APPLICATION FOR APPROVAL AND CERTIFICATE OF CONSTRUCTION

1 APPROVAL REQUESTED OF: Non-Precedent

2 TYPE: Construction

3 AAR NO: L164001A

4 DATE: 04/08/2016

4.1 ORDER DATE: 10/14/2015

5 APPLICANT'S NO: R50885

6 APPLICANT: GUNDERSON, 4350 NW FRONT AVENUE, PORTLAND, OREGON 97210

7 TANK SPECIFICATION: DOT-117A100W

8 STENCILED SPEC: DOT-117J100W

9 REPORTING MARKS AND CAR NUMBERS: FURX 160000-160099

10 NUMBER OF CARS: 100

11	Initial Commodity	See Notes	**12**	Density (LB Per Gallon)	6.55
13	Full Water Capacity (Gallons)	30420	**14**	Dome Capacity or Outage (Gallons)	per DOT 173.24b(a)(1)
15	Material Type / Grade Heads	AAR TC-128, Gr. B	**15.1**	Tank Head Material Normalized	Yes
15.2	Tank Head Spliced	No	**15.3**	Charpy Requirements	
16	Material Type and Grade Shell	AAR TC-128, Gr. B	**16.1**	Tank Shell Material Normalized	Yes
16.2	Charpy Requirements		**17**	Material Thickness Heads (Inches)	0.563
18	Material Thickness Shell (Inches)	0.563	**19**	Lining Type	None
20	Inside Diameter - Center (Inches)	118.875	**21**	Inside Diameter - End Rings (Inches)	118.875
22	Head Radius, Main (Inches if not 2:1)	2:1	**23**	Test Pressure (PSI)	165
24	Insulation Type	CF-Ceramic Fiber	**25**	Insulation Thickness (Inches)	0.5
26	Thermal Conductivity (BTU – in/hr. –ft sq. – degree F)	0.29	**27**	Type of Safety Relief Devices	Valve
27.1	Number of Safety Relief Devices	1	**28**	Pressure Relief Device Start-to-Discharge (PSI)	75
29	Pressure Relief Device Flow Capacity (CFM Required)	2814	**30**	Pressure Relief Device Flow Capacity (CFM Actual)	30061
31	Tank Surface Area (Sq Ft)	1781	**32**	Underframe or Stub Sill Type	GUN001-GUN001 Stub Sill Design
33	Center of Gravity, Loaded (Inches)	88.3	**34**	Estimated Light Weight (lb)	90600
35	AAR Clearance Diagram	C	**36**	Rail Load Limit (lb)	286000
37	Truck Capacity (Tons)	100	**38**	Head Shield Type	F-Full Shield
38.1	Head Shield Thickness (inches)	0.50			

Notes: Initial commodity to be Petroleum Crude Oil (PG I & II & III UN1267) and products authorized by DOT Part 173 for which there are no special commodity requirements and non-regulated commodities compatible with this class of car. Other Related Drawings are attached which should be verified.

Original Certificate:

Builder:

Date:

Former lading:

	The Following Drawings Apply:	Drawing Number	The Following Prior Approvals Apply: Drawing Number	Application/Certificate No
39	General Arrangement	A02090 B		
40	Tank Arrangement	A10005058		
41	Reinforced Openings, Including Calculations	A10004415,A10004619,see 53. Calculations		
42	Anchorage, Including Calculations	See 53. Calculations		
43	Fittings Arrangement	A10004413 A		
44	Manway Assembly	A10004613		
45	Protective Housing	See "other related drawings",see 41. Reinforcement Openings,see 53. Calculations		
46	Venting, Loading, and Discharge Valves	A10004526,A16219-01,A16220-01,see 43. Fittings Arrangement,see 47. Pressure Relief Devices,see 50. Bottom Outlet Valve		
47	Pressure Relief Devices	A10004528		
48	Heater Systems	None		
49	Gauging Devices	See 40. Tank Arrangement		
50	Bottom Outlet Valve	A10004782		
51	Repairs	None		
52	Manway Cover	MCKENZIE 508893 C		
53	Calculations	A10004802,R50885 CALCS REV A		
54	Tank Qualification Drawing	A10004697		

REVISIONS: Revision A:
Line 39: General Arrangement now Rev A
Line 40: Tank Arrangement A10005058; was A10004618
Line 43: Fittings Arrangement now Rev A
Line 53: Calculations now Rev A
Other Related Drawings: Jacket Arrangement now A10004982; was A10004397

APPLICATION BY: Brad Thomas

I certify that the foregoing conforms to all applicable DOT and AAR requirements, including specifications, regulations, rules of interchange, and the DOT Railroad Safety Appliance Standards.

SIGNATURE: Brad Thomas

TITLE: Senior Mechanical Engineer

APPROVAL - AAR Tank Car Committee

Date Approved 04/19/2016 Kenneth Dorsey

(signature) on behalf of the Tank Car Committee

CERTIFICATION: **The cars enumerated below conform to the above approved description and to all applicable DOT and AAR requirements, including specifications, regulations, rules of interchange, and the DOT Railroad Safety Appliance Standards. Copy of this Certificate of Construction will be furnished to the owner and others, as required by 49 CFR Part 179.5, before these cars are placed in service**

Initials and Car Numbers:

FURX 160000-160099

Name: Rodolfo Aguirre **Date:** 04/22/2016

Title: QA Manager

17 TANK HEADS 0.553 IN. MINIMUM AFTER FORMING

36 NOTES SPECIFIC TO 286,000 LB GROSS RAIL LOAD
The car is designed and built in accordance with AAR Standard S-286-2002. The trucks are in conformance with AAR Specification M-976-2002. The car is in conformance with M-1002 Chapter 2 Section 2.5 and M-1002 Chapter 2 Section 2.7.

38.1 Full Height Head Shield conforms to 'Alternate Compliance by other than testing' per DOT 49 CFR Ch. I (12-3-15 Edition) 179.16 (c) (1) (2) (3) having tensile strength greater than 55,000 psi and contouring to tank head on both ends of car. Shield meets requirements per AAR M-1002 Chapter 5.3.1, 5.3.1.1. Full Height Head Shield attachment and design is not an untried or new design and conforms to past ' Industry standard' designs. Testing is per AAR M-1002 Chapter 5.3.2 not required.

45 Car meets all 9 MPG Rollover requirements per DOT 49 CFR Ch. I (1-8-16 Edition) §179.102-3 (1) and Top Unloading Protection requirements per MSRPCIII AAR M-1002 Appendix E 9.2.

46 L164001 (R50885) 30,400 GALLON TANK CAR FITTINGS AAR APPROVAL NUMBERS
1. PRESSURE RELIEF VALVE - KELSO JS75XHS-316-13-C-R 75 PSI (PRD-079004)
2. 4" BOTTOM OUTLET VALVE - JAMESBURY 4-9RET3-36HB-XTA-FO (E-079011)
3. 3" TOP UNLOADING BALL VALVE - MCKENZIE 3-UFR-3636MT (E-107011)
4. 2" AIR INLET BALL VALVE - MCKENZIE 2-UFR-3636MT (E-107011)
5. VACUUM RELIEF VALVE - SALCO VVN15S6RA6202FA (E-099034)
6. MANWAY COVER - MCKENZIE 508893 REV C (E-137015)

Other Related Drawings:

A10004982.pdf JACKET ARRANGEMENT

APPROVAL - AAR Tank Car Committee

Date Approved 04/19/2016 Kenneth Dorsey

(signature) on behalf of the Tank Car Committee