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To whom it may concern,

The Institute for Supply Management Rail Industry Forum Quality Assurance Committee, Warranty Working Group, working in cooperation with the AAR Equipment Engineering Committee, AAR Quality Assurance Committees and AAR Car Repair Billing Committee, has developed a new Product Identification and Warranty Standard for the railroad industry. Attached is a Business Case Study for the proposed specification for your consideration. Also attached is a list of Bar Code Technology Sources and the current ISM-RIF QAC-WWG membership.

This standard was presented to the AAR Technical Services Working Committee on November 7, 2002 and approved to go out for public comment. We respectfully request that you review and approve the standard as we proceed through the AAR approval process.

In short, the new standard requires designated parts be given a unique identifier with key information bar coded on the part or on a label that is permanently attached to the part. When finalized and issued as a new AAR Technical Standard, it will provide a consistent and uniform method for labeling and identification of designated railroad products and components. We expect standardized component labeling and identification to yield significant efficiency and cost benefits for the industry in terms of product traceability, inventory management, maintenance operations, root cause analysis of defects, service life calculations (reliability) and warranty claims processing. As you will read in the attached Business Case, there are some costs associated with the implementation of the standard, however, the estimated savings potential are substantial.

Your comments will be helpful in making this document useful for years to come.

Sincerely,

William D. Smith
ISM QAC-WWG Chairman

A BUSINESS CASE
for Standardized Product Identification in the Rail Industry

EXCUTIVE SUMMARY

The Institute for Supply Management (formerly the National Association of Purchasing Management) Rail Industry Forum (ISM RIF) in cooperation with the Association of American Railroads Equipment Engineering Committee (AAR EEC) has developed a new Product Identification and Warranty Standard for the railroad industry. When finalized and issued as a new AAR Technical Standard, it will provide a consistent and uniform method for the labeling and identification of products and components manufactured for the rail industry or reconditioned during their service life. We expect standardized component labeling and identification to yield significant efficiency and cost benefits for the industry in terms of product traceability, inventory management, maintenance operations, root cause analysis of defects, service life calculations (reliability), configuration and asset management, and warranty claims processing.

The new standard requires designated parts utilize a unique identifier. This information is put on a durable label or metal tag and is permanently applied to designated serialized parts or equipment at the time of manufacture. The label will contain key information that uniquely identifies the item in both human-readable and bar-coded formats including manufacturer, part number, serial number, manufacture date, and warranty expiration date. When a component is reconditioned, the original label will be left in place and a second similar label with information about the reconditioning will be added. In addition to being applied to designated parts, the labeling requirement can also be referenced in purchasing contracts or purchase orders. The standard will provide minimum or basic labeling guidelines, allowing for future improvements. Product identification will facilitate life cycle analysis, inventory control and equipment maintenance traceability, in addition to facilitation of warranty claim tracking and processing.

Our request is to issue the proposed standard to the industry via an AAR Circular Letter for public comment with a 60-day response period. After comment review and revisions, the committee anticipates the specification to be finalized and issued in 2002.

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SITUATION ANALYSIS

History

Over the past year and a half, the working group of the Institute for Supply Management (formerly the National Association of Purchasing Management) Rail Industry Forum (ISM RIF) Quality Committee has been working to develop an industry standard for the labeling and identification of railroad industry parts. The working group is known as the WWG (Warranty Working Group) and consists of twenty-six (26) part-time members from five (5) major railroads, two (2) transit authorities, five (5) major OEM suppliers and six (6) other support groups. (See the attached list at the end of this document for membership detail) The WWG's mission has been to develop a component identification and warranty administration program suitable to railroads, suppliers and OEMs. This initiative is succeeding because all the participants have a vested interest in the outcome. Railroads and industry suppliers lose millions of dollars each year through inefficiency in materials management and non-recovery of warranty-related expenses. This takes away from the bottom line of many organizations.

Two major obstacles had to be overcome before a standard could be developed. The first challenge was to create and jointly agree on a component identification process. This system would need to be consistent, practical and easy-to-use. Some of the problems in the past included the person applying or removing the part could not always identify useful information from the tag on the part or it's serial number. There was no standard being followed for the labeling or serialization from one commodity to another. In turn, the same serial number could be found on like products or would get changed during the rebuild process losing its original identity. It was difficult to track the component life, reliability, history or defect information. Information was confusing and inconsistent from supplier to supplier. When useful data could be found on the tag, it required considerable time and energy to extract it and put into a useable format. Errors and incomplete information was often the case. Companies that were using the newer technology, such as bar coding, would struggle on format and standardization. One company's bar code would mean little to the end-user. This included the typical railroad maintenance worker.

