INTERMODAL TRANSPORTATION, USACE STYLE

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ABSTRACT

The US Army Corps of Engineers (USACE) has developed project management techniques with a proven track record for safe and successful results for constructing large scale and massive projects such as improving our nations water transportation systems, flood control, bridges and dams. Applying many of these techniques to the Formerly Utilized Sites Remedial Action Program (FUSRAP) managed by USACE to remediate the environment is achieving the same safe and successful results as their construction projects. This paper examines the additional economics and improved safety results of using intermodal containers and a combination of rail and truck transportation conveyances to transport the contaminated soil and debris from the Linde FUSRAP site, located in Tonawanda, New York.

To date, USACE, along with their contractor IT Corporation has been able to remediate and remove over 93,000 tons of contaminated soil and debris at the Linde FUSRAP site. Over 71,000 tons of FUSRAP material has been transported to Blanding, Utah and over 22,000 tons to Andrews, Texas from the Linde site. This task was done by *Intermodal Transportation, USACE Style*. Even though a large portion of the material was not direct rail served at the end destination, the project was still able to provide an economical method of transportation utilizing intermodal containers, and a combination of rail and truck transportation.

The IT Corporation contracted MHF Logistical Solutions, Inc. to supply the transportation logistics and equipment to accomplish the task. The following paper will describe how the ideals of the USACE could be instilled into the transportation efforts of the Linde project. Such details as equipment descriptions, transportation management, intermodal transfer, and final trucking of the material will be described in the following presentation. In addition, the summary will provide lessons learned from the project that can be used for future campaigns such as this one.

PROJECT BACKGROUND

FUSRAP Linde Site Remediation, Tonawanda, New York

The IT Corporation has been contracted by the United States Army Corps of Engineers (USACE) to remediate the Linde Site located in Tonawanda, New York. This remedial effort is part of USACE's Formerly Utilized Sites Remedial Action Program (FUSRAP). The principal contaminants of concern at the Linde Site are uranium-238, thorium-230, and radium-226.

During the 1940's, the Linde Site was used by the Manhattan Engineering District (MED) to isolate uranium from ore. The Linde Site encompasses a 135-acre complex and is home to office buildings, fabrication facilities, and approximately 1,400 employees.

The remediation efforts conducted by the IT Corporation at the Linde Site included: utility relocation; new utility construction; building demolition and restoration; soil characterization; excavation, water treatment, transportation and disposal; final status surveys and site restoration. Following the signing of the Record of Decision in March 2000, IT Corporation began remediation activities.

In July 2000, IT Corporation began the demolition of the first of five buildings at the site. IT Corporation performed characterization sampling of the site to determine waste stream profiles and the extent of the contamination. Based on IT Corporation's investigation results, Argonne National Laboratory (ANL) revised the site volume estimate. Currently the revised estimate for contaminated material to be excavated at the Linde site is 120,600 tons. The current estimate is almost triple the original quantity estimate defined in the scope of work.

Following the demolition and characterization activities, the excavation of soils began. IT Corporation contracted MHF Logistical Solutions to provide the containers, railcars and transportation logistics to transport the contaminated materials off site.

The USACE and IT Corporation determined that the material would be reprocessed (reclaimed[1]). The facility that is performing the reprocessing is International Uranium Corporation (IUC) located in Blanding, UT. In order to transport the material economically, rail transportation was chosen as the safest and most economical method. Because IUC was not rail served, a transportation logistics package had to be designed that utilized rail conveyance and truck transportation.

In September 2000, the first shipment of MHF Intermodal Containers[2] (IMCs) was shipped off-site for recycling to IUC White Mesa Mill in Blanding, Utah. As of January 18, 2002 MHF has shipped 4525 IMCs, containing 93,000 tons of excavated material. An additional 900-tons of demolition material has been sent off-site for recycling or disposal. IT Corporation is currently estimating an 11 million dollar cost savings to the

US Government based on aggressive procurements, value engineering, proper classification of materials, operational enhancements and accelerated production rates. IT Corporation and MHF accelerated the project schedule by successfully doubling originally scoped on-site excavation and shipping production rates even through the winter months. The accelerated schedule put a strain on mobilizing equipment to the site. Over 650 containers had to be mobilized to the site, inspected, and prepared for loading.

In order to meet the challenge of mobilizing this large amount of containers in less than three weeks for an aggressive shipping campaign; MHF was required to deliver an average of 34 containers a day, which equates to approximately 2 trucks every hour delivering empty containers to the site. The USACE also built in certain safety requirements into the containers. One safety requirement was the use of a "flapper" door closure system, which eliminated concerns of material exiting the rear doors of the intermodal during rail transport. All of the containers supplied to the project have the flapper closure system.

When delivering the containers to the site each container had to be inspected and prepared for filling. A parking lot sized area was roped off to manage the incoming containers, and subsequently used for container preparation. The quality of the containers had to meet acceptance criteria or the containers would be rejected potentially causing delays in the accelerated schedules.

