Reverse Logistics and Product Test & Repair in the Consumer Electronics Industry

Techniques for Improving Customer Service, Reducing Costs & Minimizing Returns to Off-Shore Manufacturers
INTRODUCTION

Without question, the globalization of trade has bestowed many benefits upon the consumer electronics (CE) industry. In a business model characterized by companies that keep product development activities close to target markets while off-shoring manufacturing functions, consumers have been fed a steady stream of hand-held devices, High Definition TVs, gaming consoles and smart phones for well over a decade.

Notwithstanding the valid concerns around the loss of American jobs to foreign producers, this approach has not only succeeded in accelerating the introduction of great products to the U.S. market, it has done so in a fashion that puts them in the hands of as many users as possible. Stated simply, the mantra of “design local, outsource global” has driven costs down to the point where millions of consumers can afford goods that otherwise would be outside their economic reach.

Consistent with the internationalization of the consumer electronics supply chain, organizations have also become quite savvy at managing the inbound flow of merchandise to domestic shores. In addition to using overseas manufacturers, firms have been able to reduce inventories through better forecasting techniques, negotiate favorable ocean freight rates with carriers and streamline U.S. distribution processes. With many of these (and other) improvements being passed on to buyers in the form of lower prices, it has taken the CE industry less than twenty years to integrate what was once an unwieldy collection of suppliers, manufacturers, steamship lines, airlines and third-party logistics service providers.

In this rapidly-evolving framework it should be clear that one of the biggest supply chain challenges for mature CE companies lies in finding new ways to enhance operational performance. With so many innovations already implemented, organizations are now confronted with the reality that there are fewer and fewer “final frontiers” of optimization to be explored. In what may be considered a supply chain paradox, it is the position of this white paper that firms must seek enhancements to their Value Proposition where opportunities should have been sought long ago: as close to the final consumer as possible. More specifically, organizations must now task themselves with improving one of the more onerous – and often times ignored – aspects of their global supply chains; Reverse Logistics and product Test & Repair (RL/T&R) functions.

Whereas initial supply chain endeavors were primarily focused on upstream activities, today’s efforts need to zoom in on areas that involve direct touch-points with the actual end user. In recognition of a well-informed and demanding customer base, it is imperative that CE enterprises concentrate on processes that not only involve the inbound movement of goods, but that have a tangible downstream impact on the overall Customer Experience. Needless to say, Reverse Logistics and Test & Repair activities fall within this characterization.

Globalization, Reverse Logistics and Product Test & Repair Challenges

Not unlike the automobile designs of the early nineteen hundreds, CE supply chains were originally built to run better in forward gear than in reverse. The combination of short product life cycles and the accelerated shift to outsourced manufacturing are but two reasons why enterprises have been forced to work almost exclusively on getting products to distant markets in the fastest and most economical way possible. In such an intense environment it is easy to see why some companies would dedicate little thought (and even fewer resources) to dealing with issues like buyer’s remorse, defective merchandise or the need to quickly replace, recover and repair a broken device.

It is no coincidence that the benefits born of the off-shore manufacturing model quickly become a liability when a company begins to engage in RL/T&R functions. Especially true in markets like the U.S. that are far removed from production facilities in Asia, RL/T&R activities create unique challenges when dealing with turnaround time, inventory levels, landed costs and most importantly, customer satisfaction. If
The above situation becomes even more complex when one considers a very important characteristic of the gaming sector; gamers want the same console back that they returned for repair. With users investing hours and hours fine-tuning their settings, preferences and avatars it is very difficult to appease someone with what amounts to a blank replacement device. So, one can only imagine how happy a customer gets when she discovers that her console won’t be returned for six weeks because it spent a little too much time going through Chinese Customs.

It is issues like these that will consume what was once a healthy operating profit and compel customers to turn to Twitter, Facebook and MySpace to express their consternation.

Admittedly, this type of “Same Unit Repair” model creates tactical issues that aren’t found in other CE spaces. In scenarios where customers don’t need the same unit back, companies are able to mitigate T&R delays by simply sending a replacement right away. For example, through a practice known as “Advance Exchange” many wireless service providers in the cellular telephone industry replace defective handsets before recovering a faulty device. In what amounts to the ultimate show of faith towards the customer, companies are willing to ship a new (or refurbished) unit with the understanding that the recipient will return the defective phone by using a pre-printed label and shipping pouch enclosed with the replacement.

