



# Spring 2012 Generator Workshop

## **Performance of “Soft-Sided” Packaging**

**Presented by:**

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## ***Overview - Performance of “Soft-Sided” Packaging***

***Soft-sided packaging was introduced to radioactive waste management industry over 15 years ago. Since this time, hundreds of thousands of these packages have been sold and used in the United States in commercial nuclear and government applications. Soft-sided packaging is manufactured and supplied by several different vendors reporting consistent successful results. To the best of our knowledge there has never been a single documented case of a package failure during transport that has resulted in a release of radioactive material.***

***Definition of “soft-sided” packaging for the purposes of this presentation means a DOT compliant container (e.g. Bag) as defined in 49CFR173.410 & 411 (IP-1/IP-2) which are manufactured from polypropylene, polyethylene or similar materials ranging from 5 to 9 cubic yards in capacity.***



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### ***“Key” Definitions***

- ***Water Resistant - designed to resist but not entirely prevent the penetration of water***
- ***Water Proof - impervious to or unaffected by water***
- ***Taxpayer - a person who pays a tax or is subject to taxation***
- ***Stewardship - responsible use of taxpayer dollars and protection of the environment through conservation and sustainable practices***

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## *Why are we here -*

- *Gus and I have personally used and/or were responsible for many projects that have used thousands of bags over the past 15 years.*
- *To assist the bag manufacturers to restore confidence within the DOE complex and remove the “uncertainty” that seems to exist because of one highly visible project. (e.g. LANL MDA-B)*
- *To share accurate “real-life” success stories from two major bag manufacturers (e.g. SPS & PacTec) and provide lessons learned.*

## *Our goal -*

- *Prove that bags provide a viable cost effective alternative to metal containers when used in “suitable” applications and in accordance with the manufacturers instructions.*
- *Reminder that we as waste management professionals need to be good stewards of taxpayer dollars and not discount the use of bags on future projects.*

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***When using “soft-sided” packaging, the most important things to remember:***

- ***Bags are constructed from materials that repel water and resist water intrusion under normal circumstances. They are “water-resistant” they are not “water-proof”.***
- ***Use common sense when loading, closing, lifting and storing filled bags. They are constructed from engineered plastics, not cold rolled steel.***
- ***Follow the manufacturers instructions. Many lessons have been learned through in-house testing and “real-life” field operations.***
- ***Never store loaded bags in poor drainage areas or in areas that are susceptible to water “pooling”.***

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- *Protect bags from long-term UV exposure.*
- *Use a quality “WAC Approved” absorbent media in all bags.*
- *Monitor the amount of water used for dust suppression and the source of the water. Storm water run-off is often used in this application and may have varying amounts of radioactivity.*
- *The use of excessive dust suppression and/or improperly closed packages are the leading contributors to problem bags. Be sure to use all the bag features and don't take short cuts. Follow the manufacturers instructions!*
- *When work is being performed by more than one work crew, ensure that both crews receive the same level of training.*



