NOVADYNE
COMPUTER SYSTEMS, INC.

LOGISTICS ON-LINE

A NEWSLETTER FOR THE SERVICE AND SALES SUPPORT EMPLOYEES OF NOVADYNE

WELCOME

This is the first in a series of technical and operational newsletters about changes and improvements coming from the Operation Support organization. We believe the principle audience for this information is the service delivery community made up of Field Engineers, Logistics specialists, the Technical Support contingent, Sales Reps, and of course their management. While this issue focuses on the new parts delivery process and the new methodology to achieve excelling performance, there are other articles of interest relating to current Operation Support activities.

I must say that the last year has been challenging and interesting for everyone involved in the logistics activity, and especially myself. As we reorganize our processes, it becomes possible to predict improvement, and it is gratifying to see the results measured at the Corporate level. It is even more gratifying to hear from Engineers that parts supply is getting better. Nonetheless, we have a long way to go.

I hope this first issue of Logistics On-line is informative and that it paves the way for an open dialog on the subject of parts availability. In the next issue, I hope to outline the official Standards of Performance or as some of you have called it, "a Sparing Philosophy" for Novadyne.

I want to close by saying thanks to all of the field force for the cooperation received in implementing the re-engineered processes which we have developed. From bar-coding and field replenishment, to parts ordering and expendable usage reporting, our excelling parts supply system cannot be achieved without mutual respect and combined work efforts. Such teamwork will lead to the legendary customer service that we seek in the SPM market. It is the mission of the logistics team to provide a parts distribution service so that engineers and their management can experience "Quiet Enjoyment" as they anticipate and respond to the next call.

Rich Heimann
Vice President, Technical Operations

Bar Code Update

As most everyone must know by now, we are progressing towards our first bar coded physical inventory. To make this a "reality", there are many different tasks taking place simultaneously to ensure that all is ready by the end of October. Field Operations and the Repair Centers are busily applying bar codes to the repairable AIMS inventory. Many locations have already finished. MIS is making significant changes to the many AIMS and Inventory programs. Some of these changes should already be apparent to those who use AIMS on a regular basis. One of the side benefits of these changes will be the ability to track each part's actual location as well as maintain an historical record of each part's movement.

Many people have been asking when they will receive their bar code readers. At this time, the initial plan is for each "manned" location to have a reader no later than mid October. The readers are actually wands made by Welch Allyn which have an integral RS-232 interface. The wand works in conjunction with a device called a "wedge". The wedge serves as a "Y" or junction box for your terminal and the wand. It also provides power to the wand. The wedge allows you to use your terminal, PC, laptop, etc. to access AIMS as you normally would and also, to use the wand where bar coded input is required. This is the configuration in which the wands and wedges will be used most of the time.

To conduct the physical inventory, the wedge connects to the serial port on a laptop and the wand connects to the wedge. Operating a special Novadyne PC-based inventory collection application, the lap tops will collect part and sub-location bar codes. When the data collection process is complete, the laptop will then be used to upload the results of the inventory to NOVA-1, where it will be processed. Sub-location bar codes will be distributed to those locations that use them within the next few weeks. ◆

Steve Gill
Project Manager

IMPORTANT BAR CODE DATES

October 15	Bar coding of all parts should be complete
November 8	A change will be made to CHAD to prompt for a bar code for all parts being installed (Action 82). This will be mandatory input.
December 1	(or as soon as inventory is complete) NO "R" part without a bar code may be moved on AIMS.

Keep Up -- Catch Up Build Up

Do these sound like inventory terms? Well they should; they are the new way that we are insuring that you have the right spares in the right spot at the right time.

This is how the process works for spares that are in our repair pipe line, for either in-house or vendor repair. First, we have to be sure that we are repairing enough spares on a month by month basis to keep up with the current demand. This is the Keep Up aspect of this program. Second, we are assessing what spares need to be fixed to allow us to Catch Up with our ongoing demand. Thirdly, we are in the process of repairing enough spares (Build Up) to allow us to have at least a one week supply on the stocking shelves in the warehouses.

This program sounds simple, doesn't it? Well, there are several things that cause it to become more complicated. First, we had to throw out all the old unused inventory that was cluttering up the repair centers as well as your District stock rooms. This allows us to concentrate on fixing needed products without sorting through out-of-date and defective equipment. Second, we had to modify AIMS to accommodate the various

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passes we had to take at the inventory and to generate reports to validate what we were doing. Thirdly, we are working to get your field offices involved in the field replenishment activities to insure that we are shipping any field excess before we ship from the repair center. The field replenishment is important and worth emphasizing. This process is having a major impact by allowing the repair centers to concentrate on fixing equipment that isn't available as excess from other field offices. Your support in the field replenishment process is key to making this activity work. Allowing the repair centers to focus on equipment that isn't available from other field offices is having a positive, major impact on the Catch Up/ Build Up backlog. Keep up the good work. We plan to complete the Catch Up and Build Up before the end of this year. The Keep Up is an ongoing process that will be addressed each month by looking at the AMU needs from the previous month. We will budget enough money to pay for our AMU based Keep Up needs. As you can see the process is not as simple as it sounds.