Even though Advance Exchange has been in practice for some time it still serves as an important service innovation and is an excellent example of how
direct-customer touches at the tail end of the global supply chain can make or break a company’s brand. This depiction is not meant to convey the idea, however, that there are no behind-the-scenes logistical challenges associated with the practice.

Quite the contrary, the model mandates that a company be able to send suitable replacements in a timely fashion, recover the original device, conduct a quick diagnosis of the problem(s) and from there, make a decision on whether to repair the unit for re-use, harvest it for parts or send it out for recycling. If an organization isn’t in a position to execute on all of the above activities, said company’s image and budget will suffer accordingly.

As one can see, whether a company employs a Same Unit Repair or Advance Exchange model, there is a great deal of money and brand equity in play when executing what ATC Logistics & Electronics has termed Last Mile Logistics and Back Again™ services. From this viewpoint, it is just pure folly for companies to invest so much time, energy and funds in their upstream supply chains only to throw it all away on flawed returns and T&R processes. Fortunately for the consumer electronics industry, several manufacturers have implemented solutions that help to alleviate the long lead-times, delays and bloated inventories associated with lengthy reverse logistics processes.

A Partial Solution

One of the advantages of working with global OEMs or CMs is that they maintain a multi-site manufacturing footprint. Taking advantage of regional trade pacts, Foreign Trade Zones, access to local suppliers and shorter distances to markets, a considerable number of today’s producers have capacity in places like North and South China, Korea, Mexico, Brazil and Eastern Europe. Given this setup, one obvious option in serving the U.S. market is to shift both manufacturing and repair work to Mexico. Another alternative that device makers employ is to keep production in China while using their Mexican facilities in support of T&R functions. In either scenario it is hard to dispute that there are substantial lead-time, transportation, inventory and customer service advantages when compared to a pure China solution for RL/T&R services.

Although Mexico is a lot closer to the U.S. market than China or Eastern Europe, this strategy doesn’t resolve all of the logistics, inventory and customer services issues that can arise. Even with the advantage of operating under the North American Free Trade Agreement, Mexico is still an international destination that requires a fair amount of export/import formalities. In addition to this exercise, the lead-time benefits of shipping to Mexican facilities can be diminished depending on the location of the site (just over the border in say, Matamoros vs. places like Guadalajara in the southwestern state of Jalisco). Add to these challenges the need to maintain equipment, seed stock and spare parts inventory in-country, as well as the cost of truck or airfreight, and Mexico becomes an option that should only be used under specific circumstances.

Whether a CE company off-shores production and T&R services to China, Mexico, or a combination of the two, the bain of any consumer electronics supply chain is what is known as “No Trouble Found,” (NTF) devices. As the name indicates, an NTF situation arises when units are sent all the way back to a manufacturer for repair when there is nothing technically wrong with them. Related to consumer issues like user error and exacerbated by a lack of supply chain stop-gaps that weed out NTFs prior to being sent overseas, once NTF units become part of the reverse logistics process they are a never-ending source of aggravation, wasted time and unnecessary expense.

Depending on the specific vertical within the Consumer Electronics industry, No Trouble Found units can represent more than sixty five percent of all returns to a producer. When one considers the sheer volume of NTF devices in a reverse network, and the handling, packing and shipping expense that is incurred for each one, the amount of money involved in this non-value-creating activity can be staggering. Add to these expenses the fact that producers charge a penalty for clogging up their T&R lines with undamaged products and the overall hit to profit
margins is devastating. Driven by the knowledge that it is impossible to completely eradicate No Trouble Found units, any RL/T&R strategy should strive to not only address their proper handling, but work to remove them from the reverse logistics chain as early as possible.

Once the end-user implications of every potential return scenario are identified, companies can then begin to contemplate the operational and financial limitations of working across global supply chains. Within the context of this multi-national framework it is important to factor in variables such as where the product was first made, who made it (in-sourced vs. outsourced), whether the original producer will also conduct T&R functions and if so, in what location(s). If it is determined that a third party will carry out Test & Repair activities, additional thought must be given to the level of repairs that will be conducted by the service provider, where facilities should be located, what the repair-specific work rules will entail and how the third party will liaise between the manufacturer, the brand owner and most importantly, the customer community.

