1. Aerodynamic Contour Smoothness

A. General

(1) Scope

This specification establishes static surface smoothness requirements for Gulfstream IV aircraft with specific emphasis on wing leading edges and wing surfaces. Aerodynamic smoothness is defined herein with limits prescribed for surface discontinuities (steps and rivets), contour variations and gap tolerances. This specification also applies to purchased equipment such as assemblies (antennas) which may be added or removed for specific purposes and their mounting or access holes, etc.

B. Applicable Documents

(1) The following Gulfstream document forms a part of this specification. See GIV Finish Specification, 51-14-00, Repair.

(2) Reference documents - All sections applicable to the installation of rivets and other fasteners as listed in this manual.

(3) Precedence - This specification shall have precedence over all specifications applicable to the GIV aircraft. Any deviation from this specification or from other applicable specifications, shall be specifically approved in writing by Gulfstream Technical Operations.

C. Requirements

(1) Aerodynamic Smoothness

(a) The aerodynamic smoothness, mismatch and gap tolerances are defined herein.

(b) All tolerances apply as installed on aircraft in static attitude.

(2) Classification - The exterior surfaces of the aircraft are divided into two functional areas as follows:

(a) **Zone 1:**

   1 Wing - Inboard of Wing Station (WS) 405; leading edge to a point 1 inch aft of the intersection of the leading edge and the first machined plank.
2 Outboard of WS 405 - From leading edge to trailing edge.
3 Winglet - Entire surface.
4 Stabilizer - Leading edge to a point 1 inch aft of the front beam.
5 Fin - Leading edge to a point 1 inch aft of the front beam.
6 Engine Inlet - Compressor face forward to inlet highlight, then aft on cowl exterior to a point 1 inch aft of inlet lipskin.

(b) **Zone 2:**
1 All other surfaces including fuselage.

### D. Aerodynamic Smoothness Requirements

**NOTE:** The following tolerances on surface finish shall be adhered to and must be maintained in order to meet the performance requirements of the aircraft. All measurements are in inches.

1. **Fasteners**
   a. Nonremovable, Nonmillable Flush Screws and Hi-Loks
      - Zone 1: Flush within a tolerance of: +0.003 -0.002
      - Zone 2: Flush within a tolerance of: +0.005 -0.002
      **NOTE:** Fasteners installed below the surface shall be filled to provide a smooth surface.
   b. Removable, Nonmillable Flush Screws and Hi-Loks
      - Zone 1: Flush within a tolerance of: +0.003 -0.002
      - Zone 2: Flush within a tolerance of: +0.005 -0.002
   c. Shaved Flush Head Rivets
      - Zone 1: Tolerance after shaving: +0.003 -0.000
      - Zone 2: Tolerance after shaving: +0.005 -0.000
      **NOTE:** Heads of NAS1097 rivets shall not be shaved except by specific approval in the repair and the tolerance in all zones after shaving shall be: +0.003 / -0.000
   d. Crown Headed Fasteners
      1 For HL200 and HL369, the maximum permissible fastener protrusion noted shall be the same as for flush fasteners. See Step 1.D.(1)(a) and Step 1.D.(1)(b). However, the crown will project into the air passage by the amount shown as "A" dimension.

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>A DIMENSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zone 1</td>
<td>0.007 Max</td>
</tr>
<tr>
<td>Zone 2</td>
<td>0.015 Max</td>
</tr>
</tbody>
</table>

   Zone 1: Flush within a tolerance: +0.003 -0.002. See Figure 201.
   Zone 2: Flush within a tolerance: +0.005 -0.002. See Figure 202.

2. **Steps at Skin Joints (see Figure 203):**
   - Zone 1 ±0.010 inch
   - Zone 2
      - ±0.020 inch - Step up going aft
• -0.035 inch - Step down going aft
• 0.030 inch - Step streamwise - Winglet / wing fillets and fuselage

(3) Gaps at Skin Joints (see Figure 203):
• Zone 1: 1/8 inch maximum
• Zone 2: 1/8 inch maximum

(4) Nonremovable Panels
(a) All gaps either parallel to or normal to the air stream shall be filled with sealing compound. See GIV Finish Specification, 51-14-00, Repair.

(5) Removable Panels, Access Doors
(a) Formed-in-place gaskets shall be used when practical for the application. See GIV Finish Specification, 51-14-00, Repair.