After the task of mobilizing the containers was completed, they then had to be filled, manifested and placed onto MHF ABC rail cars[3]. Because of the chosen destination of the material, the containers could only be loaded to 21 tons. Typically, an IMC can be loaded up to 31 tons if the IMC is transported by rail, but because of the weight limitations of trucking over the road, the IMC's from Linde had to be limited to 21 tons. In order for the material to be transported to the final destination, a 120-mile truck trip was required for the last leg. At the peak shipping times of the project, 120 containers a week were being shipped from the site. In order to manage that many containers at one time, 110 railcars were utilized for the project. The loaded railcars were shipped approximately 1800 miles from Tonawanda, New York to Cisco, Utah. Twenty trucks and trailers were utilized to perform the 120-mile trip from Cisco to the IUC Mill.

Cisco is a sparsely populated cattle and mining town located 70 miles west of Grand Junction, Colorado. Cisco had no infrastructure to support the IMC transfer. MHF had to supply all of the necessary equipment and personnel to support the operation. Three local people were hired out of Green River, UT to provide truck administration, intermodal transfer and DOT paperwork management for the shipments. The operation needed to be self-supporting, so while electric and phone lines existed, everything else had to be brought in to provide support for the necessary operational tasks. Installing fax machines, computers (e-mail), a mechanical repair shop, and a container repair facility was something that the small town of a population of three had never seen. Once operational, the MHF Intermodal Facility was able to process twenty trucks per day. The main functions of the facility were to inspect incoming railcars and containers;

off load containers with a CH-70 side lifter; load the trucks; verify the shipping paperwork both inbound and out bound; load empty containers back onto the rail cars; perform minor repairs on tarps and containers; and perform routine maintenance on all transportation equipment including trucks and trailers.

Once the containers arrived at IUC, they were detached from the truck and reconnected to a Bartlett Dumper. The Bartlett streamlined the container empting process at IUC because the container never needed to be unloaded from the trailer, thus eliminating the need for additional equipment for unloading.

In order to remain cost effective, IT Corporation asked to have equipment brought in or taken off the project at peaks and valleys in remediation efforts. MHF had to manage the equipment and transportation so the project never had an excess or shortage of containers. In order to accomplish this, IT and MHF had to work as a team, continuing to refine schedules so that the equipment could be available when needed and did not impair efficient productivity. In order to provide accountability of moving equipment, the MHF Project Manager provided status and location reports to IT and the USACE on each railcar and truck. This provided the confidence that the material would not be misdirected or delayed.

The incident rate on the transportation of the material is exceptional. To date there are no reportable DOT incidents on the Linde Project, nor are there any reportable injuries from the Cisco Site personnel or trucking personnel. The combined efforts and teamwork between vendor contractor (MHF and IT) demonstrated an unprecedented shipping campaign. The results of this effort were immense cost savings, accelerated schedules, and no safety incidents. A true demonstration of how the USACE and its contractors can work together, focus on the goals of the project, and execute the project efficiently and safely. Intermodal transportation, USACE style.

By The Numbers

- 0 Reportable Safety Incidents
- 3 MHF Personnel at Cisco, Utah
- 20 Trucks Per Day at Cisco, Utah
- 110 Railcars Utilized
- 120 Containers Per Week Shipped From The Linde Site, Tonawanda, New York
- 120 Mile Truck Route From Cisco, Utah to IUC, Utah
- 658 Intermodal Containers Utilized
- 1800 rail miles from Linde, New York to to Cisco, Utah
- 4525 Intermodal Containers Shipped
- 93,000 Tons of Materail Shipped
- Estimated $11,000,000 Cost Savings

LESSONS-LEARNED

- *Because of the contracting and budget allocation between IT and the USACE, the "green light" to begin mobilizing equipment was not given until the final hour of project start up. There was no buffer to allow for delivery of the containers to the project site. In the future, contracts need to have a window of mobilization that allows for the build up of equipment, before project start up.*
- *The accelerated schedule caused equipment to build up at the destination, MHF had to work very closely with the IT Project Manager to spread the equipment out so that there was enough equipment available for use at Linde. Initial problems with multiple lines of communication led to exclusive and direct communication between the IT PM and the MHF PM to prevent misinformation being passed.*
- *The Global Positioning System (GPS) tracking system was discontinued early in the Linde Project for the tracking of the railcars and containers. This was because it could be demonstrated that the MHF Tracking system was superior when all factors were taken into account, i.e. cost effectiveness, operational ease, reliability, and accuracy.*

FOOTNOTES

[1] Reclamation = Is a recycling process in which the material is reprocessed to remove the uranium raw product.
[2] IMC's = Intermodal Containers have a 25.4 cubic yard capacity; they are 8x6x20 feet with tarp tops.
[3] ABC = Articulating Bulk Commodity railcar that is capable of double stacking containers and has a capacity of 177 tons.