If you have any questions on how it works or why it works in a certain way, please call either Dave Elm at (714) 566-3703 or Mike Brunk at (714) 566-2021. ◆

Dave Elm
Director, Tech Ops

SPARES LEAD TIME

How much lead time do I need to have spares to support a new contract in my area?

30 days to support standard contracts
45 days to support new equipment including new BTNA released parts.

If 30 days is not possible, the customer should be advised that this is a short term notice contract and that there is a mutual short term risk until the parts are fully stocked.

Sparing Fundamentals

PART I

The five objectives of service parts management are:

- the right item
- in the right place
- at the right price
- of the right quality
- at the right time.

Fill rate is one of the key measures of success in meeting these objectives. To better understand this measurement, it is helpful to understand these terms:

Provisioning is the process of determining the varieties and quantities of repair parts, tools and support equipment that should be procured and stocked to maintain equipment. The objective of provisioning is to pre-plan as much as possible what parts should be carried on the shelf so that they will be there when needed.

Authorized stockage level (ASL) is the designated target quantity for an item in a stocking location. This is called the provisioned quantity in AIMS. If planning is done accurately, this is the optimum quantity to have on hand; any more is excess, any less will degrade service. In time, we will begin to refer to the AIMS *provisioning levels* as *Authorized Stockage Levels*.

Safety stock is the quantity of stock planned to be in inventory to protect against fluctuations in normal demand and/or supply.

Fill rate measures the level of conformance to the ASL of a specified stocking location. An 85 percent fill rate means that if 100 parts are authorized, then 85 of them are available.

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Novadyne measures fill rate at three points:

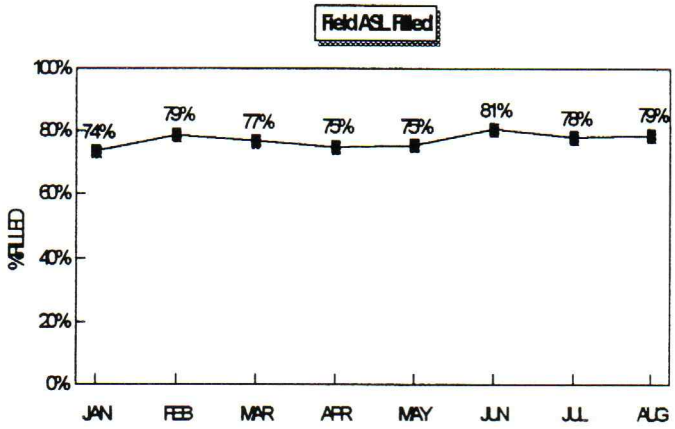
- Field stocking location ASL (the AIMS "provisioned" quantity at each service center)
- Depot ASL (the target quantity of an item at each of the three repair centers: Santa Ana, Dallas and KOP)
- And, most importantly, the instantaneous fill rate of the field engineer on a call.

Field stocking location ASL fill rate is measured as the percentage of field ASL (or "provisioning") that is filled, just after the AIMS replenishment module runs. To calculate this, use the number of back orders listed on AIMS to find the portion of authorized quantity that is filled, and divide this by the total quantity authorized:

field ASL fill rate = (quantity authorized - back orders) / quantity authorized X 100

You can check the fill rate for a particular part on AIMS by using the above formula with the information found on the AIMS inquiry screen. (From the AIMS main menu, choose FLD INQ and then enter the part number and location desired.) Quantities "provisioned" and back ordered are displayed, along with other information.

ASL is *filled* when a part is at its assigned place (or, at least en route to it). ASL is *back ordered* when parts are unavailable, or when they are simply in the wrong place. Parts can be available in large quantities in various service centers, but if they're not at their assigned places, ASL is not considered to be filled. The field stock point ASL fill rate has been above 74 percent all year, but has only once risen above 80 percent.



