



RAILBLAZERS®

ALLTRANSTEK, LLC

RAILCAR FLEET MANAGEMENT AND CONSULTING

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CLOSER LOOK SERIES

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WELDING PROCEDURES: QUALIFIED OR PREQUALIFIED?

Welding on railcars is governed by two different organizations: the Association of American Railroads (AAR) and the American Welding Society (AWS). The AAR Tank Car Specification (AAR MSRP CIII (M-1002), Appendix W, governs welding on tank car tanks. Prequalified welding procedures are not allowed by this specification. AWS D15.1, Railroad Welding Specification for Cars and Locomotives, does provide for the use of prequalified welding procedures for other railcar welding.

Qualified welding procedures are developed by welding test coupons and by performing the required destructive testing to verify that the required mechanical properties have been achieved, both in the weld deposit and the heat affected zone (HAZ). Destructive testing of weld coupons may include tensile testing, guid-

ed bend testing, notch toughness testing, corrosion testing, hardness testing and macroetch testing. Tensile and guided bend tests determine whether the weld metal and HAZ have the required strength and ductility for service. Notch toughness testing determines the ability of the weld metal and HAZ to absorb energy at a low temperature, usually -30° F or -50° F for pressure tank car tanks. Corrosion testing is required when tank car tanks transport corrosive commodities, like acids. These tanks are usually made from stainless steel. Hardness testing is done to verify the hardness of weld metal and the HAZ, usually after postweld heat treating operations (PWHT). A low hardness reading usually indicates good ductility and energy absorption properties, which is desirable in railcar applications. Macroetch testing is

Continued on page 2.

CAR TYPE HIGHLIGHT: COVERED HOPPER FLEET

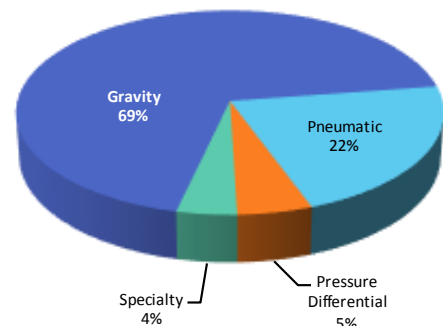
The Covered Hopper fleet, totaling 557,350 cars, carries dry bulk materials, primarily from the agricultural and petro-chemical industries. Covered Hoppers are differentiated based on unloading systems and cubic capacities. These specifications determine what commodities the car is capable of moving. The wide variety of commodities served by the Covered Hopper fleet make this car segment economically appealing to shippers and railroads.

Gravity, pneumatic, and pressure differential are the three main types of unloading systems. Respectively, these account for 69.1%, 21.7%, and 5.2% of the total Covered Hopper fleet. The remaining 4% of the fleet is comprised of Specialty Covered Hoppers, a category that encompasses cars with unique or combined unloading systems.

Gravity gates are the most common of the unloading systems and rely on gravity to unload product. Pneumatic unloading systems

utilize pneumatic conveying under negative pressure (vacuum) to transfer dry bulk goods from the car to a storage vessel, reducing the

All Covered Hoppers 2017 Fleet Size



Source: Umler, AllTranstek; 541,638 cars

Continued on page 4.



PROGRESSIVE RAILROADING ARTICLES

AllTranstek's Chief Commercial Officer, Richard Kloster, was recently featured by Progressive Railroading Magazine in the February 2018 issue.

February 2018 - Commentary: Railcar lessees need to know the new lease accounting standards

Co-authored with Senior Consultant Rob Hart, this commentary examines the anticipated effect of the Financial Accounting Standards Board's (FASB) newest lease accounting rule.

[CLICK TO READ FULL ARTICLE](#)

August 2017 - Rail-car outlook: Where did the momentum go?

The promising forecast for 2017 has not come to fruition despite being halfway through the year. Learn why.

[CLICK TO READ FULL ARTICLE](#)

February 2017 - Commentary: If things are so bad in the rail-car leasing industry, why are so many jumping in?

This article examines investors' interests in railcars in spite of an unkind market in recent years.

