

Meeting Hanford's Infrastructure Requirements – 12505

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Hanford, by all accounts, is an enormous and complex project, with thousands of disparate, but co-mingled activities in motion on any given day. The primary target of the mission at Hanford is cleanup of the 586 square-mile site, but there is the equally vital mission of site services and infrastructure. Without functions like the well-maintained site roads, electricity, water, and emergency management services, not a single cleanup project could be undertaken.

As the cleanup projects evolve – with new workscope emerging, while existing projects are completed – there becomes a very real need to keep projects integrated and working to the same “blueprint”. And the Hanford blueprint extends for years and includes myriad variables that come with meeting the challenges and complexities associated with Hanford cleanup.

Because of an innovative and unique contracting strategy, the Department of Energy (DOE) found a way to keep the cleanup projects un-encumbered from the side task of having to self-provide their individual essential site services, thus allowing the cleanup contractors to concentrate their efforts on their primary mission of cleaning up the site. These infrastructure and support services also need to be provided efficiently and cost effectively – done primarily through “right-sizing” efforts.

The real innovation came when DOE had the foresight to include a second provision in this contract which specifically asked for a specialized role of site integrator and innovator, with a special emphasis placed on providing substantial cost savings for the government.

The need for a true site integrator function was necessitated by the ever-increasing complexity of projects at Hanford and the progression of cleanup at others. At present,

there are two main DOE offices overseeing the cleanup work and six primary contractors performing that work. Each of these contractors works to separate schedules and cleanup milestones, and the nature of the cleanup differs, but all are intertwined in their need for essential site services.

One of the key tasks spelled out in the Mission Support Contract (MSC) is to take the volumes of cost, schedule and budget forecasting data each contractor is responsible for and consolidate that data into a “one Hanford” perspective, with a clear and well-defined “map” of the future, taking into account the many cross-cutting priorities at the site. This function is termed “portfolio management” in the MSC.

In scoping the role of Hanford infrastructure provider, DOE laid out the following services in the MSC:

- Utilities: water, electricity, sewer
- Emergency services: security, fire, emergency management
- Warehouse operations (including asset revitalization)
- Facility management
- Crane and rigging
- Fleet vehicles and maintenance
- Training
- Information management and telecommunications
- Environmental integration, including analytical laboratory services, pollution prevention and green energy
- Land management
- Benefits and pension management

It also called for specific integration functions:

- Site-Wide Safety Standards
- Traffic Safety
- Portfolio Management and Lifecycle Planning
- Consolidated Infrastructure Planning and Forecasting

In 2009, the DOE awarded the MSC to Mission Support Alliance, LLC. (MSA), a team made up of industry leaders with key government services credentials, Lockheed Martin, Jacobs Engineering and WSI. Now into its third year managing the contract, MSA has continually shown tangible results in its oversight of the MSC.

One of the most prominent improvements MSA implemented from the start of the contract was the introduction of a commercial delivery model for acquiring site services. Key to the success of this model was the implementation of a web-based service catalog, which gave Hanford site service users the ability to quickly and easily order services with one mouse click. Prior to the on-line service catalog, services were acquired via phone or by email, significantly slowing response time. MSA also implemented other tools such as commercial rate structures, service-level agreements, availability forecasts and customer feedback surveys.

Operating at a site where some of the infrastructure has been in place since the early 1940s, keeping aging water lines and one-of-a-kind cranes in working condition is a huge challenge. The infrastructure must be maintained or replaced to keep services available to the cleanup contractors. MSA removes obsolete infrastructure when necessary and installs equipment and materials that will provide dependable service.

DOE included a key function of the MSC to provide a continual “right-sizing” of the Hanford infrastructure, where continual analysis is done to determine what infrastructure, equipment or services are needed, how long they will be needed, if they need updating or modernizing and what costs will be incurred. MSA has developed a number of tools to obtain feedback from the field to determine the working condition of its equipment on a continual basis, while it works closely with the Hanford contractors to project future demands and determine how to best meet the infrastructure needs of the customers, and, most importantly, how those needs can be cost-effectively served through economies of scale.

One of the most prominent efforts in this area is the Infrastructure Services Analysis Plan, or ISAP, which is the net result of hundreds of interviews and data gathering sessions with Hanford’s service users. The annually updated ISAP gives a complete sitewide assessment and is essential in projecting and forecasting multi-year infrastructure and service needs across the site.

Wholesale modernization efforts have paid immediate dividends at Hanford. Sweeping changes in the information technology on site were made and new personal computing strategy was delivered that resulted in more robust cyber security and enormous cost savings. MSA, relying on the corporate resume of its parent, Lockheed Martin, quickly set to work remaking Hanford's communications networks, software and hardware.

An expanded Wi-Fi network is maintained on the site, covering over 300 square miles. This major increase in wireless coverage allowed remote access from areas across the site that had never had it previously. In addition to saving people from having to use land-based computers to converse or enter data, the expanded coverage now means instantaneous information sharing and real time updates on critical systems in the field.

The DOE has transitioned its computers to use cloud and "Thin Client" computing, where data is now centrally stored "in the cloud" at a centralized data center, not on individual PCs. This reduces the need for the desk-based computer by replacing it with the Thin Client, which is energy efficient, provides stronger cyber security for the entire system, and utilizes the consolidated data centers that operation efficiently.

The newly implemented Voice over Internet Protocol (VoIP) system eliminated tens of thousands of analog-based telephones, saving the government significant money in replacement costs for the aging system. VoIP carries standard telephone services via computer rather than through land lines, and not only makes the service more dependable and effective to install. The implementation of VoIP resulted in an \$8M cost avoidance and \$1.5M annual savings.

