FY 2011 DOE Accomplishments and Award Nominations

Site Name: Y-12 National Security Complex

Accomplishment Information

Name of Activity: Y-12 Targeted Excess Materials (TEM) Program Pursues Sustainable Disposition Paths

Category: Cradle to Cradle

PSO: Oak Ridge (NNSA)

Accomplishment Description (Abstract):

As the Y-12 Complex works to reduce the size of its Protected Area (PA), disposition of legacy and unusual items becomes increasingly more important in order to enhance storage capacity and enable the consolidation of strategic materials that are related to ongoing needs. The Targeted Excess Materials (TEM) project, funded by the Legacy Program, was established in Fiscal Year (FY) 2010 to address hard-to-disposition excess legacy materials, critical and strategic materials, and equipment. These excess items often have contamination, classification, and/or special material issues associated with them. By collaborating and sharing efficiencies, the TEM project was able to assist in obtaining a cost efficiency of more than $490,500 with a resulting waste avoidance of more than 38,865 pounds, while freeing up space to support contemporary mission work.

The TEM project's objectives include (1) reuse or recycle of unneeded Y-12 materials and equipment—in lieu of disposing of them—to free up storage space for active projects and programs and (2) achieving return on investment (ROI) for the U.S. government by recovering previous expenditures through Investment Recovery. TEM supports the U.S. Department of Energy's (DOE) Critical Material Program and the U.S. Department of Defense's (DoD) Strategic Materials Program by identifying valuable and strategic materials in Y-12 storage with no planned Y-12 use and making the materials available to the appropriate program. For items that are not needed by DOE or DoD, the TEM project works to identify other potential appropriate customers and reuse/recycle paths. TEM activities and successes are both repeatable and transferrable to other sites.

Major accomplishments achieved by the TEM project during FY 2011 included:

- During FY 2011, four additional drums of titanium sponge were shipped off-site for reuse by DoD. DoD can reuse titanium sponge material directly as an intermediate product in manufacturing operations. This material can be used to support personnel protection needs in Iraq and Afghanistan. The transfer of the titanium sponge material to DoD achieved an ROI of $19,000. A total of nine drums of Titanium sponge were shipped to DoD during FY 2010 and FY 2011.

- One beryllium log was transferred from Y-12 to the DOE International Thermonuclear Experimental Reactor (ITER) project. ITER will demonstrate the feasibility of using beryllium from retired weapons for production of new beryllium tiles for the first wall of the ITER prototype fusion reactor. ITER may prove to be a customer for future TEM items for reuse and recycle. The total ROI achieved was approximately $12,500.
- A contract was negotiated to transfer obsolete fissile material packages to a commercial vendor. During FY 2011, 625 drums were transferred to the commercial vendor. In addition a total of 92 drums were transferred to other Y-12 locations for reuse at the site. Critical storage space was projected to be exhausted in FY 2013 adversely impacting production schedules. Now Y-12 has sufficient capacity until 2020. The transfer of the 625 drums to the commercial vendor achieved an ROI of $390,000. In addition, the procurement cost avoidance for the 92 drums transferred to other Y-12 programs more than $69,000.
- Approximately 1,800 cadmium-plated inserts were sent to a commercial vendor for metal melt during FY 2010 and FY 2011. The material will ultimately be used to support other DOE missions. This Resource Conservation and Recovery Act (RCRA) material would have required special processing prior to disposal. Since the project expanded over two years cost avoidance were not included for this activity.
- Total quantifiable ROI associated with these FY 2011 achievements were $490,500.

In addition to these transfer achievements, in FY 2011 TEM accomplished the following:

- A specific area in a Y-12 facility was identified and implemented as an ongoing staging area for TEM items that are part of in-progress reuse and recycle projects. A total of more than 4,500 ft^2 of space was created for critical mission storage: 3,000 ft^2 through execution of a TEM project and an addition more than 1,500 ft^2 through collaboration with a separate disposition project.
- A TEM project awareness campaign was launched via YSource and targeted e-mails to inform the Y-12 population about TEM services, benefits, and ROI potential. As a result of this campaign, several project managers have contacted the TEM project manager concerning specific materials with reuse/recycle potential.
- TEM inventoried items in numerous facilities to identify items to be placed on the *TEM Project Opportunities List* to facilitate follow-up contact with item owners for materials with reuse/recycle potential. TEM material identification cards are placed on items to identify them as materials which TEM believes to have reuse/recycle potential.
- TEM has begun planning the transfer and reuse of items for FY 2012. For example, TEM is working with a number of Y-12 organizations on the prospects for transferring approximately $100,000 worth of beryllium oxide powder to a commercial vendor. In addition, TEM plans to issue an Expression of Interest containing multiple types of material to facilitate future reuse/recycle opportunities.