Whether a CE company chooses to run its Reverse Logistics and T&R program with the original producer (be it an OEM or CM) or outsource those services to a third party, there are many important policies, procedures and tasks that have to be mapped out. Luckily, many of these activities can be found in any basic Manufacturing Planning & Control System (MP&C), including forecasting, Material Requirements Planning, Capacity Planning, labor cost analysis, technical training, shop-floor control, inventory management and of course, budgeting. Needless to say, the trick is to take advantage of existing concepts from MP&C Systems while adapting them to the specific requirements of product returns, test and repair functions.

The adaptation of techniques from Manufacturing...
Planning & Controls Systems to a RL/T&R environment not only allows a company to utilize a proven methodology, it forces organizations to take an IT enabled, enterprise-wide approach to process design. Especially important when working with third party service providers, policies have to be in place regarding who will procure raw materials for device repair, on whose balance sheet replacement parts will appear, how excess and obsolete (E&O) inventories will be accounted for amongst the parties, and what Enterprise Resource Planning software will be used to facilitate functional execution. With those decisions made, companies can then move on to equally important matters like the most economical country of origin for raw materials purchases, the costs associated with moving those goods across borders (inbound transportation, customs duties, et al.) and if replacement/spare parts have to be sourced through certified OEM suppliers.

**A Holistic Solution in the Age of Globalism**

It is within this multi-variable context that a methodology must be devised to create a true balance between customer expectations, operational realities and the budgetary constraints placed on any CE organization. With an emphasis on systemic improvements, the following model is meant to complement the existing relationship between a manufacturer and branded seller by introducing highly specialized, function-driven expertise in the areas of Reverse Logistics and Test & Repair. The result is a hybrid approach that protects both budgets and brands through improved turnaround times, rationalized parts inventories, better use of seed stock, reduced transportation expense and the near elimination of NTF penalties from off-shore producers. The specific components of the model are as follows:

**a) Outsource Reverse Logistics and Test & Repair processes to a qualified Third Party Logistics Company.**

RL/T&R programs require facilities, technical skills and software support that are purpose built and highly specialized. In spite of the importance of these activities to a CE company’s Value Proposition, very few have attained the necessary expertise in each of these areas and as such, should seek to optimize functions by outsourcing them to an expert in Reverse Logistics and Test & Repair services.

It is important to point out that this paper advocates the integration of RL/T&R services with the same 3PL; meaning that one company should be responsible for both the recovery, consolidation and transportation of product returns, and the Test & Repair of CE devices. Be it from the perspective of product tracking, transportation costs, Material Requirements Planning, inventory management or customer expectations there are myriad benefits to integrating RL/T&R functions, and it is imperative that those services be conducted by the same 3PL.

Ideally, the 3PL in question should also be able to create value for CE companies by offering them the option of purchasing and liquidating their returned goods. With this extended portfolio of services the 3PL not only creates value through its RL/T&R capabilities, it provides CE companies with a viable outlet for products that they opt to sell through aftermarket channels. The decision to utilize this type of offering depends on many factors, but the ability to link RL/T&R services with product disposition capabilities is a compelling model that CE firms need to consider.

**b) Utilize a centrally located facility for RL/T&R processing.**

Whereas it is essential for a CE organization to utilize multiple distribution facilities as part of its U.S. forward logistics strategy, it also makes sense to conduct RL/T&R processing in a single, integrated location in the center of the country. Using the Dallas/Fort Worth Metroplex as an example, one can see that a facility in this area is more or less equidistant from the East/West Coasts, and is well positioned to receive, process, repair and re-ship goods not only to/from these areas, but to the Midwest and Gulf regions as well.

When properly laid out, a 3PL operation in the central U.S. can handle incoming products from various sources, including retail stores, other third party...
warehouses, offices and homes. Further enabled by a Warehouse Management System (WMS) that is connected to a CE customer’s Enterprise Resource Planning (ERP) software, the 3PL is able to scan individual devices into the system upon arrival at the site, thus assuring visibility for all parties and access to product specific work rules throughout the entire RL/T&R process.