(6) Waviness
(a) The allowable limits on the waviness of an air passage surface are as follows:

1 Both the wave height and the wave slope must be checked (except for Zone 2 chordwise waves for which only maximum height needs to be checked).
2 Neither value is to exceed the allowable listed below (see Figure 204).
3 A chordwise wave is defined as a wave with its length running in the direction of leading edge to trailing edge (trough of wave running from root to tip).
   a Zone 1 - Wing, stabilizer, fin and winglet
   b Leading edge to a point 1 inch aft of the intersection of the leading edge and the first machined plank (wing) or the front beam (stabilizer, fin and winglet).

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>MAX WAVE HEIGHT</th>
<th>MAX SLOPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stabilizer, fin and winglet</td>
<td>0.020 inch in 12 inches</td>
<td>0.0033</td>
</tr>
<tr>
<td>Aft of location in Step 1.D.(6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a)33 a</td>
<td>0.040 inch in 12 inches</td>
<td>0.007</td>
</tr>
</tbody>
</table>

(c) Zone 2 - Maximum wave height 0.040 inch in 12 inches - no maximum slope requirement.
(b) A spanwise wave is defined as a wave with its length running in the direction of root to tip.
   1 Spanwise wave - Trough wave running from leading edge to trailing edge and including leading edge bow. See Figure 204.

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>MAX WAVE HEIGHT</th>
<th>MAX SLOPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>All areas</td>
<td>0.060 inch in 12 inches</td>
<td>0.010</td>
</tr>
</tbody>
</table>

(c) Waves shorter than 12 inches - For waves shorter than 12 inches, the allowable deviation shall be proportionally reduced. See Figure 205.
(d) Deviations from Theoretical Contour
1 Deviations from the theoretical contour shall be subject to the same limits as deviations from smooth (waviness) unless otherwise specified on the drawing.

(e) Primary Static Ports

1 The primary static ports are located in the upper static pressure plates on the right and left sides of the fuselage at Fuselage Station (FS) 193 +9.35 and waterline 91.17. The allowable static plate recess from the surrounding contour is shown in Figure 206.

   a The deviation is to be checked using a straight edge positioned horizontally across the static plate resting on the skin at frames FS 193 and FS 193A (+12).

   b The straight edge should not be placed on any sealant at FS 193 skin joint.

   c The static plate recess from the straight edge is measured with feeler gages or other appropriate measurement tools (i.e., dial calipers, etc.).

   d Allowable static plate recess referenced to straight edge is:

      - Green or unpainted aircraft:
        - Minimum recess - A = 0.000
        - Maximum recess - A = 0.040
      - Painted aircraft:
        - Minimum recess - A = 0.005
        - Maximum recess - A = 0.048

   e Any aircraft with static plate recess not within limits or straight edge contacts a skin wave between frames shall be referred to Gulfstream Technical Operations for disposition.

E. Quality Assurance Provisions

   (1) Acceptance inspection - The final contour shall be fair and smooth. Variations from fair and smooth contours shall not be greater than those specified herein.

   (2) Rejection and rework - Surfaces that do not conform with requirements of this specification may be reworked using procedures provided in this manual. Surfaces that cannot be brought into conformance shall be referred to Gulfstream Technical Operations for disposition.
Crown Headed Fasteners - Zone 1

Figure 201

"A" DIM

+ 0.003
- 0.002 OFF AIRPASSAGE

3/16 FASTENER

Crown Headed Fasteners - Zone 1
Figure 201
Crown Headed Fasteners - Zone 2

Figure 202

3/16 FASTENER

+ 0.005
- 0.002
OFF AIRPASSAGE

"A" DIM

Crown Headed Fasteners - Zone 2
Figure 202

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December 31/07
Steps at Skin Joints
Figure 203
SLOPE IS DEFINED AS 2 X WAVE HEIGHT / WAVE LENGTH

Theoretical Contour
Figure 204

THEORETICAL CONTOUR

ACTUAL CONTOUR

WAVE HEIGHT (MAXIMUM DEVIATION)

WAVE LENGTH
Deviation for Waves Shorter Than 12 Inches
Figure 205
Primary Static Plate Recess from Surrounding Skin
Figure 206
2. Sealing of Surfaces for Aerodynamic Smoothness

A. General

(1) Scope

This specification establishes requirements for sealing of surfaces for aerodynamic smoothness on flight vehicles operating in temperature range of -65°F to +360°F, using polysulfide and epoxy based materials.