The second hurdle was the warranty administration or more fondly known as the 'red tape' typically involved in processing a warranty claim. This included different administrative requirements for submitting the claim, keeping track of the material and ultimately forging an agreement between customer and supplier. Over the years, each railroad developed some form of a warranty process to handle material that did not meet contractual requirements. The goal was to have the major railroads and industry suppliers agree on a warranty administration process that everyone could use. In addition, the nonconformance reporting requirements of the AAR imposed a further measure of complexity.

The group looked at some of the best methods in related industries on how to mark the parts and process a warranty. Asking many questions and keeping an open mind, various members of the team talked to UPS, Federal Express, the US Army, Motorola, the Auto ID Center at MIT, Boeing, ATA (Air Transport Association) and United Airlines. After considerable contact with the airline industry and review of their specification called Spec 2000, a benchmarking tour of the United Airlines maintenance facilities was completed. While exploring methods of component identification used in the airline industry, the WWG learned that component identification could be useful for material and equipment inventory control as well as warranty administration.

The success with airline material warranties comes from readable and survivable material identification in machine-readable formats on every critical part. Bar code technology exists to permit the easy printing and placement of accurate bar code labels on/near each component data plate. The permanent bar code marking of parts requires different considerations than the technology has typically dealt with because of the longevity of the required bar code. Where bar codes on consumer goods are required to last days-to-months, bar codes on expensive, serialized parts in industry are required to last from years-to-decades. The airline industry developed a standard called "Spec 2000" (www.spec2000.com) that encompasses many functions from permanent part marking through a variety of electronic business transactions. Many of the concepts used to develop the Rail Industry's standard were taken directly from the Spec 2000, using a proven data foundation for supply chain e-Business processes.

Many railroad suppliers are already using bar coding for materials management functions such as shipping and inventory control. Since many freight cars experience a failure while in interchange service, bringing the information into the Car Repair Billing System, providing traceability and configuration control down to the Lowest Level Replaceable Unit (LLRU) on new as well as reconditioned serialized components would be a difficult task to achieve. Difficult… but possible!

Why Bar Coding?

What once seemed to be simply an odd little striped label that began appearing on a few retail, food industry related goods in the early 1970's has evolved into an effective and widely used productivity enhancement tool. Bar codes enable fast, easy and accurate data entry for an automatic data collection process. Bar coding enables identification and product data to be tracked efficiently and accurately entered at speeds not possible using manual data entry systems. The result is commonly referred to as real-time data capture. Because it is so easy to collect data, much more data can be obtained from the source - the person doing the work. Bar code technology significantly improves the man/machine interface, which is important, since people are not given a typing test before being assigned a data entry job. Improved accuracy is yet another benefit. Studies show that the entry and read error rates when using automatic data collection and bar code technology is approximately 1 error in 1,000,000 characters versus 1 error for every 300 characters in manual key entry. In summary, use of machine-readable codes increases the timeliness and accuracy of the collected data while doing so in a more efficient manner.

The IBM PC explosion in the early 1980's served as the catalyst to promote the widespread usage and application of bar coding for automatic data collection. Over the past 20 years, bar coding has become a virtual necessity for the collection and processing of information in a quick and timely and efficient manner enabling companies, in every conceivable industry, to maximize and dramatically increase their productivity and overall efficiency. Bar codes enable managers to track information and activity as it occurs allowing their decisions to be dictated by more concrete, current information. The traditional manual key entry process of data compiled on sheets of paper, by comparison, does not provide real-time data entry capability as the data being entered usually reflects events that occurred in the past and can be counted on to have many errors. Despite the advantages of automatic data collection via bar coding, there is still an element of mystique and a stigma of high implementation cost associated with the technology that intimidates many people.

Bar Code Construction

Bar coding is a type of Morse Code used to encode or put information into a universally recognized code language in the form of a bar code symbology. Encoded data can consist of a part number, serial number, supplier number, quantity, transaction code, or any other data. A number of bar code standards have been developed and refined over the years into accepted languages called symbologies. Numerous bar code trade associations, like American National Standards Institute (ANSI), Health Industry Bar Code Council (HIBC) and Automotive Industry Action Group (AIAG), have subsequently established standards to regulate the use of bar code symbologies in accordance with accepted industry specifications.

