STANDARD OVERHAUL PRACTICES MANUAL

APPLICATION OF WEATHER, FUEL, OIL, SOLVENT, AND HEAT RESISTANT PROTECTIVE COATINGS

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To: All holders of APPLICATION OF WEATHER, FUEL, OIL, SOLVENT, AND HEAT RESISTANT PROTECTIVE COATINGS 20-50-13.

Attached is the current revision to this STANDARD OVERHAUL PRACTICES MANUAL

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	NO HIGHLIGHTS

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STANDARD OVERHAUL PRACTICES MANUAL

A = Added, R = Revised, D = Deleted, O = Overflow

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All revisions to this manual will be accompanied by transmittal sheet bearing the revision number. Enter the revision number in numerical order, together with the revision date, the date filed and the initials of the person filing.

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STANDARD OVERHAUL PRACTICES MANUAL

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INTRODUCTION

1. General

A. The instructions in this manual tell how to do standard shop procedures during maintenance functions from simple checks and replacement to complete shop-type repair.

B. This manual is divided into separate sections:

(1) Title Page

(2) Transmittal Letter

(3) Highlights

(4) Effective Pages

(5) Contents

(6) Revision Record

(7) Record of Temporary Revisions

(8) Introduction

(9) Procedures

C. Refer to SOPM 20-00-00 for a definition of standard industry practices, vendor names and addresses, and an explanation of the True Position Dimensioning symbols used.

D. The data is general. It is not about all situations or specific installations. Use it as a guide to help you write minimum standards.

E. If the component overhaul instructions are different from the data in this subject, use the component overhaul instructions.

APPLICATION OF WEATHER, FUEL, OIL, SOLVENT, AND HEAT-RESISTANT PROTECTIVE COATINGS

1. INTRODUCTION

A. The data in this subject comes from Boeing Process Specification BAC5840. The airline has a copy of the Boeing Process Specification Manual.

B. The data is general. It is not about all situations or specific installations. Use this data as a guide to help you write minimum standards.

C. Refer to SOPM 20-00-00 for a list of all the vendor names and addresses.

2. MATERIALS

A. Coatings per BMS 14-4:

(1) BMS 14-4, Type 1 – Sermetel W, V58913

(2) BMS 14-4, Type 2 – Sermetel 249, with Sermetel 273 (catalyst), V58913

(3) BMS 14-4, Type 3

(a) Sermetel 984, Parts 1 and 2, V58913

(b) Sermetel 985, Parts 1, 2 and 3, V58913

(4) BMS 14-4, Type 4

(a) Brown: Sermetel 1273M primer and Sermetel 1274 topcoat, V58913

(b) Black: Sermetel 1273M primer and Sermetel 1279 topcoat, V58913

B. Wipers – BMS 15-5, Class A or B

C. Gloves

(1) Clean, white lightweight, knitted cotton

(2) Synthetic fiber, polyethylene or nylon

D. Aluminum oxide abrasive pads – Scotch-Brite, Type A, V76381

3. EQUIPMENT

A. Unless specified differently, use standard painting equipment in a room with a good flow of air.

(1) The equipment must apply a fine, smooth spray pattern, with an external mixing nozzle when possible.

(2) The gun must have a stainless steel fluid tip and needle.

(3) The coating material must be supplied to the gun from an attached stainless steel pressure cup with agitation. As an alternative, you can use a siphon cup of glass, plastic or stainless steel on a stencil gun or airbrush for touch-up, but this cup must be shaken by hand as the coating is applied.

(4) These DeVilbiss (V17431) guns are recommended:

(a) MBC-510 spray gun (with stainless steel fluid tip and needle), for general operations.

(b) EGA-502 stencil spray gun, for touch-up and surfaces where the access is not easy.

(c) MBX-5214-36 extension spray gun, or MBC-510 gun with MBX-4214-36 extension head, to apply coating to the internal surfaces of tubing. Guides are necessary to make sure the spray stays in the center of the tube bore.

B. Ventilated oven or paint curing heater that supplies controlled heat up to 650°F.

4. SURFACE PREPARATION

A. Solvent clean or vapor degrease or aqueous degrease ferrous alloy surfaces per SOPM 20-30-03. Solvent clean or aqueous degrease titanium surfaces per SOPM 20-30-03.

B. Dry abrasive blast with clean 80, 100 or 120 grit aluminum oxide per SOPM 20-30-03.

CAUTION: DO NOT TOUCH THE CLEANED PARTS WITH BARE HANDS. PUT ON CLEAN WHITE COTTON GLOVES OR DISPOSABLE POLYETHYLENE GLOVES TO PREVENT CONTAMINATION OF THE CLEANED PARTS.

