



ED No. 207



21. LANL TA-21, DP West Characterization & Remediation Support

22. Year Completed Professional Service:

2006

CAGE Code: ID1U3

Year Completed Construction: (if applicable)

n/a

Los Alamos, New Mexico

Contract Role: [X] Prime Contractor [ ] Subcontractor

DUNS Number: 61680573

23 a. Project Owner/Customer:

Los Alamos National Laboratory
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23 b. Point of Contact Name:

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Key Personnel:

Table with 4 columns: Name, Title, Email, Phone. Rows include Mike Bradshaw, Project Manager and Stan Waligora, CHP.

24. (Include scope, size, and cost) Brief Description of Project and Relevance to this Contract:

Awarded Price: \$3,000,000.00

Final/Projected Cost: \$2,942,002.65

Award Date: 06.01.2005

Contract No.: 23782-001-05

Period of Performance: 06.01.2005 - 03.31.2007

Final or Projected Schedule: 03.31.2007

Contract Type: [ ] Firm Fixed Price [ ] Cost Reimbursement [ ] Time and Materials [X] Cost Plus Fixed Fee
[ ] Cost Plus Award Fee [ ] Performance Based

Type of Work Performed: 562910/Facility Characterization & Environmental Remediation Services

% of Work Self Performed: 100%

% of Work as Subcontractor: n/a

Notes: Project came in on schedule & under budget.

Contracting Officer (if applicable):

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Project Description

EDi was awarded a cost-plus, fixed-fee multiyear contract to conduct site investigations of the DP West facility located in Technical Area - (TA -) 21 at Los Alamos National Laboratory (LANL). Delta Prime (DP) West is comprised of four major labs encompassing 287,000 square feet and served as the first plutonium research facility in the nation, operating from 1947 until the late 70s. The facility contained high levels of plutonium and americium and lower levels of



Built in 1946, the buildings inside DP West saw many scientific breakthroughs



LANL TA-21, DP West Characterization & Remediation Support (continued):

uranium, tritium, classified radionuclides, and hazardous constituents such as beryllium and asbestos. The facility, including all ancillary buildings, was scheduled for decontamination and decommissioning (D&D).

EDi conducted a comprehensive characterization survey of the entire research facility to support D&D planning. Surveys for alpha, beta, and gamma radiation were conducted to include sampling for radionuclides of interest and all hazardous materials. EDi prepared a Work Plan, Sampling and Analysis Plan, Site Safety & Health Plan, and an Integrated Work Document. EDi mobilized a field staff that collected more than 1,300 samples and radiation measurements.

Constituents of concern (COCs) included hydrocarbons, caustics, acids, heavy metals, asbestos, polychlorinated biphenyls (PCBs), beryllium, lead, uranium, plutonium, americium, and other classified isotopes. Various types of building media were sampled including concrete, plaster, metals, and roofing materials. Liquids from process lines and residue from waste lines were also sampled. EDi conducted a historical review and performed a walk-down of the facility determining the nature and extent of the planned characterization. Sample media and locations were identified and incorporated into the work plan. In addition to identifying all hazardous and radioactive materials contained within the facility, EDi was charged with evaluating any safety concerns associated with future D&D activities. Ambient air sampling was conducted for the radioisotopes of concern, asbestos, and beryllium metals. Gamma dose rates and transferable radiation surveys were conducted throughout the building.

Surface and subsurface soil samples were collected immediately adjacent to the exterior of the building structure and from beneath the interior concrete slab. Soil samples were analyzed for the radioisotopes and hazardous COCs. All work was performed in negative containments custom designed by EDi for various applications due to the potential for encountering high levels of radiation during drilling operations. Containment systems included small glove box-type configurations, sampling tents, decontamination tents, and process system entry containments.

The potential of encountering high levels of soil contamination made traditional drilling/sampling methods unfeasible—from the standpoint of contamination control and worker exposure. EDi identified a specialized drill rig capable of retrieving samples with minimal soil disturbance and total containment and isolation of the sample materials. EDi selected the Sonic Drilling Method to meet the client's stringent requirements. The sonic drill head is a technologically advanced, hydraulically activated unit that imparts high frequency sinusoidal wave vibrations into a drill string to effectuate a cutting action at the bit face. No cuttings are result of excess materials forced into the borehole wall because of the high forces created by the sonic head and the external flashing nature of the drilling string. The hollow stem cores were equipped with clear liners that allowed for maximum contamination control and ease of sampling. This method also prevented cross contamination at depth. Because the sonic method drills more footage per day, overall project costs were reduced.

Underground vaults containing abandoned waste process lines required sampling to complete the facility characterization. This created a challenge involving very high levels of radiation from leaking pipes over a 30-year life cycle. EDi consulted with a specialty company to design and construct a robot capable of recording gamma dose rates and video footage. The robot had to be remotely operated with a wireless control system and capable of traversing various obstacles within the pathway. Special containment systems were also constructed to deploy and capture the robot.

The same company previously designed a Three-Dimensional Integrated Survey System (3-DISS). The 3-DISS is a surface contamination monitor system developed to automatically record scanning count rates or fixed-point integrated counts along with the associated x, y, and z coordinates. Data are logged by a hand-held or laptop computer and then downloaded into ArcView GIS, AutoCAD, or other commercially-available application where the data can be processed and displayed. Single detector units with components placed in a fanny pack were used in difficult to access areas or to perform long-term integrated measurements. A wall-scanning unit consists of a computer-controlled lift that moves an array of up to eight detectors up and down a vertical wall surface at a defined speed. Thirdly, a floor scanner moves the detector array over floors at a constant speed. Labor savings between 50 and 90 percent were evident when using the single unit and multiple units, respectively, when compared to conventional manual surveys. The 3-DISS was used to obtain characterization data of interior floors and walls. Significant efficiencies were realized because of the systems range finding and data acquisition capability.



## Obstacles & Solutions

Once the Sonic drill rig was mobilized to the site, it became apparent modifications to the designed negative-air contaminant system would be required. EDi promptly responded by working with the drilling subcontractor to redesign and construct a new containment system within 72-hours to avoid project delays. The modifications were implemented within the required timeframe allowing the project to move forward on time.

Another modification to the drill rig was required to allowing safe operation in close proximity to exterior walls in the facility. The location of the drill rig controls presented a safety hazard thus requiring modification. EDi worked with the subcontractor to design remote controls, which would allow full operational capabilities while maintaining a safe work environment. The project was completed with no OSHA recordable or lost time injuries or safety violations.

## TA-21 Update — August 2010

Due to efficient demolition activities, an additional three buildings will be demolished at Technical Area 21 (TA-21), bringing the total number of buildings to be demolished to 24. Currently, 15 of the 24 buildings have been demolished, including the 16,000-square-foot Tritium Systems Test Assembly (TSTA) facility.

Pre-demolition activities continue in other areas of Technical Area 21 as crews prepare buildings for demolition by removing equipment, fixtures and pipes. To date, more than 300 tons of clean metal from buildings at Technical Area 21 have been recycled.

TA-21, also known as the Delta Prime (DP) Site, is on DP Mesa, situated immediately east-southeast of the Los Alamos town site at an elevation of 7140 feet.

TA-21 was the site of chemical research for refining plutonium and plutonium metal production from 1945 to 1978. As a result, most waste disposal activities involved plutonium.