The target we must aim at is no less than 100 percent field ASL filled (including parts at the field site, in transit to the site, and allocated for shipment to the site), each time the replenishment module runs. If a need for a part has been established, then the need should be met. If the need is not real, then the back order and authorization (provisioning) should both be removed from the system. (Because of necessary transportation delays, the actual field fill rate will always be slightly less than the measured fill rate. Back orders are considered filled when parts are allocated or inbound to a service center). Though the overall fill rate has not changed much yet, there are some bright spots. Fill rate for the infamous Tri-rock Modem has been pushed from below 50 percent to over 75 percent through some extra effort and procedural changes at the Valley Forge Technology Center. The fill rate for all Texas repair center parts increased this year from 70 percent to over 97 percent, and Texas vendor repair parts fill rate increased from 65 percent to over 80 percent as new methodologies were implemented. The quantities of P1 orders for these parts has declined in each case.

Sparing Fundamentals will be continued in the next issue. In that issue, depot and individual fill rates will be discussed. ◆

Bruce Goodwyn
Logistics Specialist

Cerplex -
Our Strategic Partner And Neighbor

It's been 6 1/2 months since the forming of the strategic relationship between Novadyne and Cerplex, which began on March 1, 1993. Cerplex handles over 1,500 active repairable parts for Novadyne; 1,200 are repaired in-house and 300 are sent to outside repair facilities.

With Novadyne's employees transferring to Cerplex, Novadyne's products, processes, and parts knowledge also transferred, making this strategic transition virtually painless.

Cerplex has been instrumental in Novadyne's success in the 3rd party maintenance business, by acting as a strategic partner with Novadyne for such customers as the University of Minnesota and NorthWest Airlines.

Controlling Cerplex's production is the responsibility of Novadyne's Logistics department. This department generates the Repair Center (RC) and the Vendor Repair (SR) weekly schedules. At the present time, it takes two full days of Logistic Planner Linda Brien's time to generate these complicated schedules. Within 3 months, this process should be 90 percent automated. Cerplex is being monitored for performance against these weekly schedules.

More will follow in the next newsletter on the performance of our strategic partner and neighbor. ◆

Dick Samstag
Cerplex Account Manager

Texas Repair Center (TRC)

Problem:

In January 1993, TRC backorders were 640 and 564 TRC parts were shipped P1. This was a contributing factor to inadequate parts availability.

Solution:

Ensure that the right part is at the right place at the right time; consistently!

Elements Of Success

- Accepting Ownership of Problem
- Restructured Repair Center Operation
- More Efficient Use of Resources
- Designed and Implemented Scheduler
- Goals, Incentives, Measurements

The results of applying the above elements include increased service parts availability to a level never experienced prior to the implementation of this concept. Backorders decreased by over 70 percent by the end of June to a corporate low of 55 backorders for TRC dispositioned parts. P1 orders have also decreased by over 42 percent during a three month period ending June 30, 1993. The TRC fill rate also went from a rate of 70 percent to a corporate high 97+ percent. (See accompanying article on fill rate by Bruce Goodwyn.)

This effort truly brings Novadyne a major step closer to Bob Laurence's goal of using "PARTS AVAILABILITY" as a marketing tool. It is also the underlying process that is responsible for a degree of "QUIET ENJOYMENT" for all parties affected by the TRC Dallas dispositioned parts.

Accepting Ownership of the Problem

We realized that the solutions would have to be conceived and implemented on a local level to tailor them to the characteristics of the service

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parts within our realm and to maximize the capabilities and talents of locally available resources. Fortunately, during this same time frame a consulting firm provided some beneficial concepts and corporate provided additional resources.

Restructured Repair Center Operations

Fact

The initial step taken in TRC was to realize our current repair strategy was wrong. In the past a custom (one on one) repair for each P1 order or backorder was the rule. This process had inherent inefficiencies including setup time, technician reassignment and defective stock selection. Despite the allocation of overtime and temporary man power, the inefficiencies of this strategy frustrated our efforts. No progress was made.

Solution

A restructuring of the Texas Repair Center work force was needed. Team leaders and their new responsibilities were identified, a repair center piece parts coordinator was designated and technicians were encouraged to work in teams contributing to repair methodologies. Additional modifications to the work day allowed departments to cross product line boundaries, and maximize productivity and employee interaction.

The second round of reorganization centered on the workload itself. By analyzing RCR data we were able to establish the criteria necessary for judging when a part needed to be scrapped, sent to the vendor or purchased. A program to maintain quality as we increased quantity was also established, it required direct feedback and monitoring from the technicians and outside departments.