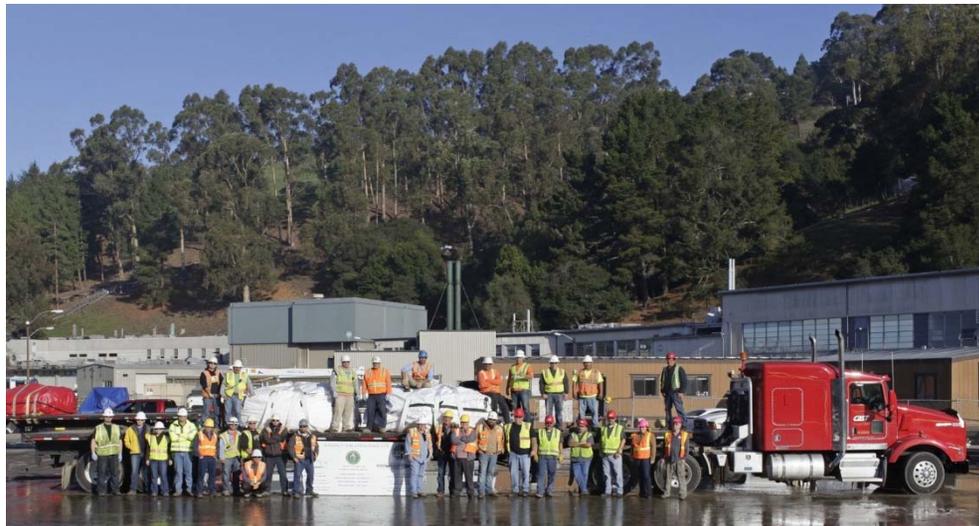


Strategic Packaging Systems, LLC



## ***Projects - Strategic Packaging Systems***

- ***Berkeley Bevatron Project – 9YD Nautilus™ Bags***
  - ***Supplied over 1,200 Bags (IP-1)***
  - ***Shipped to NNSS via Truck – No Reported Bag Issues***
  - ***Cost Savings to Taxpayer = Est. \$1.4 mil.***





Strategic Packaging Systems, LLC



## ***Projects - Strategic Packaging Systems***

- ***Argonne Building 330 D&D – 9YD Nautilus™ Bags***
  - ***Provided over 1,300 bags (IP-1)***
  - ***Shipped to NNSS via Truck – No Reported Bag Issues***
  - ***Cost Savings to Taxpayer = Est. \$1.4 mil.***





*We manufacture packaging.  
We engineer solutions.*

## ***Projects - PacTec***

- ***Los Alamos National Lab/EnergySolutions– 9YD LiftPac™ Bags***
  - ***Provided over 1,500 bags (IP-1)***
  - ***Shipped to Clive, UT via Truck – No Reported Bag Issues***
  - ***Waste Description – Soil-like, concrete rubble***
  - ***Cost Savings to Taxpayer = Est. \$1.7 mil.***





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We engineer solutions.*

## **Projects - PacTec**

- ***SPRU Project/EnergySolutions– 9YD LiftPac™ Bags***
  - ***Provided over 3,000 bags (IP-1)***
  - ***Shipped to Clive, UT via Truck/Rail – No Reported Bag Issues***
  - ***Waste Description – Soil-like material***
  - ***Cost Savings to Taxpayer = Est. \$3.1 mil.***





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We engineer solutions.*

## ***Projects - PacTec***

- ***B&W Y-12 Site – Custom 9YD LiftPac™ Bags***
  - ***Provided over 2,000 bags (IP-1)***
  - ***Shipped to EMWMF via Truck – No Reported Bag Issues***
  - ***Waste Description – Beryllium contaminated components***
  - ***Cost Savings to Taxpayer = Est. \$2 mil.***
  - ***Also designed a patent pending remote release lifting frame to provide better worker safety for the project***



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### *Lessons Learned:*

- *Common sense – always use common sense. If it looks like metal, feels like metal and smells like metal, don't use a bag. Use a metal container.*
- *When moisture content of a soil-like material approaches 25%, the bag will press water through the weave of the bag due to the hydrostatic pressure.*
- *Solution: Add a light weight polyethylene inner liner in addition to extra polymer absorbent. Be sure the material meets the disposal site WAC.*

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## ***Lessons Learned:***

***A project using the LiftPac bags took place during the winter months in extreme weather conditions with snow and temperatures below freezing. During loading the soil was placed into the bags and became frozen while in the staging area prior to shipment. The bags froze into unusual shapes which deformed the top portions of the bag. When the time came to load the bags for transport, the unusual shape of the bags caused unequal stress on the lifting straps. The lift straps are fed through guide loops, similar to belt loops which caused the bag to tear due to slight shifting of the bag through multiple lifts.***

## ***Solution:***

***After evaluating the situation the problem was solved by removing the straps from the guide loops on the LiftPac bag, which allowed the lifting straps to be repositioned removing the stress on the guide loops and providing an even lift on the straps.***

A banner image for the Spring 2012 Generator Workshop. It features a desert landscape with two yucca plants in the foreground and a range of rugged, rocky mountains in the background under a clear blue sky. The text "Spring 2012 Generator Workshop" is overlaid in a dark blue, sans-serif font at the top of the image.

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### **For more information:**

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