Bar code symbologies come in two basic varieties. They can be either linear or two dimensional in their configuration. A linear barcode symbology consists of a single row of dark lines and white spaces of varying but specified width and height, as indicated by the example below.

LINEAR

2-D

Similarly, a 2-Dimensional symbology can be configured into a stacked or matrix format. Two-dimensional bar codes are special rectangular codes which ‘stack’ information in a manner allowing for more information storage in a smaller amount of space. The amount of data that can be encoded in a linear barcode symbology is more limited than that of a 2-D symbology. A 2-D matrix symbology of 1 x 1inch square, for example, can encode and store the entire US Constitution! Hence, the power of barcode technology in maximizing information storage within limited space.

A brief introduction to the various bar code parameters is needed. There are two main parameters that require different solutions when marking parts – one-dimensional (1D) vs. two dimensional (2D) bar codes and low contrast vs. high contrast bar codes.

	1D Bar Codes	2D Bar Codes
High Contrast	These are the standard, typical bar codes that most people think of and that any bar code equipment will read, e.g., USN 12345ABC123	These are typically small squares or rectangles of black dots on white background that require imaging equipment to read, e.g., USN 12345ABC123
Low Contrast	1D, low contrast bar codes don't typically exist	These typically occur when directly marking the part using technologies like dot peening, laser etching, or chem etching. Rather than black-on-white it looks more like grey-on-grey e.g., USN 12345ABC123

BUSINESS OBJECTIVES

At the present time, a twelve-page Equipment Identification and Warranty Administration Specification has been developed and has been reviewed by the various relative AAR committees. It will be sent out via AAR curricular letter for railroad industry comments later this year. The specification is applicable to all equipment and components as stipulated in purchase agreements between railroads and suppliers or between two suppliers. Following adoption by the AAR, the specification will be used in a cooperative effort to achieve improved data accuracy, productivity and cost reduction. Ultimately, it will provide for better identification and improved quality.

The specification calls for a durable label affixed or applied in such a way that does not interfere with the operation of the component and in a conspicuous location to facilitate ease of reference while in service, when disassembled, or while in transport. Components such as air brake equipment, fuel pumps, traction motors, cushioning devices, empty load devices and many more are covered. See the list on page 17. The list is not all-inclusive, however, it can be used as a guideline for labeling of other components.

The label will contain key information that uniquely identifies the item in both human-readable and bar-coded formats. It is broken up into two sections. The first section includes the manufacturer and serial number. These static bits of information, when combined, would serve as a unique equipment identifier. No other part would have the exact same string of information within that cage code manufacturer. It would never be reused or change, so it would stay with the part from cradle to grave.

The second section of the label would cover dynamic data; the manufacture date, part number, warranty expiration date and any re-manufacturer information. The part number may change when the part has been changed in fit, form or function. When a component is reconditioned, the original label will be left in place and a second similar label with information about the reconditioning will be added. In some cases, the original

OEM label will be lost or cannot be maintained during the reconditioning process. It is the responsibility of the reconditioner and/or the repair facility removing the component to replace this information with an identical (same information) label.

The new standard will only apply to designated parts that can be referenced in purchasing contracts or purchase orders. It provides a minimum or basic format for labeling guidelines. In addition to obvious advantages of tracking and processing warranty claims, the product identification will also facilitate life cycle analysis, inventory control and equipment maintenance traceability.

MARKET BENEFIT ANALYSIS

Improved Warranty Recovery

The savings to the railroad industry can be substantial. Currently, one Class 1 Railroad has a "hard" tagging requirement without using bar coding. It is the responsibility of the craftsperson (approximately 20,000 folks) to remove any component, tag it and if it is a warranty component, set it aside in a hold area for the warranty officer to further process. This system in the year 2001 recovered approximately 8% of the total dollars spent for all components purchased for the mechanical department. With bar coding and a more visible tag, more warranty components may be recovered.