(2) Applicable Documents

The documents herein cited form a part of this specification to the extent specified. Unless otherwise noted, they shall be of the latest issue. See Table 201.

In the event of a conflict between the text of this specification and the documents cited herein, the text of this specification shall take precedence.

(3) Requirements

(a) General

Where repairs or specifications require the application of sealants for the purpose of attaining aerodynamic smoothness on flight vehicles, it shall be accomplished as follows:

(b) Qualified Personnel

Personnel preparing sealants per this specification shall be qualified in the preparation and application of aerodynamic smoothness sealants per the requirements of the supplier and to the satisfaction of the operator.

(c) Restrictions

The provisions for aerodynamic smoothness contained herein shall not be employed to conceal scratches, depressions, etc., unless approved by Gulfstream Technical Operations. These scratches, depressions, etc., shall be no larger than one square inch in area and they shall not be located adjacent to or in engine or APU intake area, except as approved by Gulfstream Technical Operations.

B. Special Requirements

(1) Special Requirements

(a) Classification - Sealants shall be specified on repair or specification as follows:

1. Type I Sealant for use in temperature range of -65°F to 200°F.
   a. A - Polysulfide base.
   b. B - Epoxy base.

2. Type II Sealant for use in temperature range of -65°F to 360°F.

3. Type III Polysulfide Sealant for use in the temperature range of -65°F to 250°F

NOTE: When sealant type is not specified in repair or specification, Type IA, Type II or Type III sealant shall be used.

(2) Equipment and Facilities

(a) Mixing - Mixing equipment shall be capable of uniformly mixing sealants within ±5% of the established mixing ratios and shall have provisions to prevent heating of the sealants during the mixing cycle.
(b) Freezer - Freezers shall be capable of maintaining -20°F or below.

(c) Mixing areas - Mixing areas shall be controlled environmentally to 60°F - 80°F and 50% ±10% relative humidity whenever possible.

(d) Materials - Unless otherwise specified in the repair or in a specification, the following materials shall be used:

1. Sealants
   - Type IA, -65°F to 200°F temperature range - See Aerodynamic Sealant Compound, 51-21-00, Repair
   - Type IB, -65°F to 160°F temperature range - EC 1751 B / A
   - Type II, -65°F to 360°F temperature range - See Fuel Resistant Sealing Compound - Fillet and Faying (−65°F to +360°F Service), 51-21-00, Repair Type I
   - Type III, -65°F to 250°F temperature range - MIL-S-8802

   NOTE: The classes specified in Table 203 may be used.

2. Cleaning Agents
   - Solvents conforming to the requirements of MIL-S-5002
   - Solvent cleaners for titanium and titanium alloys. See Cleaning and Descaling of Titanium and Titanium Alloys, 51-21-00, Repair
   - Isopropyl alcohol per TT-I-735 or ASTM D770
   - Methyl Propyl Ketone (MPK) per GAS115K
   - Methyl Ethyl Ketone (MEK) per ASTM D740
   - Acetone per ASTM D329

C. Procedures

(1) Surface preparation - Surfaces shall be prepared as follows:

   (a) Cleaning
      - 1. Solvents for fiberglass and metal surfaces (other than titanium). See Step 2.B.(2)(d)
      - 2. Aluminum oxide abrasive paper, No. 180 grit or finer, may be used to supplement the cleaning procedure.
      - 3. Solvents for surfaces adjacent to acrylics or polycarbonates. See Isopropyl Alcohol (Step 2.B.(2)(d)2).

   (b) Material preparation - Sealant mixing ratios as specified by the manufacturer’s recommendation. See Table 203.

   (c) Identification of prepared sealant - Each container of prepared sealant shall be identified by type, class, batch number and date of mixing.

   (d) Application - The sealant shall be applied to areas specified on the repair document or specification.

   (e) Curing - Curing may be accomplished at ambient or elevated temperatures. See Table 203.

   (f) Finishing - Excess sealant shall be removed prior to finishing. See Sealing Pressurized Areas, Skin Joints, Faying Surfaces, Access Closures and Coating Exterior Surfaces, 51-22-00, Repair, Excess Sealant paragraph.
Finishing may be accomplished on semi-cured or cured sealant and shall provide a smooth surface flush with the surface contour.

(g) Repairs - If required, foreign matter shall be removed from the sealant.

1. The surface of the sealant around any defect shall be cleaned and sealant applied. See Step 2.C.(1)(a), Step 2.C.(1)(d), Step 2.C.(1)(e) and Step 2.C.(1)(f).

