject	0	Scr	Clar Clar Clar Clar Clar Clar Clar Clar	Me	Dai	di se in	Comments
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General Components	28.	Valve Stem Seal			-		1				STREET, STREET	missing
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	34.	Plug/Stem O-ring	NA									
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6	38.	Cage										
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	41.	Flange Seal									CHARGE STREET	
Needle Valve	42.	Stem O-ring										
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	44.	Plug/Stem O-ring	T				1					
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G.D.	50.	G.D. Tube					1		1			
	51.	Nozzle Seal Surface					1		1			
Manway	52. 53.	Lid Sealing Surface							1		States of the second	
MU	53.	Ears Bolts										
Ma	55.	Hinge							1			
	56.	Lugs			1		1		1			
	57.	O-ring					1		1		1	1
VRV	58.	Spring							4		and the second second	
	59.	Valve Sealing Surfaces							1			
F.P.	60. 61.	Bottom Sealing Surface Nozzle Sealing Surface							1			
	62.	Threaded Connections	1			1.1.1			1			A SHALL BE SHALL DO NOT SHOULD
L		Appd: Roy Rogers					/15/20	1.5			Davi D	ate: 2/12/2016 Rev. A



CRDX 300077 Fort Vale VRV 48/B0020CC7









TR				ed S	Service	Equip	men	t Ins	pectio	n Rep	ort		
		ber: CRDX 3000	77		3. Inspect	tor:	ais			5.Cc	ommodity:	Ethanol	
2. Rep	porting	Facility: TRN SAS	25-	rxx1	4. Inspect	tion Da	te: <u>3</u> -	16-2	2				
					ervice Eq							79 <u>00-00</u>	
6. Equ	ipmen	t Туре: 🔲 воv-ваш	••		ig Valve				Top Plug			ve 🗌 Angle Valve	
-		Gauging Device (G.D.)		Thermo		Mar Mar							. 1
		rer: Fort Vale			9. Model N 10. Serial I	iumper:	481	BC	020	<u>c</u> 11.	Equipment	Left Right	
8. Man	ufactu	re Date: NA		-					31	-	Location.	A-End B-End	0
		Low Pressure Tes	ting		Bench	Pressu	ire Tes I	sting	н	iah Pros	sure Test	ing	
12	. Bend	ch Test Pressure: 2401		Vac	psig	+	18.	Bench	Test Pre		Sule lest	psig	
		Test Passed			No No	1	19.	Leak 7	Test Pass	sed			
14	. Valv	e Seat Leak		es	No No	1	20.	Valve	Seat Lea	ak		Yes No	
15	. Valv	e Stem Leak	Z Y	es	No No	1	21.	Valve	Stem Le	ak		Yes No	
16	. Valv	e Face Plate/Body Leak	□ Y	es	No No		22.	Valve	Face Pla	ate/Body	Leak	Yes No	
17	. Valv	e Plug/Cap Leak		es	No No		23.	Valve	Plug/Cap	o Leak		Yes No	
				V	alve Tear	down a	and Ins	spection	on			-	
A Sepa	arate F	orm is Required for Each	Servi	ce Equ	uipment	E	р		gal			1	- 1
Compo	onent					.io	he	eq	ge	ge ica	atic		- 1
Refer t	o form	instructions for Accept/R	eject o	criteria	1	Ű	atc	Cracked	Mechanical Damage	em	al		
			Acc	ept	Reject	Corrosion	Scratched	U U	Mechanic Damage	Chemical Damage	Improper Seal Orientation	Comments	
	24.	Valve Body Exterior	N	A		1			1				
General Components	25.	Valve Body Interior				1 2 2 2 2			30.000	1.00000000			100
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		Plug/Stem O-ring	†			1			1			 	
	35.	Plug Valve Seat		1000					10000000	120329	A STATE OF STATES		201
Plug Valve	36.	Face Plate	1			1			1				_
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	40.	Cam				1							
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Vee	43.	Needle Seat									Sales and a		0.00
	-44.	Plug/Stem O-ring	t			1			1				
<u>e</u> e	45.	Plug Valve Seat					100			1000			
Angle Valve	46.	Face Plate	/			1		1	1			1	
A >		Face Plate O-ring				1			10000000				
T.W.	48.	Flange Seal T.W. Tube											
G.D.		G.D. Tube	+			+			+				
<u></u>		Nozzle Seal Surface	† †			1			1				
	52.	Lid Sealing Surface							1			and the second second second second second second second second second second second second second second second	
Manway		Ears				1							
lar		Bolts										and a second second second second	
-		Hinge Lugs		-		1			1				
	57.	O-ring			/	1					Le plant	Burroad Grasiss	
VRV	58.	Spring	Late	act .		1	İ		1			A WALL DOLLAR WALL DOLLAR DO	
	59.	Valve Sealing Surfaces	N			T			1				
F.P.		Bottom Sealing Surface											
1 00 0		Nozzle Sealing Surface Threaded Connections										Constant of the second second second	
EXB-01		Appd: Roy Rogers			leeve	L Date: 5	/15/20	15			Roy D	ate: 2/12/2016 Rev	V. A
EVD-01		Abba. Koy Kogers			issue	Date. 5	113/20.	1.0			Rev. Da	are. 2/12/2010 Rev	v. A

TILX 731762 (66) BOV Jamesbury 9RET3 22HB XT



Valve doesn't apper to have direct heat damage





Ball and gasket were in good condition considering.