[CLICK TO READ FULL ARTICLE](#)

Continued from page 1.

usually done on fillet or groove welds on materials with high strength and relatively low ductility. Cross-sections of the weld test coupon are etched with an acid/alcohol mix which shows a distinct difference in the weld deposit and the base material that was welded. The weld deposit and HAZ can then be visually examined to verify weld integrity.

All requirements of the pertinent sections of AWS D15.1 must be followed for the use of prequalified welding procedures. AAR, FRA, or customer inspectors may ask to review welding procedures during a facility audit. In some cases, the response to the auditor's request is, "I'm not required to have a welding procedure specification (WPS) because my welding is prequalified". This statement is incorrect. Several essential variables, items that could adversely affect the overall quality of a weld if changed beyond a certain limit, must be defined to ensure that welding meets the criteria of a prequalified WPS. Essential variables include base material, welding process, joint design, heat input, preheat/postweld heat treatment, welding filler metal, amperage, voltage, and travel speed.

Each section within AWS D15.1 is numbered and referred to as a Clause. When developing a prequalified WPS, Clauses 5-8 in AWS D15.1 must be reviewed to verify that the particular welding process is not excluded. One example would be using gas metal arc welding (GMAW) in the short circuiting transfer mode. This process does not inherently lend itself to good penetration and must be qualified by destructive testing methods.

Determining whether or not the material to be welded falls under a prequalified status is also required. Materials that cannot be prequalified per AWS D15.1 include stainless steel and aluminum. Joint designs must also be listed in the prequalified joint section of AWS D15.1 (Clause 7). A prequalified joint design example

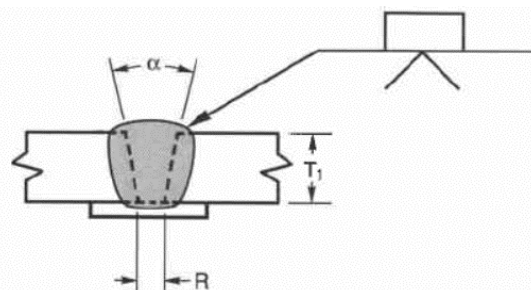
is provided below. The dimensions in the figure vary based on the specific welding process being used. In the prequalified joint below, α = groove angle, T_1 = material thickness and R = root opening. These items directly effect the successful completion of a quality weld.

Finally, listing acceptable materials for a prequalified welding procedure is essential. Table 8.1 in AWS D15.1 lists materials based on Classes. Materials are grouped as Class I, Class II, Class III, Class IV and Class V. Classes are largely based on tensile and yield strength, which determines what filler metal and pre-heat is required for each material. Deviations from requirements outlined in these material groups must be evaluated to determine if the WPS requires a separate qualification.

Welder performance qualification is also required to be compliant with both AAR and AWS specifications. Welders must qualify in the position that they will be welding, and with each particular welding process they will be using. Welders and welding operators cannot be prequalified; they must always demonstrate welding proficiency.

Other standards, specifications, or appendices may require review for your particular welding compliance. For example, AAR Standard S-402 has additional requirements for air brake pipe welding. Federal Regulation (CFR Title 49, Part 179.102) has additional welding requirements for tanks car tanks transporting certain low temperature commodities.

If you have concerns about compliance of your welding program, AllTranstek has personnel available to evaluate your status and assist you in meeting the regulatory requirements. Welding compliance requirements for the rail industry will be examined during a welding webinar this March presented by Steve McCullough and Mike Untermeyer, featured in this issue's Employee Spotlight (page 5).



Prequalified Joint (left)

α = groove angle,

T_1 = material thickness

R = root opening

PREFERRED SHOP NETWORK

As part of AllTranstek's fleet management services, one of our primary functions is our clients' selection of repair facilities used to maintain their railcar fleets. Historically, our clients have used approximately 175 different repair facilities throughout the United States and Canada. The introduction of the Preferred Shop Network will decrease this number by highlighting specific shops in North America.

AllTranstek's Preferred Shop Network was established with specific goals in mind: 1. Reduce freight cost for our clients when possible. 2. Reduce out-of-service time (cycle time) for our clients' fleets. 3. Improve the quality of repairs and documentation due to increased volumes of work.