Were Costs Avoided by this project? Yes

- **Cost Avoidance**: Total return on investment was $490,500

Was waste generation avoided by this project? Yes

Waste Type: Sanitary/Industrial but also included Low-level, and Hazardous (RCRA) wastes

Waste Avoided:

- Titanium sponge (4 drums): 2,407 pounds based on P2IMS Project Number 2011083
- beryllium metal (1 log): 17 pounds based on P2IMS Project Number 2011083
- Drums-commercial (625 drums): 31,841 which included 236 carbon steel drums (10,425 pounds) and 389 stainless steel drums (21,416 pounds) based on P2IMS Project Number 2011083
- Cadmium plated metal (FY 2010 and FY 2011): Not Included In Total since spread over two years
- Drums - Y-12 Reuse (92 drums): Assume each drum weighs ~50 pounds; therefore, avoided 4,600 pounds

Total Waste Avoided: 38,865 pounds

Is this activity being nominated for P2 Star and GreenGov award consideration? No

Award Information

Nomination Point of Contact

Name: Janice Jackson
Organization: Waste Management
Address: B&W Y-12, L.L.C., P.O. Box 2009, MS-8286
City: Oak Ridge
State: TN
Zip Code: 37831-8286
Phone: 865-241-2567
Fax: 865-574-6934
Email: gilbertjm@y12.doe.gov

Federal Point of Contact

Name: James Donnelly
Organization: National Nuclear Security Administration (NNSA) Y-12 Site Office
Address: B&W Y-12, L.L.C.; P.O. Box 2009; MS-8009
City: Oak Ridge
State: TN
Zip Code: 37831-8009
Phone: 865-574-6260
Fax: 865-574-0492
Email: donnellyjp@yso.doe.gov

Nominated Individual or Team Information

Team/Project/Facility Information: Y-12 Targeted Excess Materials (TEM) Team

The List of people who directly participated in the activity:

- Elmer Baum,
- Sam Brown, BWS
- Steve Buffalo, BU4
- Nathan Cole, CO6
- Pam Davis, IPD
- James Donnelly, YXZ

- Dartis Francis, DQF
- Terry Ferguson, TF3
- Max Galyon, XM6
- Tafonda Griffin, TKG
- Chris Hammonds,
- Chuck Heatherly, 9HY
- Jan Jackson, GTL
- Kyle Kleinhans, KRP
- Diane McDaniel, DIV
- Rich Meehan, IFR
- Larry Osborne, L2R
- Bernard Phifer, BPP
- Rose Reich, 7XR
- Harvey Rice, H99
- Bill Rogerson, YYR
- Blake Scott, 2P9
- Kenny Self, 3ZA
- Ben Watts, 92W
- Jeannette Widman, JQW
- Materials Management Supervisors, and Handlers (9720-33)
- RadCon (9720-33)
- FIS Riggers (West-End)

Nomination Description:

The Y-12 Complex Targeted Excess Materials (TEM) project has achieved many accomplishments in (1) reuse or recycle of unneeded Y-12 materials and equipment—in lieu of disposing of them—to free up storage space for active projects and programs and (2) achieving return on investment (ROI) for the U.S. government by recovering previous expenditures through reuse/recycle of items and achieving cost avoidances associated with disposal. As the Y-12 Complex works to reduce the size of its Protected Area (PA), disposition of legacy items becomes increasingly more important in order to enhance storage capacity and enable the reuse of strategic materials that are related to ongoing needs. The TEM project was established in Fiscal Year (FY) 2010 to address hard-to-disposition excess materials, critical and strategic materials, and equipment. These excess items often have contamination, classification, and/or special material issues associated with them. TEM supports the U.S. Department of Energy's (DOE) Critical Material Program and the U.S. Department of Defense's (DoD) Strategic Materials Program by identifying valuable and strategic materials in Y-12 storage with no planned Y-12 use and making the materials available to the other sites for reuse. For items that are not needed by DOE or DoD, the TEM project works to identify other potential appropriate customers, including commercial customers, and appropriate reuse/recycle paths.

TEM project objectives include:

- Free up space and enhance storage capacity to support contemporary site missions.
- Achieve ROI for Y-12 through recovering previous expenditures through reuse/recycle of materials and equipment and achieving an ROI and cost avoidance of disposal where possible.
- Evaluate inventories of excess, obsolete, and surplus equipment and materials.
- Sustain critical and strategic materials for reuse by other government agencies.

- Demonstrate exemplary stewardship that saves taxpayers' money.
- Collaborate and form interagency partnerships that incorporate reuse/recycle of materials, parts, equipment, and other items.
- Ensure safety, health, and protection of workers, the public, and the environment.

TEM's successful execution of its responsibilities has required effective communication and coordination among numerous Y-12 organizations and the effective participation of various personnel. The TEM core team consists of representatives from the Y-12 Material Management Organization, a Program Support/SME representative, Directed Stockpile Work organization, Applied Technology, Property Management, Sustainability and Stewardship, and Waste Management. TEM work processes have been well documented in the *Targeted Excess Materials Disposition Plan*, YLB-16307, Rev.1, September 2011.