One of the most critical services features of this IT-driven operation must be the ability to identify and segregate No Trouble Found devices as soon as possible. Inspired by the aforementioned need to create systemic value across the global supply chain, the 3PL site needs to stop NTF devices dead in their tracks, thus eliminating unneeded returns to overseas manufacturers. Once NTF units are identified by the 3PL it becomes much more efficient to carry out legitimate value-added services like the level of repairs to be performed on a defective product, the type of raw materials to use, when to put a device into seed stock, harvest it for parts or prepare it for recycling.

c) Support the central U.S. operation with additional T&R capacity on the Mexican border.
With NTF units culled from the process at the U.S. facility, a border-based Mexico T&R operation can augment the effectiveness of the overall model in several ways. Run by the same 3PL as the operation in the central U.S., the best way to optimize cooperation between a plant in Texas and another in Matamoros or Reynosa is to make a clear distinction as to what level of repairs will be provided in each site. Policies on repair levels between plants are not only needed to eliminate confusion, but to help 3PLs remain sensitive to their client’s service needs as they work within the boundaries of potential transit time, labor and/or inventory management constraints.

Although each CE customer will have their own detailed requirements, one proven method involves using the Texas facility for NTF filtering, cosmetic repairs and parts swap out, while technical expertise on the border is utilized for complex, board-level activities. In cases where turnaround times for behind-the-scenes repairs are more flexible, Texas can be used strictly as an NTF stop-gap and Mexico can conduct all levels of repair. With the ability to offer several types of operational schemes to a CE client, this model remains attune to customer service exigencies as it makes the best use of locations, transit times, technical expertise and labor cost differentials.

d) Use a combination of Enterprise Resource Planning software, Middleware and Warehouse Management Systems to integrate operations.
Mentioned briefly in part b) of this section and expounded upon here, it is imperative that the software system of each player in a RL/T&R program is connected in real-time. In addition to the need for a WMS that enables process visibility and workflow, enterprise-wide software must be present that captures the broader-based needs of an operation that embraces the principles of Manufacturing Planning & Control Systems.

Driven by a forecast that is broken down by the total amount of returned devices, the percentage of NTFs, the number of repair units and the quantity of raw
materials required to carry them out, the CE customer has to use ERP software that connects with the 3PL's system. Without this connectivity, it would be impossible for a service provider to receive, act upon and update information regarding Bills of Material, Material Requirements Planning, Capacity Planning, shift scheduling or Activity Based Costing. On the flipside of the operational equation, a lack of connectivity would also make it very difficult for the CE company to anticipate the availability of products for return to the original buyer, resale, seed stock or recycling.

In an effort to extend connectivity beyond the four walls of the 3PL facility even further, the use of a web-based portal designed exclusively for Return Materials Authorizations (RMA) is also required. Whether it is provided by the CE company or developed by the 3PL, this upstream visibility facilitates returns for retailers, businesses and individuals as much as it helps the logistics partner to plan for their arrival and subsequent processing.

**e) Engage the 3PL for purposes of Collaborative Planning, Forecasting and Replenishment.**

A valuable bi-product of outsourcing RL/T&R programs is found in the information a 3PL can compile on the one-time events, trends and patterns associated with every product that they handle. Whether it involves data on a device with unusually high NTF occurrences, a component with unacceptable failure rates or raw materials suppliers that are constantly late with deliveries, the data a service provider can pull together in support of continuous improvement initiatives should be treated like gold by its CE customers.

Taking this concept a bit further, CE companies should not only ask the 3PL for reports on the various facets of RL/T&R programs, they should actively engage their logistics partner in those same activities. An excellent example of how CE companies can work in greater unison with a 3PL lies in the discipline of Collaborative Planning, Forecasting and Replenishment (CPFR). Because the 3PL can provide up-to-date comparisons on forecasted vs. actual outcomes across the entire RL/T&R spectrum, said 3PL should be called upon to participate in all of those forecasting exercises.

A relatively new practice that has gained currency in the field of CPFR surfaces when a 3PL agrees to source and purchases raw materials, component parts and other goods on behalf of the CE customer. Now with real skin in the game, the 3PL is broadening its service offering to include the procurement of all of the materials associated with the RL/T&R program. By fulfilling this function and keeping assets on their own balance sheet a 3PL makes a quantum leap from a provider of specialized logistics services to a true global supply chain partner.

**The Benefits of Integrating RL/T&R services with a Highly Specialized 3PL**

Prior to listing the benefits of outsourcing an integrated RL/T&R program it must be acknowledged that there is no such thing as the perfect solution. When dealing with so many customer, operational and financial variables it is simply impossible to devise a system that addresses the idiosyncrasies of every client in all possible scenarios. With that said, the model proposed herein offers a combination of flexibility, structure and visibility that CE customers can use to achieve the balance so often mentioned in this paper.