2. When rework or ruptures require the removal of any part of the seal, the repair shall be accomplished in the same manner originally used to apply the seal.

D. Quality Assurance Provisions

(1) Responsibility - The operator shall be responsible for assuring compliance with requirements of this specification.

(2) End product - The end product shall be a tack free, cured compound, free from voids, breaks and features not conforming to design requirements.

(3) Discrepant material - Materials not meeting requirements of this procedure shall be rejected.

E. Notes

(1) Material storage - Unmixed material storage. See Table 204. Premixed materials shall be stored per the manufacturer’s recommendations.

(2) Safety - All federal, state and local ordinances shall be adhered to.

(3) Suppliers (Sellers) - This specification shall be applicable for supplier (seller) compliance. Any deviations from this specification shall be submitted to Gulfstream Technical Operations, in writing, for approval.
Table 201: Applicable Documents

<table>
<thead>
<tr>
<th>INDUSTRY</th>
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<tbody>
<tr>
<td>ASTM D 329</td>
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<td>ASTM D 740</td>
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<td>ASTM D 770</td>
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<tr>
<th>FEDERAL</th>
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<tr>
<th>MILITARY</th>
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<tr>
<td>MIL-S-5002</td>
</tr>
<tr>
<td>MIL-S-8802</td>
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<table>
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<tr>
<th>SPECIFICATIONS</th>
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<tbody>
<tr>
<td>Cleaning and Descaling of Titanium and Titanium Alloys, 51-21-00, Repair</td>
</tr>
<tr>
<td>Fuel Resistant Sealing Compound - Fillet and Faying (−65°F to +360°F Service), 51-21-00, Repair</td>
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<tr>
<td>Sealing Pressurized Areas, Skin Joints, Faying Surfaces, Access Closures and Coating Exterior Surfaces, 51-22-00, Repair</td>
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<tr>
<th>STANDARDS</th>
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<tr>
<td>GAS115K</td>
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<tr>
<td>Aerodynamic Sealant Compound, 51-21-00, Repair</td>
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</table>

Table 202: Qualified Products Listing

<table>
<thead>
<tr>
<th>SPECIFICATION / TITLE</th>
<th>APPROVED PRODUCTS</th>
<th>MFG CODE</th>
</tr>
</thead>
</table>
| Sealing of surfaces for aerodynamic smoothness | Type IA  
ProSeal 895  
PR-340 | PRC |
| | Type IB; EC-1751 B / A | 3M |
| | Type II  
ProSeal 899  
PR-1740 | PRC |
| | Type III  
MIL-S-8802 | QPL-8802 |
<table>
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<tr>
<th>MATERIAL</th>
<th>MIXING RATIO (BASE/ACCELERATOR) BY WEIGHT</th>
<th>APPLICATION LIFE&lt;sup&gt;(1)&lt;/sup&gt;</th>
<th>TACK FREE&lt;sup&gt;(1)&lt;/sup&gt;</th>
<th>HARD CURE&lt;sup&gt;(1)&lt;/sup&gt;</th>
<th>FULL CURE&lt;sup&gt;(1)&lt;/sup&gt;</th>
<th>ACCELERATED CURE (1/8 INCH THICK)</th>
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</thead>
<tbody>
<tr>
<td>Type IA PS-895</td>
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<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Class B-1/2</td>
<td>10 / 1</td>
<td>30 minutes</td>
<td>10 hours</td>
<td>24 hours</td>
<td>14 days</td>
<td>10 hours&lt;sup&gt;(1)&lt;/sup&gt; and 3 hours at 130°F</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>24 hours&lt;sup&gt;(1)&lt;/sup&gt; and 3 hours at 120°F</td>
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<td>2 hours</td>
<td>24 hours</td>
<td>48 hours</td>
<td>14 days</td>
<td>24 hours&lt;sup&gt;(1)&lt;/sup&gt; and 3 hours at 130°F</td>
</tr>
<tr>
<td>PR-340</td>
<td>10 / 1</td>
<td>2 hours</td>
<td>24 hours</td>
<td>72 hours</td>
<td>7 days</td>
<td>150°F for 2 hours plus 24 hours&lt;sup&gt;(1)&lt;/sup&gt;</td>
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<td>Type IB EC-1751B / A</td>
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<td>45 minutes</td>
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<td>Type II P/S 899</td>
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<td>15 minutes</td>
<td>6 hours</td>
<td>16 hours</td>
<td>14 days</td>
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</tr>
<tr>
<td>Class B-1/2</td>
<td>10 / 1</td>
<td>30 minutes</td>
<td>10 hours</td>
<td>30 hours</td>
<td>14 days</td>
<td>10 hours&lt;sup&gt;(1)&lt;/sup&gt; and 3 hours at 130°F</td>
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<tr>
<td>Class B-2</td>
<td>10 / 1</td>
<td>2 hours</td>
<td>24 hours</td>
<td>72 hours</td>
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<td>PR-1740</td>
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<tr>
<td>Class B-1/2</td>
<td>10 / 1</td>
<td>30 minutes</td>
<td>10 hours</td>
<td>30 hours</td>
<td>14 days</td>
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<tr>
<td>Class B-2</td>
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<td>2 hours</td>
<td>24 hours</td>
<td>48 hours</td>
<td>14 days</td>
<td>24 hours&lt;sup&gt;(1)&lt;/sup&gt; and 3 hours at 130°F</td>
</tr>
</tbody>
</table>