C. After the grit blast, clean the surface with compressed air or nitrogen blast to remove remaining grit and other unwanted matter. Do not touch the surface with bare hands.

D. Make sure that surfaces have no grit, oil, scale or other contamination, and that metal surfaces are bright and clean.

E. Give protection to the cleaned surfaces until you apply the coating. Apply the coating in 4 hours or less after the blast.

5. APPLICATION OF COATING

A. General

(1) Mix the coating materials by the vendor's instructions. Make sure it is fully mixed before you use it.

(2) For Type 2 coating, do not mix the Sermetel 249 coating and Sermetel 273 catalyst together. The catalyst is applied after the coating material is dried.

(3) For Type 3 coating, slowly add the catalyst to the base while you shake the base with a low speed mechanical mixer. Use a plastic or glass container with a screw cap.

(a) Sermetel 984 aluminum coating – Mix 17 volume parts of Part 2 catalyst with 100 volume parts of Part 1 base.

(b) Sermetel 985 top coating – Mix 10 volume parts of Part 2 and 10 volume parts of Part 3 with 100 volume parts of Part 1 base.

(c) Mix only the amount of coating you will use in one day. The maximum pot life of the mix is 12 hours.

(d) Identify the container of mixed coating with this data:

1) The product name and number.

2) The date and time the coating was mixed.

3) Who mixed the coating.

4) The time the pot life will expire.

(e) Send through a paint strainer the amount of mixture you will immediately apply. Use a 500-mesh strainer for Sermetel 984 material. Use a 325-mesh strainer for Sermetel 985 material. Shake the remaining coating material in a roller agitator until you use it or until you discard it at the end of the pot life.

(4) Keep the coating material continuously stirred during the spraying process.

(5) Spray equipment can be cleaned with water.

B. BMS 14-4, Types 1 and 3

WARNING: DO NOT LET OVERSPRAY COLLECT ON SPRAY BOOTHS OR OTHER EQUIPMENT. THE FINE ALUMINUM PARTICLES IN THE COATING ARE A FIRE HAZARD.

(1) With continuously stirred spray painting equipment, apply the material to the prepared surface until you get a continuous green layer. On areas where this will not be easy, you can apply the material with a stencil gun, an airbrush or a hand brush first, and then immediately apply by spray the material to the other areas of the part.

(2) Because the wet material will absorb water, the layer must be dried and cured immediately after you apply it. Dry the layer at 175-200°F for a minimum of 15 minutes. The layer must be smooth, and be a smooth grey color when dry. Green areas on the dried layer are a sign that the layer is too thick and could flake or craze during the cure.

(3) Remove unsatisfactory layers with clean warm running water. Wipe parts dry with clean oil-free wipers and immediately spray on a new layer.

(4) There must be no lumps, runs or dry-spray marks visible in the dried layer.

(5) Cure the BMS 14-4, Type 1 coating at 600-650°F for 30 minutes minimum, or at 350-400°F for 26 hours minimum if permitted by the overhaul instructions. Cure the BMS 14-4, Type 3 coating at 350°-400°F for 60 minutes minimum.

(6) Do Paragraph 5.B.(1) thru Paragraph 5.B.(5) again for each added layer as necessary. Apply a minimum of two layers to all parts. The final coating must be 0.0015-0.0035 inch thick after the layers are polished. The internal surfaces of tubular parts smaller than 5 inches ID can have a minimum thickness only. These thickness limits are applicable only to surfaces which can be touched by a 3/4-inch diameter ball, but all surfaces must have a continuous layer of the BMS 14-4 coating on them, and be polished as specified.

(7) Between layers, you can lightly abrasive blast the surfaces, but only to Type 1 and Sermetel 984, Type 3 base coat surfaces. Do not do this to Sermetel 985, Type 3 topcoat surfaces.

(8) Unless specified by overhaul instructions, polish the cured Type 1 and Type 3 base coat layers, by one of these methods, until you get a continuous shiny metallic conductive surface:

(a) Glass bead blast by the abrasive cleaning procedure in SOPM 20-30-03, or glass bead peen per SOPM 20-10-03.

(b) Power brush with a very soft brass or stainless steel wire-brush wheel.

(c) Dry abrasive blast, with 100-320 aluminum oxide abrasive at 30 psi maximum air pressure. This can be used to polish the surface, or to make the surface rough to make a better bond with a subsequent layer of primer or topcoat.