Improved Component Traceability

While the savings from improved warranty recovery can be substantial, there is an even greater potential for cost savings though operational efficiencies. All railroads and manufacturers handle large quantities of components and materials every year in their every day operations. There is material receiving and inventory management that is performed by all companies. Additionally, all manufacturing and re-manufacturing companies control material flow from inventory to the production floor. Furthermore, finished goods must then be packaged and delivered to the customer. For most companies, the operations functions encompass most of their business and represent millions of dollars in operating capital. The DOD has repeatedly shown that visibility of assets can and does reduce the amount of repairable spare parts required to support a given system. These sophisticated inventory management models depend upon the ability to correctly identify and locate parts as they are moved, stored, repaired, installed or removed.

Imagine being able to save just 1% to 5% of this operating capital because of improved efficiency in handling and controlling material flow. For a company with a $50 million operating budget, a 1% improvement in efficiency represents a saving of $500,000 per year in operating capital.

Additionally, consider that these efficiencies are available to the entire railroad industry through implementation of component identification. The efficiency savings could easily become significant enough to make a significant difference in the cost of one company's products versus their competitors.

Other Key Benefits of Common Data and Bar Code Technology

Implementing a bar code system in one's facility offers tremendous advantages when coupled with the appropriate computer hardware and software of an external database. The most compelling advantages of bar coding and automatic data collection are:

(1) Accuracy

Bar coding increases accuracy by reducing the likelihood of human errors from manual entry or miscommunication from misread items. Industry studies have shown that bar code data entry is 100,000 times more accurate than manual data entry.

(2) Collection of Uniform Data

With common data defined, all companies (both Suppliers and Railroads) can identify and track expensive components in a common fashion. This will solve the problem of each company setting different data requirements, which vary between component lines within a company, between companies, and between computer applications. Common data is the foundation of improving the supply chain process. Meta data is the real key and one of the hardest things to achieve. Standards like this are one of the best tools yet to achieve common meta data.

(3) Intelligent Data

This specification requires intelligent (tagged) data, versus just naked numbers, to be used on data plates. This makes it much easier for both people and computer systems to understand what the number is and to get the correct number into the correct field.

Computer systems can now do this automatically making the data entry job that much easier for our people.

(4) Timely Feedback

Because it is so easy to collect the data, bar coding promotes timely feedback in that data can be captured in real-time as the source data transaction occurs. This enables management decisions to be made from current information.

(5) Ease-of-Use

Bar codes are easy-to-use provided the appropriate hardware and software aspects are in place to maximize the process of automatic data collection. "WYSIWYG" (What You See Is What You Get) data on component labels specifies bar coded data and human readable data to be identical. This allows for failure and changes over to the manual processes if the bar code technology isn't working at that particular time so that the business can continue operation.

(6) Improved Productivity

Bar codes improve productivity due to the automation of many manual activities and tasks enabling personnel resources to be utilized in other ways thus increasing the efficiencies of scale within an organization. Bar coding further enables manufacturing processes to be monitored and tracked more closely to improve the company's overall quality standards. Reduces the need for data correction when the computer rejects data entries.

(7) Increased Profitability

The increased efficiencies (e.g. improved workflow, reduction in error rates, etc.) that bar coding promotes enables companies to save costs and substantially improve their bottom line. Note: The return on investment for an automated data collection system is typically one year, and often substantially less.

DEVELOPMENT STRATEGY

The specification is expected to be finalized before the end of 2002. Each railroad and industry supplier can elect to reference the AAR specification in their procurement documents to define a uniform way in which components are to be labeled and warranties are to be administered. Imagine a craftsman standing next to a piece of equipment after changing out a brake valve and scanning the label into his handheld computer for billing purposes. Or, picture a mechanic scanning the motor information into the maintenance history database. Imagine recovering the warranty on those parts in a simple and straightforward manner.

Timeline (4 Years)

This kind of investment in technology may require capital monies and engineering to accomplish the goals of the specifications. It is estimated that it will take approximately 4 years to fully implement this specification in the Railroad Industry. If the AAR approves the specification in 2002, each OEM will be allowed 2 years to finalize and receive approval for the various labels to be applied. The application cycle will begin within 1 year and will become mandatory by contract agreement by the end of 2006.

Contacts

In addition to symbology standards set by the various trade associations, there are several other related types of compliance standards used in manufacturing and distribution operations. A number of bar code technology providers have been very supportive in implementing Spec 2000 data standards. These companies not only show their capabilities at Spec 2000 Symposiums, but many have produced Spec 2000-specific marketing material, created an electronic magazine that is emailed out to the Spec 2000 community, and even formed consortiums with other providers to better leverage each other's capabilities. The list in the Appendix is not intended to be one of recommendation, nor exhaustive in nature, but rather one to acknowledge the support of the technology provider community. Other resources can be found through the Automatic Identification Manufacturers (AIM) association found at www.aimglobal.org .