**a) Economies of scale in a multi-channel reverse logistics network.**

With the proper layout and IT support, a North Texas site can coordinate the inbound routing, receipt and internal handling of products from multiple sources. By combining industrial engineering techniques with investments in human capital, materials handling assets and T&R equipment the 3PL is able to design processes that accommodate devices sent from big-box retailers, strip mall merchants, commercial entities and online buyers.

Well defined processes at the point of receipt help to foster economies of scale by segregating NTF units, identifying devices that were part of an Advance Exchange and flagging units that are subject to Same Unit Repair criteria. From there, demand signals pull large lots of product through additional processing in
areas such as triage, Radio Frequency Testing or software re-flashing. If these activities were spread across multiple facilities in the U.S. it would not only be difficult to maintain the same productivity and quality of work in each plant, the economies of scale needed to optimize these operations wouldn’t even be possible.

b) A well-trained and competitive pool of human talent.
A natural (and permanent) advantage that the North Texas region has over other parts of the country is its central location in the United States. For purposes of domestic distribution, the Dallas/Fort Worth Metroplex has become a logistics Mecca for companies involved in consumer electronics and wireless communications, spawning a workforce that not only possesses logistics skills, but technical capabilities specific to product T&R. When seeking a labor pool that possesses both logistical and technical expertise a CE company would be hard pressed to find an area as rich in talent as North Texas.

Compared with other workforces across the country (and especially in coastal areas) North Texas has a very competitive compensation structure. When linked to the economies of scale mentioned previously, the duo of a fair hourly wage and high productivity makes an integrated RL/T&R facility in the Dallas/Fort Worth area that much more attractive. Equally compelling is the Mexican border site’s ability to integrate its highly skilled and competitive workforce into this activity-based, variable cost model.

Reverse logistics transportation costs represent a major component of any RL/T&R program. While recognizing that there are divergent philosophies on the subject of the inland freight costs generated in a stand-alone vs. a multi-site network, one thing is certain about sending goods to a single facility: there is a concentration of volume and shipment frequency that makes this type of freight very attractive to transportation companies. Be it that goods are moving between Los Angeles and Fort Worth or from North Texas down to an operation in Matamoros, access to high volume/high frequency shipments will have freight companies lining up with competitive pricing and promises of a quality service.

Another transportation-related benefit inherent to this model is the predictability of lead-times in/out of the plants. As important as transportation costs itself, the level at which an operation can count on the reliability of lead times will drive the efficiency of all subsequent operations and ultimately, customer satisfaction.

c) Rationalization of lead-times and landed costs.
When a CE company works with more than one RL/T&R facility it is an on-going challenge to rationalize landed costs, lead times or inventory levels across its various operations. In fact, given the variation that is inherent to a multi-site model, it is possible that over the long-term lead times will become less reliable, landed costs more varied and inventory levels higher than anyone ever contemplated.
Particularly true when goods are coming in from all over the country – and via different modes of transport – stable lead-times into a facility enables better operational planning, execution and client satisfaction.

The issue of lead-time variation is particularly salient for trans-border operations. In the case of shipments moving to/from a plant on the U.S./Mexico border, the advantage of operating so close to the U.S. can easily be erased by the variations in lead times caused by Customs complications. Potentially an issue on both sides of the border, the 3PL that runs a dual-tier North Texas/Border operation will minimize the probability for Customs delays by having formal import/export compliance policies in place, staff members trained in the nuances of U.S./Mexican border requirements, a great Customs broker, and a favorable reputation with U.S. Customs & Border Protection and the Mexican Customs authorities.

d) Better management of inventory levels and reductions in corresponding balance sheet values.

A maxim of inventory management is that it is much less complicated to stock a small number of facilities than it is lots of them. Certainly true in the realm of RL/T&R work, there are several inventory-related advantages to managing a primary operation North Texas that is supported by a site on the border in Mexico. It should be pointed out that these advantages apply to all types of inventory including raw materials, work in process and finished goods.

When the 3PL is engaged in CPFR with a Consumer Electronics firm there is a better chance of reducing the value of raw materials inventory without the risk of stock-outs. Mentioned earlier, the 3PL’s ability to provide real-time information on consumption rates is invaluable in the quest to minimize the amount of inventory held at a facility. If, as in this model, the same 3PL is procuring raw materials and/or component parts on behalf of its CE customer, the dollar value of inventory on the client’s balance sheet is not just reduced, it is removed entirely. Backed up by explicit agreements on Excess & Obsolete inventory, this type of partnership compels both partners to be actively engaged in the on-going management (and reduction) of raw materials inventories.