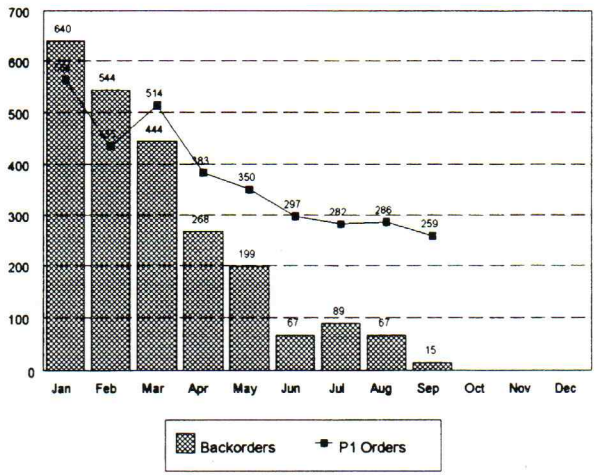
Implementation

With the reorganizations in place, we initiated the first test of this new approach. By targeting our highest AMU keyboards and taking into account economy of scale, the repair center technicians were assigned to the uninterrupted processing of specific keyboards. As a group, the technicians were allowed to devise their own methodology for repair with an objective of maximized production while maintaining quality.

The last elements of success will be detailed in our next issue. ◆

Jeff Leining, Section Manager/Repair Center
Al Hessling, Section Manager/Logistics

TRC Back Order Levels
1993 Month End Totals



Tri-Rock Modems

When Rich approached me with the idea of jotting down a few thoughts for the first edition of the logistics newsletter, I was thrilled. The thrill, however, was short lived when I discovered the topic was the Tri-rock modem. For as long as I can remember modems have always been a logistics nightmare, and the Tri-rock is the unparalleled winner of them all.

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The common thread in the modem world is that they rarely fail one at a time, they are extremely susceptible to lightning storms, are very dependent on strapping and user set up, and in the Tymnet world usually have a very high installed base. The Tri-rock is no exception, in fact the Tri-rock is the leader of the pack when it comes to nuisance errors, ghost signals, RNA, and power disruptions, with an installed base of over 18,000.

How do we control an installed base of 18,000+ with an AMU of 148? Well, some of you may say, not too well, a response myself and the modem repair department hope to change. Unfortunately, by and large most agree, the problem goes far deeper that, "Gee they never repair the things."
The "challenge to improve" is ever present in discussions I have with Rich and my goal is to reduce the P1's and insure good Tri-rocks are available for normal replenishment each week.

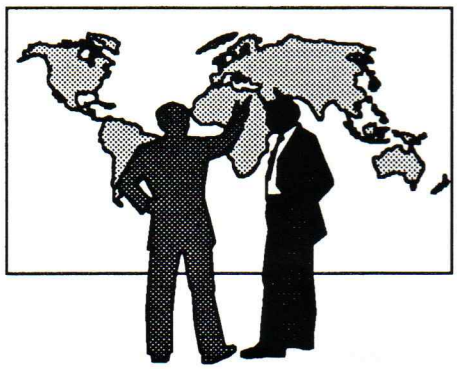
To accomplish this goal, we re-engineered the Tri-rock repair process. Starting in May of this year, we put in place a methodology that involves total harmony between the field, the logistics department, and the repair operation. The repair end was actually quite simple; develop a schedule that takes into account not only what is needed to meet the AMU (keep up) but removes the back orders (catch up), and keeps the stocking level ahead of the replenishment demands. The logistics input involves manual daily replenishment of repaired Tri-rocks and scrutinizing each P1 prior to fill. The field is being asked to ship modems over provision to sites that are under provision.

Is it working? You bet!

During the first four months of 1993 P1's averaged 144 Tri-rocks per month, the repair center repaired 155 per month and the back orders was well over 100. From May to August our average monthly Tri-rock P1 orders dropped to 69 and repairs jumped to 184. P1's would have been even lower, except for a large hit in August, the result of a power storm that left ATLR with a legitimate demand for 16 in one order. Are we satisfied? No, more needs to be done. The number of defective waiting to be returned must be reduced and there are still too many sites showing over provision, but the process is working and the cooperation is there. Together we will remove the Tri-rock modem as an irritant.

Now, how are we doing with those new US Robotics modems? ◆

Al Caraciolo
Manager, KOP Repair Center



Federal Express Agreement

On October 6, 1993 Novadyne Computer Systems and Federal Express entered into a new and innovative Custom Pricing Program.

In this program Federal Express has applied a sliding scale discount schedule based on volume and weight. It is anticipated that with the Federal Express commitment to service, Novadyne's field operation offices should see an immediate improvement in delivery times. Operations Support is continuing to search for new and innovative ways to control and distribute Novadyne's spares inventory. ◆

Sam Wilson
Manager, Logistics

EDITORS CORNER

This publication is printed quarterly, but due the vast amount of information to be shared with you in the first issue, we will publish the second half in approximately two weeks.

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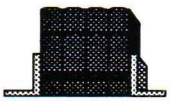

Any questions, comments, or suggestions for future articles should be submitted in writing via E-Mail to D.Mokhtari.

Thank you.