<sup>(1)</sup> Additional cure times: 24 hours and 130°F
3. GIV Finish Specification

A. General

(1) Finish Section

Scope - This specification establishes the detail requirements and procedures to be followed in the application and control of surface treatment, sealing and finishing material for the Gulfstream GIV aircraft and component parts, including spares. This specification does not apply to purchased equipment such as electric motors, instruments, switches, hydraulic valves and similar parts, unless specifically prescribed in the applicable equipment or accessory specification, or the engineering drawing or repair document.

(2) Finishing Restrictions

(a) Exterior Outfit Finish Design Responsibility

The exterior organic finish systems listed in Table 206 are the recommended exterior organic finish systems approved by Gulfstream production engineering (see footnote).
Selection of other finish systems and the exterior outfit finishing design shall be the responsibility of the Completion Center Engineering group and/or the operator.

(b) Filler Materials

Filler materials, with the exception of the high build epoxy primers listed in White Primer Coating, Sanding Sealer, 51-07-10, Repair and the aerodynamic smoothness approved to Sealing of Surfaces for Aerodynamic Smoothness, 51-14-00, Repair, are expressly disallowed on any composite surface without a specific written approval from Gulfstream Technical Operations.

(c) GIV Wing, Surface Pretreatment

GIV wings shall have chromic acid anodized interior and exterior surfaces. Appropriate cleaning, pretreatment, painting and stripping procedures outlined herein and in other specified documentation shall be followed without alteration. Deviation from approved procedures may compromise the integrity of the anticorrosion finish system.

(d) Total Paint Thickness on Flight Control Surfaces

The overall completed dry film thickness of the antistatic primer, base primer, intermediate primer and topcoat on flight control surfaces shall not exceed 5.0 mils or rebalancing shall be required.

(e) Radome Paint Thickness

Total paint thickness on the radome shall not exceed 4 mils. If the paint thickness exceeds the 4 mil maximum thickness requirement, the entire organic coating system shall be removed from the radome and reapplied.

(f) Solvent Restrictions

Halogenated solvents and methyl alcohol are prohibited from the use on titanium parts and fasteners which will be subjected to temperatures in excess of 200°F.

B. Applicable Documents

(1) The following government documents of latest issue shall form a part of this specification to the extent specified herein. See Table 205.


(3) Nongovernment documents - Copies of this specification and of other applicable Gulfstream documents may be obtained upon application to the Gulfstream Technical Operations.

(4) Precedence - In each case of conflict between this and any repair document or general Gulfstream, or other specification, it shall be brought to the attention of the Gulfstream Technical Operations for coordination and resolution.

C. Finish Requirements

(1) Approved Finish Materials

(a) The materials listed in Table 206 are approved to the referenced requirements of this specification.

(b) Detailed requirements for the application of the various finishes are specified in the referenced specifications.

NOTE: Other materials may be approved but have not been listed.
General Finish Requirements

(a) The protective finishes shall be applied in accordance with procedures and finish and process codes specified herein.

(b) In order to prevent the addition of unnecessary weight, the protective coating systems shall be held within the specified thickness tolerances.

(c) Special anticorrosion systems and/or coatings, if required by the customer, shall be subject to separate negotiations.

1 Workmanship of finished areas - Workmanship of finished areas shall be of the highest quality and shall conform to all applicable specifications, standards and drawings.