(9) Type 1: Chemical treat the surfaces per BAC 5719, Class 1A which will get a layer of primer.

(10) Type 3: Apply and cure Sermetel 985 topcoat by the above procedure.

C. BMS 14-4, Type 2

(1) With continuously stirred spray painting equipment, apply Sermetel 249 to the prepared surface until you get a continuous grey layer. Do not mix Sermetel 249 coating with Sermetel 273 catalyst. The catalyst will be applied after the Sermetel 249 layer is dry.

(2) Dry the layer 30-45 minutes at ambient temperature. The coating must be smooth, and have a continuous grey color when dry.

(3) Mask all adjacent surfaces, before you apply the catalyst, to keep the catalyst away from adjacent surfaces.

(4) Apply one layer of Sermetel 273 catalyst to coated area and let it cure for 16 hours at room temperature or 4 hours at 250-350°F. There must be no lumps or runs in the cured layer.

(5) The total coating must be 0.0015 - 0.0035 inch thick. Do Paragraph 5.C.(1) thru Paragraph 5.C.(4) again as necessary to get to these thickness limits.

6. REPAIR OF CURED COATING

A. BMS 14-4, Type 1 and 3

(1) Locally dry abrasive blast the damaged cured coating with 80 to 320-grit aluminum oxide until you see the bare metal. Blend out into the good coating.

(2) Sand with Scotch-Brite as necessary to make the edges of the area smooth with the adjacent good coating. Make rough a section of coating approximately 1/2 inch wide around the bare area.

(3) Spray or brush apply a new BMS 14-4, Type 1 or 3 coating and cure it per Paragraph 5.B. Make this new coating have an overlap with the good coating a minimum of 1/2 inch.

B. BMS 14-4, Type 2

(1) Manually sand the damaged area with 180-grit or finer silicon carbide paper until you see the bare metal. Blend out into the good coating.

(2) Solvent clean the sanded area per SOPM 20-30-03.

(3) Spray or brush apply a new BMS 14-4, Type 2 coating and cure it per Paragraph 5.C.

7. QUALITY CONTROL

A. BMS 14-4, Type 1 coatings

(1) The cured coat must be smooth and grey, with no green.

(2) There must be no cracks, checks, blisters, bad colors, or other defects.

(3) The cured coating must be 0.0015-0.0035 inch thick after the layers are polished. The internal surfaces of tubular parts smaller than 5 inches ID can have a minimum thickness only. These thickness limits are applicable only to surfaces which can be touched by a 3/4-inch diameter ball, but all surfaces must have a continuous layer of the BMS 14-4 coating on them, and be polished as specified.

(4) The burnished or polished coating must be continuous and conductive over all accessible surfaces, and must have a maximum resistance of 1 ohm/inch distance as measured with ohmmeter probes 1 to 3 inches apart.

(5) The cured coating must have no inclusions or marks left by inclusions.

(6) If the cured coating has areas of orange peel, the areas must be examined under 10 to 30-power magnification. Reject coatings with pinholes or cracks, through to the base metal or not.

(7) The cured coating must have no lumps that could be a fit problem. Some small lumps are acceptable.

(8) Marks from burnishing by handling or vibrations during shipping of Type 1 coated parts are acceptable. But the cured coating must agree with thickness requirements.

(9) The cured coating must have no chip marks.

(10) Soak a cotton swab with water or alcohol and lightly wipe the cured coating.

(a) If you see solid film particles on the swab and bare metal on the part, remove the coating. Apply new coating.

(b) Light smooth deposits of powdery material on the cotton swab are permitted.

(c) If you see a green or yellow color, the coating is not correctly cured. Cure it again per Paragraph 5.B.(5).

(11) The Sermetel 985, Type 3 topcoat must agree with these requirements.

(a) The layer must be a translucent green color. The color can be different with the layer thickness.

(b) The total thickness of Sermetel 984 and 985 must be 0.0015-0.0040 inch, unless specified in Paragraph 7.A.(3) above.

(c) The cured topcoat must not get marks or chips when scratched with your fingernail.

(d) Cracks in the topcoat are acceptable.

(e) Paragraph 7.A.(5), Paragraph 7.A.(6), Paragraph 7.A.(7), Paragraph 7.A.(9) above are applicable.

B. BMS 14-4, Type 2 coatings

(1) The cured coat must be smooth and grey.

(2) There must be no cracks, checks, blisters, bad colors or other defects.

(3) The cured coating must have no lumps that could be a fit problem.

(4) The cured coating must be 0.0015-0.0035 inch thick.