Major accomplishments achieved by the TEM project during FY 2011 included:

- A total of four drums of titanium sponge were shipped off-site for reuse by DoD. DoD can reuse titanium sponge material directly as an intermediate product in manufacturing operations. This material can be used to support personnel protection needs in Iraq and Afghanistan. The transfer of the titanium sponge material to DoD achieved an ROI of $19,000.
- One beryllium log was transferred from Y-12 to the DOE International Thermonuclear Experimental Reactor (ITER) project. ITER will demonstrate the feasibility of using beryllium from retired weapons for production of new beryllium tiles for the first wall of the ITER prototype fusion reactor. ITER may prove to be a customer for future TEM items for reuse and recycle. The total ROI achieved is approximately $12,500.
- A contract was negotiated to transfer obsolete fissile material packages to a commercial vendor. During FY 2011, 625 drums were transferred to the commercial vendor. In addition a total of 92 drums were transferred to other Y-12 locations for reuse at the site. Critical storage space was projected to be exhausted in FY 2013 adversely impacting production schedules. Now Y-12 has sufficient capacity until 2020. The transfer of the 625 drums to the commercial vendor achieved an ROI of $390,000. In addition the procurement cost avoidance for the 92 drums transferred to other Y-12 programs was more than $69,000.
- Approximately 1,800 cadmium-plated inserts were sent to a commercial vendor for metal melt. The material will ultimately be used to support other DOE missions. This task was performed during FY 2010 and FY 2011 and was not included in the ROI or Cost Avoidance Calculations.
- Total ROI with these FY 2011 achievements were $490,500. These FY 2011 achievements continue to build on TEM success.

TEM Return on Investment

Project	ROI	Ratio
Titanium sponge	$19,000	5:1
Be log	$12,500	3:1
Drums - Commercial	$390,000	5:1
Drums Y-12 Reuse*	$69,000	
Total	**$490,500**	

* Includes Y-12 procurement cost avoidance only.

In addition to these transfer achievements, in FY 2011 TEM accomplished the following:

- A specific area in a Y-12 facility was identified and established as an ongoing staging area for TEM items that are part of in-progress reuse and recycle projects. A total of more than 4,500 ft^2

of space was created for TEM staging: 3,000 ft^2 through execution of a TEM project and an additional more than 1,500 ft^2 through collaboration with a separate disposition project. While useful for TEM staging, this space would not be appropriate for use by the Nuclear Materials Management and Storage Program.

- A TEM project awareness campaign was launched via YSource and targeted e-mails to inform the Y-12 population about TEM services, benefits, and ROI potential. As a result of this campaign, several project managers have contacted the TEM project manager concerning specific materials with reuse/recycle potential.
- TEM inventoried items in numerous facilities to identify items to be placed on the *TEM Project Opportunities List* to facilitate follow-up contact with item owners for materials with reuse/recycle potential. TEM material identification cards are placed on items to identify them as materials which TEM believes to have reuse/recycle potential.
- TEM has begun planning the transfer of items for FY 2012. For example, TEM is working with a number of Y-12 organizations on the prospects for transferring approximately $100,000 worth of beryllium oxide powder to a commercial vendor.

The TEM project has excellent potential to be replicated at other Federal sites. As DOE/ National Nuclear Security Administration (NNSA) continues to streamline operations, eliminate certain programs, dismantle nuclear weapons, and seek to maximize the use of storage space, the potential for cost recovery and disposition cost avoidance will make the TEM approach to legacy materials increasingly more productive and attractive. The Y-12 Complex is in fact proposing to reduce complex-wide storage problems while recovering the value of excess materials by establishing a complex-wide integrated project team to identify critical, strategic materials (e.g., tantalum, magnesium, and tungsten) for investment recovery. Candidate materials will include both classified and unclassified items. The TEM process has been well established at Y-12 over FY 2010 and FY 2011 and is well documented in the *Targeted Excess Materials Disposition Plan*, YLB-16307, Rev.1, September 2011. The established TEM process will be used to address unclassified materials; an appropriate process will be developed to allow for investment recovery of classified materials.

By collaborating and sharing best management practices with DOE/NNSA sites to execute complex-wide projects, efficiencies could be realized that could achieve millions in dollars of savings while freeing up space to support contemporary mission work at sites. A centralizing and coordinating function will provide “one-stop shopping” in terms of finding suitable customers, determining optimum disposition paths, and maintaining a centralized inventory of available material. Not only will sites benefit from this coordination, but small businesses in the areas around each site will also be afforded excellent business opportunities. TEM activities and successes are both repeatable and transferrable to other sites. Finally, these activities support the overall goals to conserve resources while meeting the National Security needs for the Nation.

Description of How Activity Can be Replicated in Federal Community:
The TEM project can be replicated at other Federal sites to maximize the use of storage space, the potential for cost recovery and disposition cost avoidance of legacy materials. This overall TEM concept provides for an increasingly more productive and attractive disposition process. Additionally, Y-12 is reducing complex-wide storage problems while recovering the value of excess materials by identifying critical, strategic materials for investment recovery.

Attachment(s):
Pictures - Titanium Sponge and Building 9720-33