2 Documentation of finished and process codes - For individual finish and process codes applicable to the requirements of this specification, see Individual Process and Finish Codes, 51-20-00, General.

3 Interior and exterior finish schemes - For recommended interior and exterior finish schemes/systems applied to GIV aircraft, see Original Finishes, 51-20-00, General.

NOTE: Surfaces exposed to exhaust gases, such as fuselage sides, tail surfaces and other interior and exterior areas that are known to be subject to corrosive conditions, shall be provided with additional coats of finish as specified on the repair documents.

4 Antichafe coating materials - Where antichafe coating materials are required, they shall be procured per the requirements specified in GAC130R, as applicable. Contact Gulfstream Technical Operations for assistance in locating these documents.

a Antichafe coating application - Where antichafe coatings are required, application shall be per the requirements specified in as applicable. See Antistatic Epoxy Primer - General Application, 51-07-10, Repair.

Parts or assemblies requiring an anti-static coating shall be so designated, on appropriate drawings, by referencing finish code No. 92 in the finish number column and the finish block.

b Antichafe coating special requirements - Where antichafe coatings are required, they shall be applied prior to any other organic finish system.

This requirement includes antichafe application prior to primer application. The actual area of application of antichafe coatings shall be defined on the applicable engineering drawings.

5 Antistatic coating materials - Where antistatic coatings are required, they shall be procured per the requirements specified in GMS 5003 and MIL-C-83231, as applicable.

a Antistatic coating application - Where antistatic coatings are required, they shall be applied per the requirements specified in GAMPS 3113 as applicable. See Antistatic Epoxy Primer - General Application, 51-07-10, Repair.

b Parts or assemblies requiring antistatic coating shall be so designated on appropriate drawings by referencing finish code No. 92 in the finish number column and the finish block.

6 Shims, finishing requirements - The following criteria shall be adhered to when shims
are to be installed in or on GIV aircraft structure.

a Aluminum alloy shims, finishing requirements - All aluminum alloy shims, with the exception of peelable shims, shall be finished with a chromate conversion coating (finish No. 76 or No. 213) or an anodic coating (finish No. 88 or No. 176) and one coat of finish No. 2012 or No. 3012 or finish No. 144, unless otherwise specified.

b Stainless steel shims, finishing requirements - All stainless steel shims shall be passivated (process code PS) and finished with one coat of finish code No. 2012 or No. 3012, unless otherwise specified.

c Cast plastic shims, finishing requirements - Cast plastic shims shall be overcoated with MIL-S-8802, Type II, after assembly of detail parts.

d Peelable metallic shims, finishing requirements - Peelable shims shall not be conversion coated or anodized by the using agency.

NOTE: Peelable shims shall not be procured in the ready to use condition finish. No. 2012 or No. 3012 shall be applied to the entire shim prior to installation with mechanical fasteners or adhesive bonding. Finish No. 144 shall be used on the fuel exposed surfaces in lieu of finish No. 2012 or No. 3012.

(3) General Surface Preparation Prior to Finishing

(a) General cleaning requirements - Care shall be taken in those inaccessible areas to ensure that metal particles, such as drill shavings, rivets, bolts, tools, filings, do not remain in the aircraft.

(b) A vacuum cleaner providing strong suction must be employed for frequent cleaning operations in such areas.

(c) Filed or abraded areas shall be touched up in accordance with the detail paint schedule for the applicable part.

1 Pretreatment - Metal surfaces shall be cleaned and pretreated prior to the application of any coating material. Instructions on the appropriate cleaning and pretreatment procedures may be obtained from the documentation associated with the specific finish or process code. See Individual Process and Finish Codes, 51-20-00, General.

2 Use of metal wools - The use of steel wool on plastic composite surfaces, such as graphite / epoxy and fiberglass / epoxy is prohibited.

3 The use of steel wool on aluminum or magnesium alloy surfaces is prohibited.

4 Aluminum wool is recommended for deburring aluminum alloys.

NOTE: Aluminum wools are prohibited for use on graphite epoxy surfaces.

(4) Application of Organic Coatings to Nonmetallic Surfaces

(a) Molded plastic and ceramics - Molded plastics and ceramic insulators for radio antennas, etc. shall not be painted. All other molded plastic or ceramic parts may be painted unless noted otherwise by engineering documents.

(b) Plastic laminates - Laminated parts shall be suitably finished with an approved coating, where necessary, for color matching purposes. If the plastic laminate forms a part of an exterior surface or is cosmetically exposed, it shall be sufficiently pit free to preclude...
erosion or an unsightly finish. The finish shall match the exterior color.