FINANCIAL REVIEW

Bar Coding Requirements and Cost

To establish a basic bar code system for automatic data collection, four primary components are required: a bar code printer, a label for item tracking, scanning equipment for data collection and an external database for bar code data capture and relay. Bar code technology is analogous to an optical Morse Code. Light shines from a wand or a scanner and reflects off the black bars and white spaces of a linear or one dimensional (1D) bar code symbol, providing an on/off/on signal. Those are combined and converted into numbers and letters. 1D bar code scanners cost between $100 - $500.

2D (two-dimensional) bar code scanners are called imagers and take a picture of the square of dots. The scanner then interprets the picture as on-dots or off-dots and converts those to numbers and letters. High contrast 2D scanners cost between $900 - $1500. Low contrast imagers have to control the lighting just right and have more sophisticated software to distinguish between the light grey on an "on-dot" and the dark grey of an "off-dot" and therefore cost more money - in the $3000+ range.

1D and 2D scanners can come in the form of a 'wedge' reader that wedges itself between your keyboard and your PC or terminal. The application program for these scanners does not distinguish whether the data came from the bar code scanner or from the keyboard; therefore, it is not necessary to change any programs to use the equipment. It may be desirable to change programs due to increased user productivity. Similar readers can also come in the form of a portable 'batch' device that runs a program to collect the data, stores all the data in the device, and uploads it to a computer later in one batch of data. The other is to have a portable device that is connected to a network with a radio frequency link (RF link). These devices can be programmed to talk directly to existing applications and act like a full computer terminal.

Data

The most important part of marking parts is the creation of a numbering system that guarantees unique serial numbers yet provides flexibility for different areas of a company. The permanent bar code ID on the part has to be designed to last the life of the part – however long that may be. For some parts, life may be measured in months, while for others, it may be measured in decades.

Labels

The easiest, least expensive way to mark parts is with a polyester label. An industrial strength bar code label printer can be purchased for $1000 - $2000, plus the software to create the labels for $400 - $800. The labels need to be durable and "permanent" for the environment they have to live in for the life of the product. These can be used for either linear or data matrix (2D symbols).

Metal Data plates

Metal data plates generally require laser etching equipment in the $15,000-$60,000 range. Some solutions like AlumaMark (MetalPhoto) create metal data plates 'on demand', eliminating a 2 week lead-time. Metal data plates can be purchased for somewhere between $0.50 - $10.00 per label depending upon quantity, material and complexity.

Direct Part Marking (DPM)

A third way is to use 2D bar code symbology and mark the dots directly into the metal using technologies such as dot peen, laser etch, chem-etch, or others. Dot peen machines run in the $10,000-$30,000 range, laser etch in the $15,000 - $100,000 range and chem-etch in the $1000 - $5000 range. The specification suggests that for parts whose part numbers may change after modification, two separate bar code symbols should be applied to the part: one with just the CAGE Code and unique Serial Number, and the other with the part number and any other data that may change over time. That way, the permanent ID of the part does not have to be changed after it is marked on the part. Disadvantages of direct part marking include the cost of the readers and the need for suppliers to have access to 2D readers.

Return on Investment Strategies

It is estimated that the average warranty lost in the railroad industry is between 1 and 3 percent of the purchase cost. Taking the more conservative number of 1% times the annual 34,260* new cars purchased last year at an estimated average cost of $130,000 each and adding it to the 710* new or leased locomotives at an estimated average cost of $1,500,000 each, the annual potential warranty savings is well over $55,000,000 for the industry. In addition, the standardized component labeling and identification will yield significant efficiencies and cost benefits for the industry that could double these savings to over $100 million. These efficiencies and benefits will be in terms of product traceability, inventory management, maintenance operations, root cause analysis of defects and service life calculations (reliability).

It is estimated that of the normal labeled railroad components, approximately 50% can use polyester labels and the other 50% would require metal tags. The cost of a polyester label is approximately 25 cents per label. The cost of a metal tag is between $3 and $7 each. Metal tags will need to be glued, screwed or riveted onto the part. The type of tag will be determined and administered by the various regulating committees or the customer requirements. The cost to apply these tags or labels will be initially covered by the Original Equipment Manufacturers and Remanufacturers, however the cost to use it will be carried by the customer base. The overall benefits will be shared with all parties that choose to use the technology in the industry.

