

# GSIE Lean Transformation Newsletter

VOL 1, ISSUE NO.2

MARCH 1, 2003

This newsletter is a quarterly publication to provide information about success stories and lessons learned concerning the Lean conversion of the **Ground Systems Industrial Enterprise (GSIE)** to its customers, employees, and other stakeholders. GSIE is a new organization comprised of industrial facilities that support all of the U.S. Army's ground systems. These facilities are: Anniston Army Depot, Lima Army Tank Plant, Red River Army Depot, Rock Island Arsenal, Sierra Army Depot, and Watervliet Arsenal. Lean manufacturing is being implemented by GSIE at all sites except Lima Army Tank Plant, which is a Government Owned/Contractor Operated (GOCO) facility. For information on GSIE and its capabilities, visit our website at: [www.gsie.army.mil](http://www.gsie.army.mil).

## FY 03 Lean Project Prioritization Meeting at AMC

By Erik Bakken

No one should be surprised at this point that the U.S. Army Materiel Command (AMC) is moving aggressively to implement Lean Manufacturing throughout all of AMC's operations, both in manufacturing and non-manufacturing operations. General Kern laid out his vision for the adoption of Lean practices in AMC and set in motion activities to make it happen.

In early February, a group of lean facilitators met at AMC to discuss projects, funding, schedules, and metrics that would affect all of AMC. Attendees included representatives from each MSC, the AMC G-3 Lean cell, and the office of the Inspector General (IG).

Each MSC representative brought to the meeting a list of lean projects planned for FY 03. The team reviewed each planned Lean initiative and ranked them on several criteria intended to adequately fund the most important initiatives. The team reviewed projects on the criteria of their impact to recapitalization program, readiness to the warfighter, potential savings, and relationship to

AMC's core mission. The team also reviewed non-manufacturing projects for their importance to the future of AMC by looking at processes that would significantly contribute to future command business strategies, i.e., bringing in new work and facilitating Army transformation initiatives.

AMC will fund lean initiatives through a blanket purchase agreement for conducting training and developing metrics, and for performing Lean services (Value Stream Analysis-VSA and Rapid Improvement Events-RIE), and alignment reviews for assessing lean implementation results. Simpler Corporation provides the lean consulting services through Anteon International Corporation. The approved funding will not pay for all initiatives, but will provide funding to outline the studies through the VSAs and RIEs. Installations should learn from Simpler and apply the lean techniques on new initiatives throughout all activities.

AMC made available adequate funding to cover all FY 03 projects submitted by the MSCs. This is very good news, thus giving every installation and MSC the opportunity to benefit and learn from Simpler's expertise. The total amount funded for all AMC FY 03 initiatives is \$2.4M, of which \$601,200 goes to GSIE.

Along with facilitating the funding issue, we spent considerable time on metrics. Simpler

recommended three levels of metrics to determine the efficiencies gained through lean activities: lean deployment metrics, site performance metrics, and project or process metrics. Our task was to set into place the project or process metrics that will measure the progress of individual lean initiatives. We confirmed nine metrics would cover most, if not all, areas for the studies. AMC will not expect every metric filled for each study, but expects to see attention given to appropriate metrics. The available metrics will measure how fast we are producing the product, how much it costs, adherence to the schedule, and efficiency.

AMC requires monthly status reporting of lean to the AMC CG. General Kern will include in the monthly updates one installation commander to brief the status of their lean projects, beginning with Tobyhanna Army Depot in March.

We are very appreciative that funding was made available for lean events to host the services of a highly qualified contactor and to gain knowledge for future lean initiatives. We also understand that implementing lean will not be easy and will not happen over night, but with consistent application and solid determination, lean thinking will infuse itself in our daily operations.

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## ***ARE WE GETTING LEANER???***

By Sandy Frost-Cargal

Within the last five months, Anniston Army Depot (ANAD) trained more than 150 employees, worked through two Value Stream Activity events, and recently completed the third Rapid Improvement Event (RIE). The team members plunged into this effort, eagerly learning the lean techniques. This "people" process has proved to be highly motivational in addition to being a sound business strategy. ANAD is continuing to work with the Simpler consultants to help create a business strategy that focuses on operational excellence as measured by products that are delivered on time, at or below cost, and with sustained quality.

The first team's focus was to identify and eliminate inconsistent batch flow and shortages in the machine shop for the top eight items supporting the 1790 Engine process. Thirty-two employees were trained during the first quarter of FY 03 to support the implementation of lean and prepare for

the first lean event scheduled in January 2003. The classes included the Basics of Lean, How to Lead a Rapid Improvement Event (RIE), Value Stream Analysis (VSA), and a car-building simulation.

