

**Cost Savings Resulting From Classified Component Disposal
at the Nevada National Security Site (NNSS) - 16440**

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ABSTRACT

This paper discusses the Nevada National Security Site (NNSS) capability to dispose of both radioactive and non-radioactive classified components and the tremendous cost-avoidance in storage, sanitization¹ and/or demilitarization² (Demil), and disposal that have been experienced by generators. One generator, The U.S. Air Force Materiel Command (AFMC), 414th Supply Chain Management Squadron out of Hill Air Force Base (HAFB) experienced total cost-avoidance in the last two years of \$218 million on an investment of \$1.9 million for disposal at the NNSS. They also accelerated the planned component disposition schedule by 7 years. In 2012, the NNSS added the capability of meeting a key national resource for the safe, secure disposal of classified components that have been declared excess to national security requirements. Since that time the program has continued to grow and expand.

¹ Sanitization for DOE high risk personal property is the irreversible modification or destruction of a component or part of a component of a nuclear weapon, device, trainer, handling equipment, or test assembly, as necessary, to prevent revealing classified or otherwise controlled information (e.g., unclassified information that is restricted from the standpoint of export control because of its significance for nuclear explosives research, development, fabrication, or testing).

² Demilitarization of DoD personal property is the act of eliminating the functional capabilities and/or inherent military design features. Methods and degree range from removal and destruction of critical features to total destruction by cutting, crushing, shredding, melting, burning, etc. Demil is required to prevent the release of inherent design information that could be used against the United States.

INTRODUCTION

The NNSS has the only approved disposal site that accepts off-site classified components and waste for permanent disposal without sanitization and/or Demil. The existing NNSS Waste Acceptance Criteria (WAC) and regulatory permits have been modified to allow disposal of both radiologically and non-radiologically contaminated classified waste streams.

Three key initiatives identified in a fiscal year (FY) 2011 Feasibility Study were designated as being critical to the path forward at the NNSS. All three initiatives were completed by the end of the third quarter of FY 2012. The key initiatives are listed below:

1. Submit a request for disposal of High Risk Personal Property (HRPP). Seek concurrence from the U.S. Department of Energy (DOE), National Nuclear Security Administration (NNSA) to allow permanent burial of classified matter at the NNSS of weapons components without sanitization and/or demilitarization.
2. Negotiate with State of Nevada officials to allow disposal of non-radiologically contaminated classified components (hazardous and non-hazardous).
3. Establish a pilot project to demonstrate work procedures and methodology.

As a result of the DOE's change in mission and because of the need to downsize the nuclear stockpile, those facilities originally intended for nuclear weapon fabrication have been retooled for life-cycle extension and dismantling of weapons. The dismantlement process produces parts and subassemblies containing radioactive, hazardous, and non-hazardous non-nuclear components. Due to national security and non-proliferation regulations, the excess non-nuclear components from the dismantlement process are classified.

Since implementation of the Classified Component Disposal Program, the NNSS has disposed of more than 3,964 cubic meters (m³) of classified components from DOE and Department of Defense (DoD) generators. The cost avoidance associated with disposal at the NNSS without the additional destruction process previously required has exceeded 95%. In addition to the cost savings associated with disposal, there has been imbedded cost savings not typically considered in the disposal numbers. The ability to catch up on component disposition schedules or accelerate the schedules in addition to the inventory reduction numbers has been impressive.

DISCUSSION

The Kansas City Plant (KCP) was designated as the pilot project identified in the key initiatives to test the new process. KCP was chosen in preparation of the move from the old Bannister Road Facility that the DOE and the National Nuclear Security Administration (NNSA) had occupied for more than sixty years to their new Bott's Road facility. The KCP pilot project was run in two phases starting with the easiest and progressing to the hardest. The first phase took place in March 2012 and consisted of only non-radioactive, non-hazardous parts and packaged into two B-25

boxes (3.1 m³ boxes). The first shipment in the second phase took place in October 2012, and was expanded to include items made up of hundreds of components. The components were not characterized individually; rather each shape was characterized based on process knowledge as a whole yet met the definition of macro encapsulated without further treatment. Seven B-25 boxes and one pallet were shipped to Nevada for a total of 22,680 kilograms of excess components. The cost for this project was about \$85,000 and estimated that the cost savings to ship these items to Nevada rather than having the crews perform manual sanitization efforts onsite over the next few years was in excess of \$1.4 M.

In July of 2013, the NNSS was contacted by Hill Air Force Base (HAFB) regarding the disposal capabilities of classified components at the NNSS. HAFB made their first classified component shipment in September 2013. For the first shipment alone, HAFB documented a cost avoidance of \$1.4 million over traditional disposition methods and an inventory cost reduction of \$32.6 million. In addition to these efficiencies, the first shipment fully recovered the baseline disposition schedule for nuclear weapons related material by 3-years.