Furthermore, our hope is that facilities will benefit as a part of the Preferred Shop Network by increased work volume optimizing the size of our repair network facilities, improved efficiencies as shops familiarize themselves with AllTranstek procedures and docu-

mentation requirements, and improved throughput and reduction in cycle times with more consistent work volumes.

Click [here](#) to view our Preferred Shop Network. Red markers indicate shops that perform both tank car and freight car repairs; blue markers indicate shops that perform solely freight car repairs. Clicking on a location provides details on serving carriers, most recent shop audits, shop capabilities, and contact information.

Moving forward, we will continue to enhance our Preferred Shop Network by including mobile repair units, mobile tank cleaning suppliers, lining/coating material manufacturers with contact information, and scrap facility locations with contact information.

Contact info@alltranstek.com with questions, comments, or suggestions regarding our Preferred Shop Network.



SCHEDULE OF EVENTS 2018

MARCH

26-29: Chlorine Institute Meetings
Tampa, FL

APRIL

7-10: ASLRRRA 2018 Connections Convention

Nashville, TN

10-12: ELFA - National Funding Conference
Chicago, IL

18-20: AAR Tank Car Committee Spring Meeting
Atlanta, GA

18-20: Northeast Association of Rail Shippers Spring Meeting
Newport, RI

MAY

16-18: North American Rail Shippers Association Annual Meeting

Chicago, IL

16-17: Traffic Club of Chicago Annual Dinner & Golf Outing

Chicago, IL

INDUSTRY FEATURE:

AMERICAN WELDING SOCIETY



American Welding Society

Since 1919, the American Welding Society (AWS) has been dedicated to the advancement of welding through the development of industry-renowned publications, education, and certifications.

The mission of AWS, totaling over 70,000 members, is to advance the science, technology, and application of welding and allied joining and cutting processes worldwide, including brazing, soldering, and thermal spraying. The AWS is the welding industry's premier global professional/technical society.

AWS supports the welding community, listening to and representing members. With a passion for continuous learning, the AWS offers technical and education conferences and seminars to help advance careers, incomes, and productivity. AWS's services are supported by a dedicated staff and global industry professionals that represent all facets of welding.

An industry leader in developing respected standards, the AWS is dedicated to the highest levels of safety. Over 1,500 volunteers in 200 technical committees, subcommittees, and task groups create and maintain AWS standards. AWS offers codes, specifications, methods,

guides and recommended practices designed to advance welding technology, performance and safety. AWS committee members include end-users, manufacturers, suppliers, academia, government, associations, trade groups and consultants in the welding industry. Most AWS standards are American National Standards, meaning they follow American National Standards Institute (ANSI)-accredited procedures.

AWS D15.1 is the railroad welding specification for railcars and locomotives. The latest revision of AWS D15.1 is 2012. There have been two addendums to the latest revision AMD1 and AMD2. The D15.1 committee is made of representatives of railcar manufacturers, railcar repair companies, railroads, welding wire manufacturers and consultants. With approximately 45 members, this is currently the largest AWS committee. The committee met on February 7, to finalize the new revision, to be issued before year end 2018. The process requires the D15.1 Committee to vote on any changes which must also be approved by an advisory group, the Technical Activities Committee (TAC), to ensure changes are in the best interest of the AWS.

For questions regarding technical standards or committees, contact technical@aws.org.



**GARY ALDERSON
NAMED RSI QUALITY
ASSURANCE COMMITTEE
CHAIRMAN**

Gary Alderson, AllTranstek's Manager of Quality Processes, was named Railway Supply Institute Quality Assurance Committee Chairman in January 2018. Gary has over 30 years of Quality Assurance experience in the rail industry. This honor adds to the long list of accomplishments Gary has achieved during his career.

Gary was featured as a spotlight employee in the December 2017 issue of RailBlazers newsletter. Click [here](#) to learn more about Gary.