The first VSA focused on the AVDS 1790 Reciprocating Engine process. The depot's first RIE consisted of four teams of individuals from production, engineering, planning, and quality. The team's goals were to increase productivity by 30% and reduce turn-around time by 50%. At the end of the week, they shared their accomplishments with the remainder of the team members and the management team. Some of the team's accomplishments were:

(a) The team developed a specific production control board for the "Big 8" 1790 machine shop items, coordinated with union the implementation of using the board, met with machine shop employees to communicate how to use the board, and helped shop actually begin the use of this board.

(b) The team realized that there was no visual mechanism to trigger production of oil pans and damper housings, and unnecessary handling was involved. Consequently, the team determined the need for and location of a 1790 damper housing and oil pan supermarket. They also fabricated and installed signs for both supermarkets.

(c) Previously, oil pans were being individually picked-up and transported to the assembly component work bay for subsequent processing. The team identified the need, designed, and fabricated a special buggy to hold three oil pans to be used in the new supermarket. The buggy has reduced labor required for the mechanic to transport oil pans into assembly area and also reduced the risk of injury compared to the previous method used.

(d) There were several other improvements from this team that included sorting, straightening, scrubbing, making it safe, standardizing tasks, and establishing procedures for sustainment of gains. These improvements are referred to the 6Ss.

The second team on the 1790 Engine process event focused on establishing a "pull" system into and from the cleaning area of building 130. Their goal was to eliminate part shortages delivered and removed the top 20% of 1790 Engine parts. However, once they got into the process, they realized that the area was too cluttered and disorganized to continue with this goal. The team's focus shifted to establishing the 6Ss. The accomplishments included:

(a) Provided accessibility to the emergency shower and eye wash station.

(b) Removed an 8' by 10' "shanty" so floor space could be utilized more effectively.

(c) Organized the work area/floor space in steam cleaning to permit eight additional baskets/pallets of material to be accessible for simultaneous cleaning.

(d) Reduced the cleaning time and instituted procedures that improved the cleaning of damper housings, oil pans, and crankshafts.

(e) Reduced the required buffing time by decreasing oil pan rust through increasing the inside available floor space.

The third team established a process flow to and from building 409 for the 1790 Engine parts. Their changes resulted in a reduction in throughput time and identification of internal customer demands. Some of the team's accomplishments were:

(a) Identified in-process lanes at building 409 for 1790 engine parts that represent 1 day's production requirement.

(b) Identified specific daily customer requirements/process demands for cleaning personnel.

(c) Eliminated material continuously moving in and out of the building between processes.

The last team focused on assuring the availability of parts from the cleaning and finishing operations in Building 114 to the 1790 engine operations in Building 130. While personnel operating in Building 114 had a production schedule, they did not have a method to track the number of parts and pieces equating to one engine or a day's production requirement. Team accomplishments included:

(a) Establishment routing lines segregated by customer and type process.

(b) Identification of the number of parts needed to support 1790 production. The team installed a production control board with these requirements to assist personnel in tracking production accomplishments.

(c) Consolidation of basket parts by process requirements by working with the disassembly, cleaning, and finishing personnel.

The true goal of a Lean Conversion is to develop an organization (culture) that is capable of thinking and implementing "Continuous Improvement" every day. The RIE is a vehicle for:

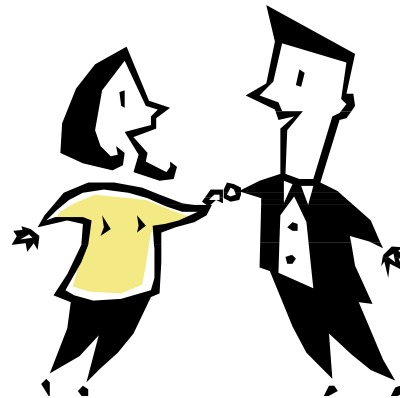
(a) Establishing a new paradigm for expectations, performance, and intensity.

(b) Using the "dirty hands university" to teach and learn the rapid improvement tools that identify waste and encourage elimination of waste.

(c) Creating the venue where change agents can demonstrate impact and newcomers can be indoctrinated into the RI process.

(d) Educating the workforce how to "Think Lean." This will fundamentally change how everyone approaches his or her job. Ultimately, our culture will become intolerant of poor quality, poor communication, and poor system execution. Once the skills and thought process have been institutionalized in our culture, the dependence on formal RI events decreases and daily continuous improvement will become the norm.

