

Headquarters U.S. Air Force

Integrity - Service - Excellence

E-3 Non-Chromate Coating System Evaluation



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E-3 Non-Chromate Coating System Evaluation

Purpose

- Discuss the USAF E-3 on going “Non-Chromate Coating Systems” project



E-3 Non-Chromate Coating System Evaluation

Background

- OSHA regulations on hazardous materials changed in 2006 to reduce permissible exposure limits (PEL) for hexavalent chromium (Cr⁶⁺)
 - PEL lowered from 52 µg/m³ to 5 µg/m³
- Air Force wide Cr⁶⁺ reduction / elimination goal
 - The Under Secretary of Defense Memorandum – Dated April 2009
- The current paint systems in use on the USAF E-3 aircraft contain Cr⁶⁺ (MIL-PRF-23377 Type 1 Class C2)



E-3 Non-Chromate Coating System Evaluation

Background

- The Air Force Corrosion Prevention and Control Office (AFCPCO) and the Coating Technology Integration Office (CTIO) have been evaluating several non-chrome coating systems and endorsed a Qualification Operational Test & Evaluation of selected coating systems



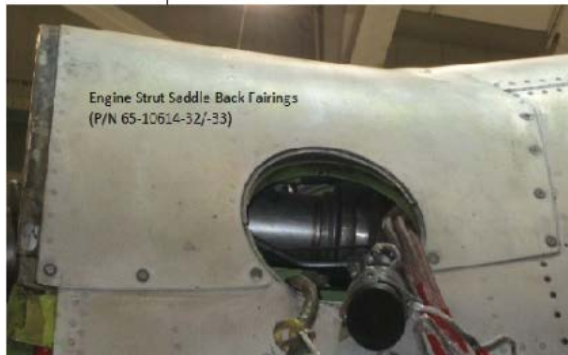
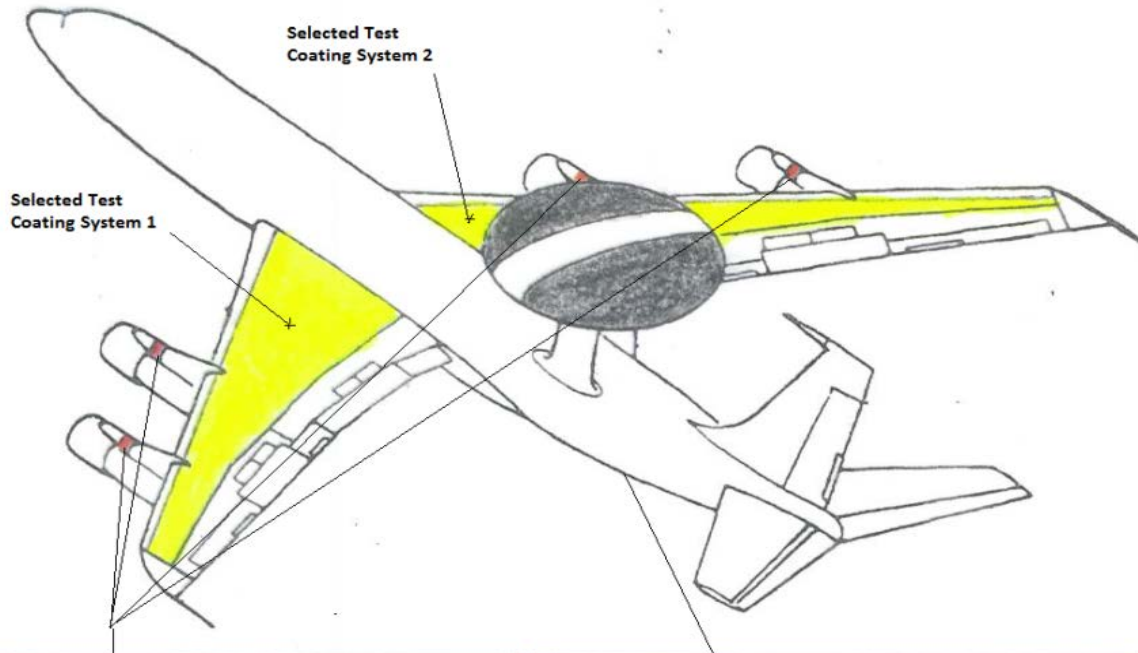
E-3 Non-Chromate Coating System Evaluation

Way Forward

- In conjunction with AFCPCO and CTIO, USAF E-3 is conducting a Qualification Operational Test & Evaluation of selected non-chrome coating systems:
 - Aircraft Outer Mold Line (LH & RH Upper Wing Skins)
MIL-PRF-32239 Type 2:
 - PREKOTE (non-chromate surface treatment)
 - AERODUR 2100 (Mg-rich primer)
 - MIL-PRF-85285 Type I (polyurethane topcoat)
 - Aircraft Parts (Engine Strut Saddle Fairings & Latrine Service Door):
 - PREKOTE (non-chromate surface treatment)
 - ECOAT (electrocoat non-chromate primer)
 - MIL-PRF-85285 Type I (polyurethane topcoat)



E-3 Non-Chromate Coating System Evaluation





E-3 Non-Chromate Coating System Evaluation

Way Forward

- The test coating systems were applied on selected FY14 PDM aircraft
- The test coating systems will remain on the aircraft until the FY20 PDM
- The performance of the test coating systems is being compared to the chromate coating systems currently in use
- Evaluations take place during ISO inspections



E-3 Non-Chromate Coating System Evaluation

Concerns

- For corrosion inspection purposes during PDM, paint systems must be completely removed
 - Non-chromate coating systems tested at OC-ALC are not removable using current chemical paint removers

- Non-chromate coating systems must be able to remain in-tact (i.e. no degradation, peeling, etc.) for full PDM cycle



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Questions