

## Chemical Demilitarization Program (CDP)

### SUMMARY

- The Chemical Demilitarization Program (CDP) is composed of nine stockpile facilities and ten non-stockpile facilities and systems.
- **Anniston, Alabama.** Successful processing of sarin-filled M-55 rockets continues.
- **Umatilla, Utah.** Operational testing (OT) of sarin-filled M-55 rockets began in late FY04.
- **Pine Bluff, Arkansas.** OT for sarin-filled M-55 rockets begins in FY05. Arsenal Ton Container Destruction Facility OT indicated the current system was unable to process trace amounts of Lewisite. The system is undergoing developmental testing (DT) of potential solutions.
- **Aberdeen, Maryland.** Interruptions experienced in processing bulk mustard agent.
- **Newport, Indiana.** Controlled start-up of VX (nerve gas) agent operations planned for early FY04.

### SYSTEM DESCRIPTION AND MISSION

CDP is an Army-managed program responsible for the destruction of the U.S. stockpile of lethal chemical agents and munitions, and non-stockpile chemical warfare materiel. This program is required to comply with the Chemical Weapons Convention, which is a major arms control and nonproliferation treaty that requires destruction of stockpile unitary chemical weapons by April 29, 2007.

The Chemical Stockpile Disposal Project is responsible for the development of the government-owned and contractor-operated chemical agent disposal facilities collocated with the nine chemical depots. Each site's prime contractor conducts all DT and OT under oversight of the Program Office and the U.S. Army Materiel Systems Analysis Activity. Five disposal facilities are employing the baseline chemical weapons disassembly and incineration process. The Johnston Atoll facility completed chemical agent disposal in November 2000, and closed in December 2003. The Tooele facility has been processing chemical agent since 1996. The Anniston and Umatilla disposal facilities began limited agent operations in August 2003 and September 2004, respectively. Pine Bluff plans to begin agent operations in January 2005.

The Army selected chemical neutralization of agents, followed by post-treatment of the neutralized products for the facilities at the two bulk agent storage sites in Aberdeen, Maryland, and Newport, Indiana. After September 11, 2001, options were pursued for accelerated destruction at the two bulk storage sites to reduce the risk of continuing agent storage. The Aberdeen disposal facility began limited agent operations in April 2003, with full-rate operation planned for December 2004. The Newport disposal facility is scheduled to begin limited agent operations in October 2004.

In 1996, at the direction of Congress, the Assembled Chemical Weapons Assessment Program was established to evaluate alternative technologies for the Pueblo and Blue Grass disposal facilities. In 2003, the Army awarded contracts to implement chemical neutralization of agents followed by post-treatment of the neutralized products as an alternative technology for the Pueblo and Blue Grass disposal facilities. The Pueblo and Blue Grass disposal facilities are in the design phase.

As of June, 2004, the disposal facilities had successfully destroyed approximately 29 percent of the total U.S. chemical weapons stockpile (originally 31,496 agent tons). The Army has met the first two Milestones of the Chemical Weapons Convention (1 percent and 20 percent destruction, respectively), but does not anticipate full destruction until April 2012.

The Non-Stockpile Chemical Materiel Project is responsible for the destruction of non-stockpile chemical warfare materiel, including the components of binary chemical weapons, miscellaneous chemical warfare materiel, recovered chemical weapons, former production facilities, and buried chemical warfare materiel.

### TEST AND EVALUATION ACTIVITY

The test and evaluation program for each stockpile incineration disposal facility consists of DT, combined DT/OT, and dedicated OT phases. The DT phase consists of subsystem component testing. The DT/OT phase employs surrogate agents in all test events, culminating in trial burns of the furnaces and end-to end operations of the facility. The OT phase consists of agent trial burns and initial operations with agent. The OT is tailored to a specific agent/munition campaign. The OT will

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support a decision whether to proceed to fully operational status for that specific agent/munition campaign. After completion of the campaign, the facility will revert to OT status for the next planned campaign. This process will repeat until destruction of all agent/munition configurations in the site's stockpile is complete.

For the two bulk agent storage sites implementing accelerated destruction, there is only a DT phase that culminates in end-to-end testing of the facility with surrogate agent, and an OT phase that consists of initial operations with agent. In implementing accelerated destruction at the Aberdeen and Newport sites, the program office has replaced the approved Test and Evaluation Master Plans for those sites with Test Concept Plans (TCPs). DOT&E has approved the TCPs for both the Aberdeen and Newport sites.

DOT&E monitors the test activity and independently analyzes test data for all stockpile facilities and non-stockpile systems. The test activity and test data support decisions on whether to proceed to the next test phase and determine readiness of either a stockpile facility to begin fully operational status or of a non-stockpile system to be operationally fielded at the conclusion of OT.

## TEST AND EVALUATION ASSESSMENT

Army testing of stockpile and non-stockpile systems in the CDP has been adequate to ensure the safe and efficient disposal of chemical warfare materiel. The U.S. Army Materiel Systems Analysis Activity is providing effective independent oversight of the testing of both stockpile and non-stockpile programs. Their expertise and vigilance have resulted in the early identification and resolution of many of the problems discussed in the following paragraphs.

The implementation of accelerated destruction processes at the bulk storage sites increases the risk of safe operation of these facilities. This is due to increased manual handling of agent materiel and increased emphasis on maintaining program schedules. Emphasis on maintaining the program schedule at the Aberdeen facility led to a hastily conducted final DT prior to the start of OT. The problems found and subsequent delays during the OT can be attributed to the manner in which the DT was conducted. To date, the accelerated destruction process has not demonstrated the intended schedule and cost benefits. The Demonstration of Safe Operations at the Newport disposal facility took place from May through August of 2004. This series of events culminated with an Integrated Plant Run to demonstrate the ability of the facility and personnel to process agents and respond properly to contingency events. Testing uncovered several issues, all of which are expected to be resolved prior to the start of agent operations.

Single Chemical Agent Identification Set Access Neutralization System OT of the redesigned break pin assembly occurred in November 2003. The testing was successful and supported the December 2003 fielding decision.

The Explosive Destruction System (EDS)-2 DT/OT successfully completed in June 2004. The EDS-2 processed mustard, sarin, and phosgene in single, large, and multiple configurations. Conduct of this DT/OT was similar to a dedicated OT in that it used operational crews and procedures with a production representative system. Therefore, a dedicated OT phase was not conducted for EDS-2. Future FOT&E of EDS-2 is required for munition types and fills not tested during DT/OT. Based on concerns raised by us, all EDS variants now have a defined vessel-vacuum "go/no-go" criterion as part of their operating procedures that is based on past test data. This will reduce the risk of inadvertent agent release from the EDS vessel that could result if detonation occurs without a proper vessel seal.

The Large Items Transportable Accessing and Neutralization System OT began in March 2004 at Porton Down, United Kingdom. The program manager halted testing after serious performance issues were encountered, and the program has reverted to engineering development.

The Pine Bluff Arsenal Ton Container Destruction Facility began OT in September 2003. Following the neutralization process, several ton containers were still contaminated with residual lewisite. Therefore, the Army suspended the OT, and the system is now undergoing developmental testing of potential solutions.