**FIRST ANNUAL OPEN
HOUSE**

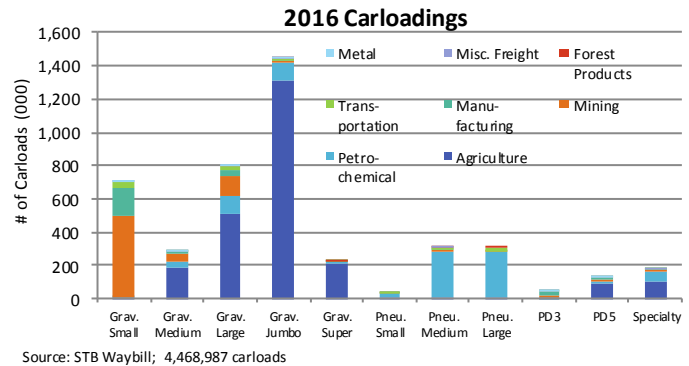
A big Thank You to everyone who attended our first annual open house in the Downer's Grove, IL office. The event was held on January 16th, and was scheduled in conjunction with the MARS meeting being held nearby at the Westin - Lombard, IL. Attendees had the opportunity to visit headquarters, and meet much of the team that works on their behalf every day, while enjoying a wonderful array of hors d'oeuvres and beverages. The afternoon was a big success, and we look forward to seeing more of our industry colleagues at this event next January.

Continued from page 1.

risk of contamination. Finally, pressure differential unloading systems have higher internal pressures and use positive pressure pneumatic conveying to securely move commodities into storage vessels.

Over half, 54.5%, of Covered Hopper traffic is generated by the agriculture industry, of which corn accounts for the highest percentage of any single commodity at 16.0%. The Gravity Covered Hopper fleet alone moves 77.6% of Covered Hopper traffic. Pneumatic cars move an additional 14.5%, and pressure differential account for the remaining 4.0%. While Gravity Covered Hoppers primarily move agricultural products, the Pneumatic fleet is almost exclusively used for shipping plastic pellets. Alternatively, Pressure Differential Covered Hoppers have a broad commodity base dictated by the car's capacity.

CH Traffic By Equipment Type



Going forward, the utilization of the Covered Hopper fleet is expected to increase due to improving export economics for grain and general freight growth across North America. This comes as a relief to the fleet which suffered in 2015 and 2016 due to factors such as equipment surpluses and modal competition for grain transport with truck and barge.

The release of the 2018 Closer Look Series is just around the corner. Join our [mailing list](#) to be among the first to know when the reports are published.

All charts and graphs come from the Covered Hopper Closer Look Report

COMMENTARY: RAILCAR LESSEES NEED TO KNOW THE NEW LEASE ACCOUNTING STANDARDS

AllTranstek's Dick Kloster, Senior Vice President and Chief Commercial Officer, and Rob Hart, Senior Consultant, co-authored an article published in the February 2018 issue of Progressive Railroading Magazine. Below is an excerpt.

The answer is: "Over \$2 trillion." What's the question? If this were the television show "Jeopardy!," it would be: "How much will U.S. companies that lease all types of assets have to collectively add to their balance sheets to comply with the new lease accounting standards?"

This figure will have a profound impact on corporate America, including rail-car lessees. Considering that rail-car lessors own 65 percent of today's 1.65 million rail cars, lessees will be adding an estimated \$7 billion to \$10 billion to their balance sheets. Unfortunately, not many rail-car "Jeopardy!" players will get this question right, given the low level of awareness in our industry right now.

In February 2016, the Financial Accounting Standards Board (FASB) issued ASC 842 (Accounting Standard Codification), a lease accounting standard that takes effect Jan. 1, 2019, for publicly traded companies and Jan. 1, 2020, for private companies. The standard

replaces the FASB 13 lease accounting rules enacted in 1976.

Under FASB 13, lessees were required to determine if a lease were a "finance" or "operating" lease. Assets, including rail cars, deemed to be on a finance lease were treated on the balance sheet as long-term assets.

Operating leases, however, were not put on a lessee's balance sheet. Instead, lessees were only required to disclose these lease obligations in a footnote to their financial statements.