DOE addressed an emerging issue on site involving complex, conflicting and redundant safety standards in use by the various contractors and projects. In prescribing what services would be included in the MSC, DOE put an added emphasis on bringing all parties together to map a set of Hanford Site Safety Standards. Working with two DOE Site Offices, multiple contractors, safety oversight representatives and organized labor,

DOE needed to spearhead sitewide safety standards which would be recognized and followed by all Hanford contractors.

The result was an agreed-to set of site safety standards that all have had input in crafting and that all will work to. As a worker, there is a comfort in knowing that the safety regulations and procedures you are working on will be the same ones you will work to if you are transferred to another project or if you go to work for another site contractor. These standards keep work flowing seamlessly when different contractors are working on the same project. To date, 15 of 16 sitewide safety standards are in place. Some areas where the sitewide safety standards guide work are Lockout/Tagout, Fall Protection, and Standardized Waste Operations and Emergency Response.

The DOE also maintains the Hanford Site Beryllium Program. This high-profile area entails Beryllium Prevention and Awareness, Corrective Action Planning, Beryllium Worker Safety Programs and medical testing.

DOE took the calculated step to include Hanford Security, Fire and Emergency Management in the MSC. Still considered a site service, this scope of work differs from typical infrastructure support due to the specialized workforce required. Managing this function requires a high degree of specialized management knowledge and experience. Across the site, DOE provides high-level government security, fire and emergency management expertise.

The HAMMER Training Center has been a long-time asset to the Hanford workforce with its delivery of the best in class hands-on training. HAMMER managed the increase in training needs at Hanford caused by the influx in employees brought about by the American Recovery and Reinvestment Act, increasing their classroom efficiency by 80% so new hires were quickly ready to begin work on “shovel-ready” projects. With the end of recovery act funding in 2010, training demands have dropped and HAMMER is focused on enhancing and evolving the site training programs to mirror the changing skills needed in conjunction with the evolution of site cleanup.

As mentioned, the MSC set aside a unique task that was separate from providing services, but as vital to Hanford's success as any infrastructure. The Portfolio Management concept is a DOE innovation at Hanford designed to provide integration and consolidation of the seemingly endless supply of schedules, budgets, forecasts, plans and scenarios that each Hanford project – large and small – needs to function. In addition to the task of “pulling everything together,” the Portfolio Management team must package and interpret that data to provide credible cost and schedule projections for project lifecycle planning purposes.

The Portfolio Analysis Center of Excellence (PACE) was built with MSA non-contract funding and offers state-of-the-art data collection and visualization tools for the DOE and Hanford contractors to view detailed cost and schedule forecasts, and “what-if” scenarios via multiple monitors and high-tech GIS mapping. DOE recently delivered a key product, the Hanford 2011 Lifecycle Cost, Scope and Schedule Report, the first comprehensive look at the entire Hanford Site's projected cost and cleanup schedule over the years of its cleanup lifecycle.

Making the Hanford Site the DOE leader in Green Energy and cutting greenhouse gas emissions was another goal of the MSC. DOE has overseen the site's vehicle fleet by reduced by almost 14% this year with the streamlined fleet using alternative fuel and hybrid vehicles for more economical management. In addition to new fuel blends, FY 2011 has seen the introduction of the first electrically powered vehicles to the fleet. Electrical vehicle charging stations have been completed on site and vendors are being sought for supplying the electric vehicles to the DOE contractors.

As the Hanford Site progresses toward the DOE's 2015 Vision, which calls for the shrinking of the active cleanup to just 75 square miles, land is being transitioned into long term stewardship for surveillance and maintenance as tracts of land that are deemed by regulators as meeting their regulatory clean status.

As Hanford approaches the milestone year of 2015, when the River Corridor will be cleaned up and work shifts to the Central Plateau, the Waste Treatment Plant (WTP) will take center stage as it begins its mission to vitrify the millions of gallons of high-level waste stored in Hanford's underground tanks. DOE contractor MSA is preparing for this transition and is lock-step in the planning for WTP operations. Contractors and DOE are partnering to ensure all infrastructure needs for the massive WTP are factored, while working to offer energy-saving innovations wherever possible. One of these is the concept of using natural gas, via a site pipeline, to power parts of the WTP.

Along with the WTP, the future of Hanford also includes exciting possibilities for land reuse, cultural preservation and tourism. The tourism aspect of the site's future is being led by the Hanford Site Tours Program, B Reactor Tour Program and the National Historic Landmark, B Reactor. In 2011, nearly 8,000 visitors have toured at Hanford..

In the two years since the start of the MSC, several key innovations have produced streamlining of site services, better delivery of these services and a clearer picture of the short-term and long-term service needs of the site's cleanup projects. These improvements are vital toward maximizing all available cleanup resources during these times of diminished funding in a down economy.

Using expertise from its corporate teaming partners and proven business practices like Lean Six Sigma, DOE has realized nearly \$56M in savings in the first two years of operating the MSC.

The MSC has also provided the mechanism for a dedicated site integrator who can operate independent of the cleanup mission to focus on consolidating all of the diverse time cost and schedule data that is generated by the cleanup contractors. Via the MSC, the Hanford Site now has the most solid and defensible cleanup forecasts ever, which will prove vital in presenting a clear and convincing scenario for congressional appropriators to fund vital cleanup projects at Hanford.