Administrative cost for implementation is limited and will vary between railroads and suppliers. Some companies in our industry are already applying segments of this technology. The goal of the application standard is to simply leverage the advantages of a uniform system. Business models have shown as much as 18% return on their investment. As in other industries, such as the airline industry or the Department of Defense, the potential savings have a capability for payback in less than one year.

* Source: Progressive Railroading Car & Locomotive Yearbook 2002-2003
2001 statistics reported from the Policy and Economics Department, AAR

The purpose of the attached specification is to provide the industry with a basic format for consistent equipment identification and warranty administration. Following is a list of typical railroad components that meet the requirements for a serialized part and would benefit from this standard. It is not all-inclusive and should not limit the use of this guideline for other components. A purchaser would specify this specification in contract negotiations or on the purchase agreements for selected components.

<u>Locomotive Component Examples</u>

Water Pump
Fuel Pump
Module Card
Power Contactor
Traction Motor
Main Alternator
Turbocharger
Radiator
Governor
Oil Cooler
Auxiliary Generator
Intercooler
Lube Oil Pump
Engine
Computer Panel
Main Generator
Aftercooler
Event Recorder
Speed Indicator
Cooling Fan
Dynamic Brake Grid
Starting Battery
Refrigerator
Radio
Cooling Fan Gearbox
Air Brake Controller
Lube Controller
Equipment Blower
End of Train Device
Head End Device
Flange Lube Nozzle
Air Dryer
Air Compressor

<u>Freight Car Component Examples</u>

Cushioning Device
Brake Slack Adjuster
Emergency Air Brake Portion
Service Air Brake Portion
Air Brake Pipe Bracket
Friction Gear
Hand Brake
Outlet Gate
Hatch Cover
Brake Beam
Load Divider
Yaw Damper
Empty Load Device
Wheels
Axles
Roller Bearings

APPENDIX

Marking/Label Companies:

- ID Integration (various solutions) www.id-integration.com
- DAPRA (dot peen) www.dapramarking.com
- Pryor Marking Systems (various solutions) www.pryormarking.com
- Telesis Technologies, Inc (various solutions) www.telesis.com
- Schilling Marking Systems, Germany www.marking-systems.de
- Monode Marking Products, Inc. www.monode.com
- ROFIN-SINAR Technologies (laser marking) www.rofin-sinar.com
- TRUMPF USA (laser marking) www.trumpfusa.com
- Horizons/MetalPhoto (dataplates) www.horizonsisg.com/metalphoto
- Camcode a division of Horizions www.camcod.com
- Metalcraft (dataplates) www.idplate.com
- Aptec, LLC (data dot labels) mgmeeks@sprynet.com
- Intermec Corporation (labels, printers) www.intermec.com

Reading Systems:

- RVSI (2D readers, low & high contrast) www.rvsi.com/acuitycimatrix/index.htm
- Intermec Corporation (1D & 2D high contrast) www.intermec.com
- Symbol Technologies (1D & 2D high contrast) www.symbol.com
- Microscan® Corporation (1D & 2D high contrast) www.microscan.com
- Hand Held Products www.handheld.com

Consultants/System Integrators:

- ID Integration www.id-integration.com
- Technology Solutions Jon@TechSoln.com
- Wabtec Transportation Technologies GDunnell@Wabtec.com
- HighJump Software www.highjumpsoftware.com
- Telesis Technologies petgin@telesistech.com

Other Helpful References:

- ATA Spec 2000 www.spec2000.com
- Cage Code References www.ccr2000.com/gov.cfm
- Institute for Supply Management Web Page www.napmrif.org/quality
- Automatic Identification Manufacturers (AIM) www.aimglobal.org

This list is not intended to be one of recommendation, nor exhaustive in nature, but rather one to acknowledge the support of the bar code technology provider community.

LIST OF COMMITTEE ISM-RIF-WWG MEMBERS

The Warranty Working Group's mission will be to review both new and existing technologies and business processes to develop a warranty administrative program suitable to railroads, suppliers, and OEMs. This will include development of an industry-recognized standard for equipment identification and labeling.

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