Capital-market reactions to off-balance sheet leasing varied. Some viewed operating leases as a form of debt, while others ignored them. Some treated them as contingent liabilities.

The U.S. Securities and Exchange Commission and FASB became concerned that footnote disclosure was not enough. The Enron scandal magnified these concerns and FASB began the process of developing new rules, which were issued in February 2016.

Read the full article [here](#).

EMPLOYEE SPOTLIGHT

STEVE MCCULLOUGH

DIRECTOR, WELDING & SPECIAL PROCESSES (SCWI & ASNT LEVEL III)

Steve develops Welding and NDT programs to meet industry standards. He is involved in training, certification, railcar repair requirements, and PWHT program development. Prior to joining AllTranstek, Steve worked for 25+ years in various positions in Welding Engineering and Quality and Fleet Engineering. Additionally, Steve worked as a Quality Manager in the Orthopedic Industry overseeing NDT, welding, metrology, and final inspection. Steve belongs to the Association of American Railroads (AAR) Tank Car Committee, Appendix T, W, and R, and the AWS D15.1 Committee. Steve holds Certifications as an ASNT Level III in PT, RT, VT, MT and LT and is also a Certified AWS SCWI and CWE.



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MIKE UNTERMAYER

WELDING, SPECIAL PROCESSES, AND ENGINEERING CONSULTANT

Mike provides technical support for welding procedure development, PWHT and NDE procedures, tank car regulatory requirements, tank car repair and design, failure analysis, and metallurgical concerns such as corrosion and fatigue cracking. Mike's thirty-plus years of rail experience includes welding, quality assurance and product design engineering, and various management positions. Mike chairs the AAR welding task force and belongs to several other standing AAR task forces. Mike was chairman of the AWS D15 Railroad Welding Committee from 2003 to 2015 and is currently its first vice chair. He belongs to the AWS Technical Activities Committee, and has two published articles in the Welding Journal.



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STRATEGIC SERVICES

Strategic services offers senior executives and fleet managers critical in-depth insight and actionable analysis throughout the rail equipment supply chain.

Our publication, "The Closer Look" series provides the most complete annual review and forecast of North American railcar fleet trends. A product of AllTranstek's expertise and FTR's dynamic forecasting model, the "Closer Look" is a wealth of railcar specific knowledge and data segmented by key railcar characteristics, including usage behaviors and capacity.

Strategic services also offers the "Railcar Investment Thesis", following the same rigorous research approach we use for our private equity clients. The "Railcar Investment Thesis" seeks to satisfy the strict requirements many of our clients have for justifying and analyzing future equipment investment. We accomplish this through our unique ability to acquire and assess industry and railcar data, and to present it to our clients in a form ready for key

decision makers, an investment committee or board of directors. Example insights include: identifying which car types meet investment criterion, reviewing car type or commodity specific trends, uncovering sector-specific opportunities and risks, and providing financial inputs and illustrations.

Our team regularly provides custom consulting services to clients. Frequent requests include assessing existing railcar portfolios for anomalies in revenue, expenses and value; benchmarking of rail car lease rates, car repair and fleet management costs; and assisting our clients with lease v. purchase decision-making.

AllTranstek's Strategic Services brings its unmatched expertise to bear on all manner of rail related challenges and opportunities. Contact Nicole Lev Ross at levross@alltranstek.com to learn more.



ALLTRANSTEK PRESENTATIONS AND EVENTS 2018

WEBINARS

Welding

Date: April 2018

How much do you know about welding as it pertains to the rail industry? This webinar will guide participants through an introduction to welding and compliance.

Presented by: S. McCullough and M. Untermeyer

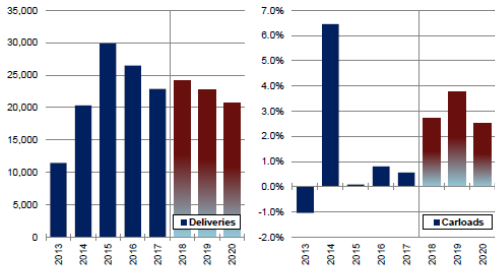
WEBINAR REPLAYS

Webinar replays are available online.