One inconvenient component of the product returns process is that a customer has to be credited and the value of the returned goods has to be reflected on the balance sheet of the CE company (as inventory under Current Assets). Unfortunately, a lack of proper systems integration between parties sometimes causes returned goods to get put back in inventory at its original value and not as a used product. A 3PL that has IT connectivity with its clients should have pre-determined product values listed in the system and be able to receive goods at the more accurate (i.e. lower) inventory value.

It is not only important that returned goods be properly valued for balance sheet purposes, they have to be moved quickly through the Test & Repair process. With the potential for millions of dollars in inventory to be tied up as Work In Process (WIP), the 3PL in the featured model relies on its expertise in industrial engineering, investments in equipment and the productivity of its technicians to turn WIP around without delays. Depending on the work instructions for each device, the 3PL will be directed to send units to seed stock, harvest for parts or have them recycled. In each case, the 3PL is able to correctly adjust inventory values down to the appropriate level.

When WIP is converted into refurbished merchandise it has to be sold as soon as possible. Recalling that the 3PL in the proposed model offers liquidation services, the CE company can get product off of its books immediately by simply selling it to the 3PL. In the case where the CE firm decides to market refurbished products through other channels, the 3PL exercises its outbound logistics expertise to move the goods quickly, providing tracking services down to the individual shipment level. In both scenarios, the 3PL makes fast work of increasing the CE company’s aftermarket sales and records the appropriate inventory value adjustments simultaneously.
e) Objectivity in the area of product Test & Repair.
At this stage of the paper it should not be forgotten that there is an OEM or CM in the mix. Although the 3PL has stepped in to provide value to the existing supply chain, the original producer still needs to receive feedback and engage in continuous improvement projects related to the T&R function. Because the 3PL in this model provides both RL/T&R services it is in an excellent position to provide objective observations on product quality and how to reduce defects in the future.

Although it may sound counterproductive to the financial goals of the service provider, the prudent 3PL will work with its clients (and their manufacturers) to find ways to improve product quality. Due to the fact that the 3PL undertakes T&R work on behalf of its CE customers every day, said 3PL can make very timely observations about product design, the quality of raw materials or excessive component fail rates. Armed with this information, the CE firm can go back to the manufacturer and engage in projects that address important engineering issues like product reliability in the field and Design for Reparability.

f) Green Programs
Given that the 3PL in this model is providing Last Mile Logistics and Back Again™ services, it is well poised to facilitate green initiatives on behalf of its customers. As one of the last entities in the global supply chain to be in possession of large amounts of consumer electronics products, the 3PL not only has a commercial motivation to engage in environmentally sound practices, there is also a moral imperative to be considered.

So, whether the 3PL is simply following the disposition instructions of its clients or sending End of Life (EOL) product to pre-approved recyclers by its own doing, the service provider has a responsibility to its clients, employees and society in general to engage in the most ethical of green activities. As the saying goes, the 3PL will quickly discover that “one can do well by doing good.”

g) Job Creation.
Originally mentioned in the Introduction of this paper, an unfortunate consequence of the off-shoring phenomenon is that thousands of American jobs were lost in the process. Ironically, the move to overseas manufacturing for consumer electronics goods now creates job opportunities stateside in the field of product Test & Repair. Also discussed in an earlier section, the fact that it makes no economic sense to return broken goods all the way to Asia demands that technicians to do the repair work here in the U.S.

Based on customer-driven requirements around service and turnaround times, it is essential for CE companies to have access to T&R capabilities in the domestic market. Even when the impact of offering services on the Mexican border is factored into the equation, the net effect on job creation from Test & Repair work done in the U.S. is still very positive. When one considers that these technical jobs tend to offer more attractive wages than traditional logistics work the overall benefit to the U.S. economy is tangible.

About ATC Logistics & Electronics
ATC Logistics & Electronics (ATCLE), is a premier provider of third-party logistics (3PL) and supply chain services. The company also operates a Foreign Trade Zone (FTZ) at its facility in Fort Worth, Texas. ATCLE specializes in forward logistics, reverse logistics, asset recovery, test & repair, kitting & packaging, transportation management and value-added services for high velocity, high-tech devices, in addition to other equipment and components. Industry focus includes wireless, broadband, electronics, medical, industrial and automotive.

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