During the following year, HAFB achieved an additional cost avoidance of \$8.8 million, an inventory reduction of \$175.1 million, and a 7 year schedule reduction. HAFB continued their efforts this year and are contacting other Depots to provide their expertise and offer assistance in their disposal efforts.

The complications of dispositioning classified components are essentially the same for both DOE and the Department of Defense. Due to the nature of the parts that are being disposed, the disposition pathways have traditionally been complicated, labor intensive and as a result very expensive. The 414th Supply Maintenance Squadron was facing several challenges due to the unauthorized movement of nuclear weapons and mishandling of classified missile parts between 2005 and 2007. A 5-year plan had been created to identify all assets that were Nuclear Weapon Related Material (NWRM) within the MK12 Reentry Vehicle (RV) and develop a path for Demil and disposal of the obsolete assets. As the 5-year plan was coming to an end (2012), it was discovered that the sub-components and spares for Mk12 RV were not considered in the 5 year plan. A two year extension was given for the Demil and disposal of the component parts. In May 2012, the AFMC 414th Supply Maintenance Squadron created a Demil Integrated Product Team (IPT) in house to aggressively tackle the problem of identifying over 1,500 National Stock Numbers (NSNs), 45,000 assets and creating valid Demil and disposal instructions for all the NWRM and classified obsolete Inter Continental Ballistic Missile (ICBM) assets.

The preliminary estimates for engineering to develop valid Demil instructions were a minimum of 34 weeks and thousands of man-hours to complete. Additionally, due to the old age of many components, major engineering efforts would have been necessary to ensure declassification and Demil processes were in line with current Department of Defense, Air Force, and Environmental Protection Regulations involved in traditional disposal methods. Government and Contractor Entities qualified to work on classified components are typically limited on capacity

especially for disposal projects. This can lead to lengthy schedules for high quantity DEMIL plans. The NNSD disposal process allows the Air Force to determine disposal demand and immediately have the capacity to dispose of all qualified components.

The establishment of the joint burial process under the Work for Others program in DOE, cut the man-hours required in this area down to days. Initially, a significant amount of time was spent in the upfront process performing the detailed characterization on the components and gaining approval for disposal. Once the characterization is completed for the parts and approval for disposal granted, the packaging and disposal is quick and easy. In addition there has been considerable, in fact, greater than 85% cost savings/avoidance over the standard method of having the Depot repair facility, declassify and dispose of the NWRM and classified assets. Demil is a secondary program for the Repair facility and is usually completed when actual repair work allows. Schedule slip from unforeseen maintenance demand that can take precedence over Demil is a major risk avoided with NNSD's disposal program. Concluding the first pilot burial shipment in September 2013, a total of 993 assets were disposed of utilizing the burial process, saving over three years of depot time and a cost savings/avoidance of \$1.4M.

The cost-savings has only been determined for the assets that have previously gone through the legacy Demil process versus the burial process. There have been thousands of assets that had no prior Demil work completed, consequentially disposal costs are unavailable and not included in any of the cost saving figures. The Air Force employs the Defense Logistics Agency for storage, distribution and associated logistics services. Storage cost is based on quantity, size, hazards and classification. Classified services are the most expensive so quickly disposing of those assets is imperative. As classified assets are disposed, the carrying cost of storage is correspondingly eliminated. Manpower utilization is an intangible and notable cost savings realized by the supply chain organization. As a supply chain management organization, the 414th is responsible for managing inventory and asset accounting. As obsolete assets are removed from the books, this allows materiel management efforts to be focused on other undertakings. The additional elimination of engineering man-hours is a big cost savings but has not been quantified.

Since the creation of the 414th Demil IPT and the partnership under the Work for Others Program in DOE, we have contributed to DoD's "War on Excess" as follows, and have reduced the total Demil scheduled for NWRM 3 years and MMII Flight Control Units by 7 years.

<u>Fiscal Year</u>	<u>Total Assets</u>	<u>Demil and Disposal Cost Savings</u>	<u>Inventory Cost Reductions</u>
FY13	993	\$1.4M	\$32.6M
FY14	11,834	\$8.8M	\$175.1M
FY15	<u>1,779</u>	<u>NA</u>	<u>\$10.6M</u>
	14,606	\$10.2M	\$218.3M

CONCLUSIONS

The classified component disposal program at the NNSS is a sound and viable option for sites that have a need for permanent classified component disposal. The ability to reduce inventory costs, which includes the imbedded cost of secure storage and inventory management, far exceeds the cost savings/avoidance by not having to perform the traditional destruction processing methods required to use commercial disposal facilities. In some cases, the components to be disposed had no technically feasible method available for releasing to commercial facilities and the NNSS was the only path forward. In these particular cases, there is no way to quantify the cost savings other than the ability to substantially reduce the inventory.

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