So when you are asked to participate with one of the teams, jump in and learn. Some good solid steps have been made for Anniston Army Depot's future. It is our responsibility to take part since we are all part of the Anniston Army Depot family.



### **3 Rules of Work**

1. Out of clutter, find simplicity
2. From discord find harmony
3. In the middle of difficulty, lies opportunity

-- Einstein Albert

## LEAN @ THE ROCK

*Rock Island Arsenal* (RIA) completed its first Value Stream Analysis (VSA) on February 18 – 20, 2003 on the Forward Repair System (FRS). Over twenty-five employees from RIA senior management, union officials, and RIA FRS technical specialists participated in this VSA. Additionally, Lean representatives from the U.S. Joint Munitions Command (JMC) and U.S. Tank-automotive & Armaments Command Ground Systems Industrial Enterprise TACOM GSIE participated in this very exciting event.

Three very successful days produced a comprehensive FRS VSA and an aggressive schedule for seven RIEs that will begin on March 2003 and run through September 2003. During the VSA, RIA established goals to improve turn-around time, productivity, travel distance, and first-pass yield. The FRS turn around time goal for FY 04 is to improve the delivery schedule from 10 months to 6 months, and the goal for FY 05 is to improve turn around time from 6 months to 3 months. The productivity goal is to improve the number of hours to build each FRS system in FY 04 & FY 05. Goals to reduce travel time for the FRS in FY 04 and FY 05 are to streamline the FRS manufacturing process. The goal for first pass yield for the FRS Crane Bracket has been established at 98% from a current level of 30%.

In addition to the FRS, RIA identified the Acquisition process, Contract Maintenance Truck Heavy (CMTH), and Explosive Ordnance Disposal System (EOD) for future lean projects in FY 2003.

Moreover, RIA invited the Maytag Corporation to the Arsenal to share their experience with implementing Lean /Six Sigma initiative. During their visit, Maytag had a tour of the RIA factory, talked with the Lean Implementation Team, and discussed their experiences with senior RIA management officials, union officials, and RIA employees about their significant accomplishments in implementing the Lean concepts throughout their 10 manufacturing plants. Maytag combined the Lean/Six Sigma initiatives within one office to share the improvement tools of both concepts and complement the improvement strategies for each concept. Maytag shared their impressive improvement results in savings for unit cost

reductions, productivity gains, and reductions in floor space utilization as a result of implementing the lean concepts within their plants. RIA has also planned other future visits from John Deere and Hon Industries to also share their successful experiences with Lean implementation at their facilities.

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## SIERRA ARMY DEPOT'S JOURNEY INTO LEAN ENGINEERING

What is Lean Engineering? Just as a butcher trims the fat from a piece of meat to make it lean, Lean Engineering trims the fat from industrial operations so they become more efficient, more productive, and thus more lean. We will aggressively examine every step of our operations and ask the key question, "Is this step 'value-added' or 'non-value-added'?" If it's the former, we keep it; if it's the latter, we eliminate or minimize it.

Sierra Army Depot has four major goals in implementing Lean Engineering: (1) achieve superior customer satisfaction; (2) increase our workload and expand capabilities; (3) be capable to rapidly adapt to changes; and (4) obtain employee satisfaction, job security, sense of purpose, and a quality working environment.

On January 14, 2003, they kick-off their three to five year journey to become "lean." With the guidance of Simpler Consulting Co., a well-known and reputable Lean Engineering consultant, they will form teams to lean three of their major processes: (1) the Class VIII Medical Supplies, Storage, Issues and Receipts; (2) the Long Term Storage (LTS) Program; and (3) Centralized Receiving. (Other processes will be identified and leaned out in the near future.)

No doubt the journey into lean engineering will be exciting, difficult, painful, and traumatic. Everybody will be involved as they lean processes and re-lean them several times until we achieve our goals. History has shown that Lean Engineering is a worthy endeavor. With everyone working together as a one team, utilizing our strengths and talents, and having a survivor mentality, they will become the best Depot they can be.

In future newsletter articles, they will discuss the approach and methodology of lean engineering in more detail.

# Watervliet Arsenal Lean Thinking

*-Lean takes a foot hold at Watervliet Arsenal-*

While still in its infancy, the formal implementation of "Lean Thinking" at Watervliet Arsenal (WVA) is contributing to the Arsenal ability in obtaining follow-on orders. For example, the potential exists for a sizable manufacturing contract for the 81mm Mortar Barrel Assembly.