**NOTE:** Determination of cosmetic acceptability shall be the responsibility of the operator.

**CAUTION:** METALLIZED COATINGS ARE PROHIBITED ON RADOME AND RADIO ANTENNA PARTS.

(c) Plastic radome and antenna covers - Plastic radome and antenna covers shall be painted prior to delivery to customer. Exterior surfaces shall be sufficiently pit free to ensure a final finish equivalent to the adjacent surfaces.

1 Plastic radome and antenna cover surface preparation - All exterior surfaces shall be scuff-sanded using wet or dry No. 220 grit paper, or finer to remove any glaze and to lightly abrade the surface. Additional surface preparation requirements may be found in Surface Preparation and Painting Procedure, 51-07-10, Repair.

**NOTE:** The total, final, organic finish shall not exceed 5 mils on any radome or antenna.

(5) General Protective System Requirements for Exterior and Interior Surfaces of the Aircraft

(a) Protective systems defined - The protective systems outlined in Table 207 are the minimum acceptable. Manufacturers shall comply with these requirements in order to prevent the addition of unnecessary weight, except in special cases where maximum corrosion resistance is specified.

(b) Organic finish requirements - Exterior and interior surfaces shall be finished as specified in Table 207 and Table 208.

(6) Application Requirements for Organic Finishes

(a) Application times - Surfaces shall receive the first coat of primer within 72 hours after application of surface treatment.

(b) This is particularly important in the case of all surfaces of parts in assemblies.

(c) After shop fabrication is completed, the primer coat shall be thoroughly cleaned and abraded, as required, to ensure adhesion of subsequent topcoats.

(d) Where the primer is to be the only protective coating, it shall be retouched by spraying or brushing to eliminate all bare spots etc.

(e) A thin coat may be applied over the entire surface for quality appearance.

(f) Subsequent coats of finishing materials, unless otherwise specified, shall be at the convenience of the manufacturer.

(g) Reactivation of finish No. 2012 or No. 3012 which is over 24 hours old, requires scuff sanding with an appropriate grit paper and solvent wipe to obtain proper adhesion of subsequent coats.

1 Cure times - Tables of the various pertinent cure times are published in Surface Preparation and Painting Procedure, 51-07-10, Repair.

(h) Cured film thickness - The normal cured film thickness of a single dried coat of an approved paint system shall be as follows:
## COATING THICKNESS / SPECIFICATION

<table>
<thead>
<tr>
<th>COATING</th>
<th>THICKNESS / SPECIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skydrol resistant primer</td>
<td>0.6 mil - 1.5 mil (4)</td>
</tr>
<tr>
<td></td>
<td>For 2012 - Epoxy Primer Coating - Preparation and Application (Including Finish 2012), 51-07-10, Repair or For 2012 - Waterborne Epoxy Primer - Preparation and Application (Finish 3012), 51-07-10, Repair For 2012 - Epoxy Primer Coating - Hydraulic Fluid Resistant (Finish 2012), 51-07-10, Repair or For 3012 - Antistatic Epoxy Primer - General Application, 51-07-10, Repair finish code No. 2012 or No. 3012</td>
</tr>
<tr>
<td>Skydrol resistant topcoat(1)</td>
<td>0.8 mil - 1.2 mil</td>
</tr>
<tr>
<td>Epoxy primer(2)</td>
<td>0.6 mil - 1.5 mil (4)(5)</td>
</tr>
<tr>
<td></td>
<td>See Epoxy Primer Coating - Preparation and Application (Including Finish 2012), 51-07-10, Repair MIL-P-23377</td>
</tr>
<tr>
<td>High build epoxy primer(3)</td>
<td>0.6 mil - 1.5 (4)(5)</td>
</tr>
<tr>
<td></td>
<td>See White Primer Coating / Sanding Sealer, 51-07-10, Repair</td>
</tr>
<tr>
<td>Urethane topcoat, (polyester)</td>
<td>1.5 mil - 2.0 mil (4)(5)</td>
</tr>
<tr>
<td>Integral fuel tank coating</td>
<td>0.8 mil - 1.5 mil</td>
</tr>
</tbody>
</table>

**NOTE**

All other finish systems shall be applied in coating thicknesses as specified in the applicable engineering drawing or specification, as required.

