

## Warner Robins Air Logistics Center



### Successful Demonstration/Validation of the C-130 Application of PreKote WRALC/402 MXW 16 May 2007



U.S. AIR FORCE

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*Quality Production On Time*



## Over View

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- Problem: Alodine with hexavalent chromium is an occupational and environmental hazard
- PreKote Solution
- PreKote C-130 Demonstration/Validation
- Projected C-130 Savings at Robins AFB
- Challenges
- Summary

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## The Problem

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Alodine is hazardous to personnel and the environment

- Chromic Acid
  - Very hazardous to handle and dispose
  - Fails when applied over contaminants
  - Involved process to apply
  - Very brittle

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## What is the Solution?

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- PreKote™
  - Proven
  - Reduced occupational health exposures
  - Superior adhesion
  - Easy to apply
  - Extremely flexible
  - Treats multiple substrates, including composites

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## What is PreKote™?

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- Aqueous based non-chromate pretreatment for metals and composite material
- Developed in 1994
- Eliminates the need for:
  - Alkaline wash
  - Acid brightening for chromate preparation
  - Solvent wipe
  - Chromic Acid
- What PreKote is and is not
  - It is not a conversion coating
    - Did not pass 168 hour salt spray test
  - Can replace wash/etch/alodine processes

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## Demonstration/Validation (Dem/Val)

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- February 2007, 402d MXW/QPE P2 Office begins dem/val project to substitute PreKote for current Wash/Etch/Alodine process as a surface treatment alternative.
- 402 MXW/QPE completed dem/val project on 3 aircraft. Favorable results from dem/val led to C-130 SPO approval and the implementation of the PreKote Application process. Additionally, 402 MXW/AMXG personnel assisted with establishing a National Stock Number for 275 gallon totes to be utilized vs. 55 gallons drums thus adding to the savings of labor required to clean and process the drums for DRMO.
- Bio-Environmental Engineering Survey
  - PreKote process preferred to the Wash/Etch/Alodine surface treatment process since there is an exponential reduction in worker exposure to toxic materials and a reduction in occupational health risk.
- Process also dramatically reduces waste streams and lowers the overall process costs.
  - The process implemented by the 402 MXW Pollution Prevention Office is projected to save in excess of \$219K per year by eliminating the hazardous material and treatment of chromate in the rinse water.
- Fewer steps associated with the PreKote process significantly reduced production time and associated cost.

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## C-130 Projected Savings

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- Elimination of 3,420 gallons of hazardous material for a savings of \$158,859
- Reduction of hazardous waste generation by 7,332 lbs for a savings of \$2,876.11
- Reduction of respirator cartridge usage by \$57,600
- Elimination of 4,488 lbs of hexavalent chromium usage and exposure.
- A total of \$219,335 in environmental and occupational health related savings, for less than a 6 month total project pay back. This savings does not include IWTP sludge reduction savings by reducing the amount of chrome going to the IWTP, savings coming from eliminating permitted air sites (associated record keeping costs) for chrome conversion, and manpower/material savings.

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## Preparation Time Line

(Depot Level C-130) Warner Robins Air Logistics Center

<p><b>CCC Process</b></p> <ol style="list-style-type: none"> <li>1. Wash</li> <li>2. Hydro Blast</li> <li>3. Dry</li> <li>4. Solvent Wipe</li> <li>5. Sand</li> <li>6. Rinse</li> <li>7. Acid Etch (corrosion removing compound)</li> <li>8. Rinse</li> <li>9. Alodine</li> <li>10. Rinse</li> <li>11. Dry</li> <li>12. Solvent Wipe</li> </ol> <p style="text-align: center;"><b>58.2 hours</b></p>	<p><b>PreKote™ Process</b></p> <ol style="list-style-type: none"> <li>1. Spray PreKote™ and scrub</li> <li>2. Dry</li> <li>3. Spray PreKote™ and scrub</li> <li>4. Rinse</li> <li>5. Dry</li> <li>6. Water wipe</li> </ol> <p style="text-align: center;"><b>37.8 hours</b></p>
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## Field Impact

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- Fewer repairs
  - Less time and material required
- Non-hazardous Repair Kit
  - Eliminates numerous hazardous products
  - Less handling and training costs
  - Less disposal costs
  - Less shipping costs

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## Challenges

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- Weapon System Approval
  - Reinventing the wheel
- Material/Process Approval
  - Bio-Environmental
  - Worker Acceptance
  - Customer Acceptance

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## Summary

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- Beneficial to operational bases
- Reduction in Paint System failures
- With the PreKote process we eliminated one MAJOR source of chromate waste.
  - Chromate waste from Alodine is more than double the waste generated from chromated primers.
- By eliminating CCC, the USAF has accomplished substantial savings of time and money. They have also achieved superior results and a much safer environment.

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## Questions

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