Gasket to car saddle intact. Valve started leaking at 11.9 psi



Seats intact and in original configuration.



Stem and seat packing appearance is good.



1 0				eus	Service			ins	pecuo			Chi	
1. Car	Num	ber: TILX 7.31 10	2		3. Inspect	or: L	Lis			5.Cc	mmodity:	Ethan	01
2. Rep	porting	g Facility: TRN Sog Z	5 T	XXV	4. Inspect	ion Da	te: <u>3</u> *	16-2	-2				
		1			ervice Eq								
3. Equi	ipmen	t Туре: 📑 воv-ваш				🗌 Тор	Ball Valve	e 🗌	Top Plug	2013022022000		/e 🗌 Ang	le Valve
		Gauging Device (G.D.)	T	Thermo		Man			VRV				
7. Man	ufactu	irer: James bury			9. Model N	umber:	9RE	T 3-	223 H	B 11.	Equipment	Left	Right
B. Man	ufactu	re Date: NA			10. Serial I	Number	:4.5	282	812.	23	Location:	A-End	B-En
					Bench								
		Low Pressure Tes	ting		Denen	1		ung	ы	iah Pres	sure Testi	na	
12	Pop				psig		19	Bench	Test Pre		NA	ing	psig
		Test Passed				1			est Pass			-	
				es	No	1			Seat Lea			Yes	
		e Seat Leak	C Y		No	10000						Yes	No No
		e Stem Leak		es	No Se	> PST			Stem Le			Yes	
		e Face Plate/Body Leak		es	No	1			Face Pla		Leak	Yes	No No
17	. Valv	e Plug/Cap Leak	ΠY	es	No	I	23.	Valve	Plug/Cap	b Leak		Yes	No No
				V	alve Tear	down a	and Ins	pectio	on				
ASens	arate F	Form is Required for Each	Servi	ce Ea	uipment	-	5		29		L.		
Compo		entro i toquirou ioi Edoli	20.70			ion	Jec	Q	je nic	e g	atio		
		n instructions for Accept/R	eject c	riteria	1	So	atc	- Ke	nac	ac mi	Inte		
			-			Corrosion	Scratched	Cracked	Mechanical Damage	Chemical Damage	Improper Seal Orientation	0.00	monto
	24		Acc	ept	Reject	0	S	0	20	00	500	Con	nments
S	24. 25.	Valve Body Exterior		1		1						OK	
General Components	25.	Valve Body Interior		-	1	1							
General	27.	Valve Stem		/	-		122.2				A REAL PROPERTY.	OK	92621
up du	28.	Valve Stem Seal		-								OK	
0 5	29.	Valve Sealing Surface		-				1535767	1110	A REAL PROPERTY AND A REAL	OK .		
	30.	Gasket	-			1						157DE	DIC
= e	31.	Valve Ball	1			1							
Ball Valve	32.	Upper Ball Seat				1			1				
	33.	Lower Ball Seat	L										
	34.	Plug/Stem O-ring	N	A									
e	35. 36.	Plug Valve Seat						81 C 2019				1 States and a state of the	
Plug Valve	37.	Face Plate Retainer			-								
>	38.	Cage				1						Contrast of the second	
no	39.	Spring					1	HIRO SECTION		10.00		STRUCT PRIMA	
9	40.	Cam				1							
	41.	Flange Seal				1						Product of the	
e le	42.	Stem O-ring	t			1			1				
Needle Valve											A DECEMBER OF A		
× >	43.	Needle Seat	L								Contraction of the		
	44.	Plug/Stem O-ring											
Angle Valve	45.	Plug Valve Seat				1							
/al	46.	Face Plate				1					Contraction of the second		
4 -	47.	Face Plate O-ring				1			1		A DESCRIPTION OF TAXABLE		
r.w.	48.	Flange Seal T.W. Tube	÷			+							
3.D.	50.	G.D. Tube	+			+							
<u></u>	51.	Nozzle Seal Surface	+			1	1		1				
7	52.	Lid Sealing Surface						1.1.1.1.1.1.1				Convert Day	
RW3	53.	Ears				1			1				
Manway	54.	Bolts				1							
M	55.	Hinge											
_	56.	Lugs	L			1							
	57.	O-ring				1							
VRV	58.	Spring	L			1							
	59.	Valve Sealing Surfaces				1			1				
F.P.	60.	Bottom Sealing Surface							1				
	61.	Nozzle Sealing Surface Threaded Connections				1			1				
	62.	Inreaded Connections	. ~			1			1	1			

The valves were reassembled in the as received condition and placed back on the pallet and shrink wrapped and placed on hold for additional instruction from NTSB/FRA.

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There are additional photos of the valves available upon request.

Please advise if you have any questions. Vernon Walker FRA Vernon Walker (

Ron Lawler Trinity Leasing