Watervliet embraced "Lean Thinking" in the early part of 2002 by encouraging increased interaction among their Manufacturing Engineering, Production Planning, and shop floor personnel to endeavor to identifying and eliminating waste in manufacturing area. Watervliet decided to apply the lean principles to the 81mm Barrel Assembly line, which was delivered on a relatively small order quantity knowing that the possibility existed for a much larger follow-on order. Unit cost was known to be a critical determining factor in the award of the follow-on order.

Through diligent efforts and close coordination the involved personnel reduced manufacturing time by 29.3 hours per unit or 43%. This represented a unit cost reduction as well as an increase in production capacity. Additionally, "Lean Thinking" contributed to the identification of potential savings in the tooling area. Consequently, the manufacturing line might benefit from a further cost reduction of approximately \$1,000 per unit.

Watervliet Arsenal has always been considered a very efficient and cost conscientious manufacturing facility with a focus on producing a quality product- at the right price- on time- safely. The concept of "Lean Thinking" will help continue to meet this commitment.

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## Spring Cleaning!

By Carl Dillard and Evelyn Chivers

It's that time of year -- Spring Cleaning. Most of us are starting to paint the inside of our home and clean out closets. All of those clothes that you thought you needed are now being removed. Why would you keep something that is of

no value to you and other members living in your home? Most likely you are cooperating with family members by generating ideas to improve your home. Our minds are being challenged with the concept of "Lean Thinking."

During the week 24 - 27 Feb 03 Red River Army Depot (RRAD) conducted a Rapid Improvement Event (RIE) on the SEE Vehicle. Teams included in the event are as follows: The Frame Brackets, Tire/Wheel Disassembly/Assembly, Cylinders, and Body Repair. This event was the final effort needed to complete a first pass for the SEE Recap Program.

The Frame Bracket team yielded substantial savings in the form of a reduction in flow time (from start to finish) by 71%, inventory reduction, and productivity increase. Another positive note included the elimination of lost time because of hunting and gathering parts by producing a complete kit of refurbished Code A Assets, parts for the line. This new process will also help to reduce rejects and increase quality by insuring necessary repairs and inspections are made. The Team Members for the SEE Frame Brackets were as follows: Willie Betts/Leader; Carl Dillard/Co-Leader; Mike Ruggs; Mike Steward; Charles Mayo; Johnny Shavers; and Mike Johnson.

Moreover, the SEE Tire/Wheel Disassembly/Assembly Team made great improvements during their RIE. The team's focus was to create a more efficient use of space and movement in this area. They were able to create a smooth workflow based on lean principles. Before the RIE, the total assembly time on SEE Tire/Wheel was 33 minutes. After applying the tools of lean principles using single flow process, the assembly time was reduced to 10 minutes. There were several pallets of red tag items removed from the area, making room for more revenue generating activities. The excess items were identified while implementing a 6S Audit, a lean tool, consisting of: Sort (get rid of what's not needed); Straighten (organize); Scrub (clean and solve); Safety (make it safe); Standardize (tasks); and Sustain (Keep it up). We improved 214% on our 6S Audit in this area. Team Members for Tire/Wheel Disassembly/Assembly are as follows: Benny Woodard/Team Leader; Curtis Escalanti/Co-Leader; Evelyn Chivers; James Hansche; Jo Ann Clayton; and Kenneth Buchanan.

The SEE Recap Cylinders Team focused on improving quality, the 6S Audit, and performing a

root cause analysis of cylinder failure and reject problems. After the event, 6S Audit was improved from 36% to 70%, and a corrective action plan was documented to meet the current cylinder repair challenge. Team Members for SEE Recap Cylinders are as follows: Larry Roberts/Lean Core Team; Roger Simmons/Lean Core Team/Co-Leader; Don Stewart/Leader; Tab Hunter; and Stacey Hilton.

The SEE Body Shop Rapid Improvement Event was a little different in the approach and application of Lean principles. There was 100% participation within the work cell. Members of the work cell included Sammy Moulton, who served as Team Leader, and full support from Mark Waller, Joe Ball, and Austin Eagle. The SEE Body Shop team successfully focused on reducing work-in-process from 22 at the beginning of the week to 15 by the end of the week. Other focus areas were flow process/time, space utilization, work environment and savings ideas. The members of the Body Shop were familiar with Lean and had already reviewed and implemented a number of changes and improvements - reshaping the work area and reviewing the work processes for efficiency, waste and safety issues. This was of tremendous value to the overall RIE. With support from the Production Engineering Division a number of projects were studied, some completed and some still in process which is the nature of Lean - continuous improvement.

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Thanks for reading the *GSIE Lean Transformation Newsletter*. If you'd like to contribute an article, have comments, or additional information please feel free to contact us.

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***Making mistakes simply means you are  
learning faster - Weston H. Agor***