FTR OUTLOOK: COVERED HOPPER FORECAST

- ◆ **Freight:** CH traffic in 2018 is forecast to grow 2.7% y/y to 5,083,000 carloads, and over 2019-2022 to grow at a 2.5% AAGR to 5,612,000 carloads in 2022.
- ◆ **New Cars:** 2018 deliveries are projected to increase 5.9% y/y to 24,225 cars, then decline 5.9% in 2019 to 22,800 cars, and fall at a -2.7% AAGR over 2020-2022, averaging 19,925 cars per year.
- ◆ **Inventory:** CH retirements in 2018 are projected to total about 8,300 cars, up 2.7% y/y, and over 2019-2022 average 8,800 cars per year, a 2.3% AAGR.
- ◆ The fleet is projected to increase 2.9% y/y to 569,600 cars in 2018, and reach 616,800 by 2022, a 2.1% AAGR over the 2019-2022 period.
- ◆ The 2018 surplus is expected to improve 35.1% y/y, falling to 65,400 cars, but then increase 21.3% in 2019 to 79,300 cars. Over 2020-2022, the surplus will climb to 101,100 in 2020 before falling back to 82,100 cars by 2022.

N.A. Covered Hopper Outlook



Source: FTR; Copyright 2018

Covered Hopper Market Indicators: 2017Q4

Actual, Not Seasonally Adjusted	2017 Q1	2017 Q2	2017 Q3	2017 Q4
Orders	2,346	9,733	3,048	3,344
% Change, Y/Y	-20.5	382.5	111.5	27.2
Backlogs	34,345	38,718	36,440	30,846
% Change, Y/Y	-29.1	-15.2	-9.3	-14.1
Deliveries	4,054	4,851	6,126	7,848
% Change, Y/Y	-41.7	-27.3	-9.8	29.3
Backlogs/Deliveries Ratio	8.5	8.0	5.9	3.9
Net Orders/Deliveries Ratio	0.6	2.0	0.5	0.4

Source: ARCI Committee of the Railway Supply Institute

- ◆ Fleet Utilization is expected to rise 4.9 points y/y in 2018, peaking at 86.5%, then fall to 85.0% by 2022.
- ◆ **Forecast Changes:** Lower surplus; higher freight, utilization, and deliveries; no other significant forecast changes.
- ◆ **Downside Risks:** Possible oversupply of <3500 cuf.
- ◆ **Upside Risks:** Increased drilling activity, >5500 cuf deliveries' higher replacement demand, improved grain exports.

All charts, graphs, and data are derived from the FTR Rail Equipment Outlook Report
For more information on this report, please visit www.ftrintel.com/REO

A CLOSER LOOK SERIES

A Closer Look Series is comprised of six individual reports, each of which exclusively covers one of the major car types: Covered Hoppers, Tank Cars, Gondolas, Open Top Hoppers, Box Cars, or Flat Cars. These reports provide invaluable information and insight for longstanding rail equipment industry participants, as well as new entrants to the industry. Among the companies who will benefit the most are fleet owners, leasing companies, new car builders, component suppliers, service providers, financial institutions, investors, rail carriers and shippers.

A Closer Look Series examines the current railcar market from multiple angles, analyzing trends in fleet size, age, ownership, segmentation, commodity traffic bases, new car deliveries, retirements, utilization, attrition, car surpluses, and much more.

[Click here for more information on A Closer Look Series](#)



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Founded in 1994, AllTranstek has grown into one of North America's largest railcar management and consulting companies, currently managing over 275,000 railcars for some of the country's largest fleets. AllTranstek also provides technical, operational, and strategic consulting services to a broad range of companies active in the rail and rail equipment supply chains. No other company has the combination of institutional knowledge, innovation, and independence that characterizes AllTranstek. As an independent company, with no ties to outside funding from industry or government, our clients can be confident that we always have their best interests in mind. AllTranstek continues to cultivate strong relationships with clients both large and small because of our ability to creatively and flexibly tailor services of various sizes and scopes to each customer's individualized needs.