(1) Skydrol resistant topcoat
(2) Epoxy primer
(3) High build epoxy primer
(4) Thickness prior to sanding for high build primer application.
(5) Total combined maximum film thickness of skydrol resistant topcoat, epoxy primer and high build epoxy primer = 5.0 mils.

(i) Application of finish No. 2012 or No. 3012, skydrol resistant primer - All Surfaces which may come in contact with Skydrol hydraulic fluid shall receive a coat of Skydrol resistant primer, finish No. 2012, per Epoxy Primer Coating - Hydraulic Fluid Resistant (Finish 2012), 51-07-10, Repair and Epoxy Primer Coating - Preparation and Application (Including Finish 2012), 51-07-10, Repair or finish No. 3012 per Waterborne Epoxy Primer - Preparation and Application (Finish 3012), 51-07-10, Repair.

1. Equipment - The activated (mixed) primer shall be applied using the following type of equipment:
   - Type I: Conventional pressure pot
   - Type II: Airless spray

   **NOTE:** Brush coating may be permitted for touchup only.

(7) General Precautions

(a) Aircraft Skins

1. Examinations of skins - Skins shall be thoroughly examined before performing any finishing or manufacturing operations.

2. Handling of skins - Skins shall be handled with the utmost care to ensure that they are not scratched or otherwise damaged at any time.
3 Moving of skins - Interleave the skins with paper, corrugated cardboard or apply a spray coat of strippable vinyl before moving.

NOTE: Do not slide or drag.

a Contoured and formed skins shall be stored and transported on edge, if possible.

4 Work surfaces - Work surfaces such as benches, tables, etc., shall be free of chips, tools and other objects that may damage skin surfaces.

a Nails, screws, etc., that project from work surfaces, skin racks or dollies, shall be removed or countersunk.

5 Protection of skins from moisture - Skins shall be stored in such a manner as to protect them from moisture and corrosive atmosphere.

6 Drilling of skins - Drill stops shall not be permitted to rotate on skin surfaces while drilling or countersinking operations are performed.

7 Discrepant material - Any skins with discrepant conditions shall be handled with care. Skins may be reworked and repaired, provided that strict adherence to Epoxy Primer Coating - Preparation and Application (Including Finish 2012), 51-07-10, Repair of this repair manual.

8 Alclad skins which have been scratched or otherwise damaged in such a manner that the clad integrity or quality is in question shall be subject to test and repair per Surface Preparation and Painting Procedure, 51-07-10, Repair.

(b) Welding and soldering - All aluminum welding shall be performed in accordance with the following specifications.

1 Welding requirements - All aluminum welding shall be performed in accordance with MIL-W-8604, Class A, (Fusion Welding of Aluminum) or MIL-W-6858 (Spot Welding) or as specified on the engineering documents. Welding shall not be permitted on an assembly, unless approved by Gulfstream Technical Operations.

2 Soldering requirements - All aluminum, non electrical, soldering shall be performed in accordance with DOD-STD-1866 (Soldering Process, General, Nonelectrical) or as specified in engineering documents. Soldering shall not be permitted on an assembly after it has been inspected and unless approved by Gulfstream Technical Operations.

(c) Functional surfaces - Special care shall be exercised to insure that paint is not applied to working surfaces, adjusting screws, oiling holes or movable fittings in such a manner as to cause malfunctioning or possibility of malfunction.

(d) Thermal anti-icing ducts, interior surfaces - paint shall not be applied to the inside surfaces of heating or deicing ducts fabricated with corrosion resistant metal. Paint application to duct surfaces is not recommended where the expected service temperatures exceed 180°F.

(e) Leading edges, wing and stabilizer interior surfaces - Interior surfaces of wing and stabilizer leading edges, where dissimilar metals contact each other, shall be protected from corrosion with a barrier film of Poly-Tetra-Fluoro-Ethylene (PTFE or TFE) plastic material in accordance with the applicable repair drawings.

(f) Control cables and control chains - Control cables and control chains shall not be painted.
Carbon steel (except stainless steel) cables and chains shall be protected by a dip coating conforming to MIL-C-16173, Grade 1 or equivalent, applied in accordance with MIL-F-7179, prior to installation.

As touchup is necessary, it shall be accomplished using the same materials as originally applied.

Dip coating shall be optional for stainless steel cables and chains.

Springs, closely coiled - Springs that are closely coiled, preventing the application of plating to internal surfaces, shall receive a protective coating conforming to Class E of Table 207 or MIL-C-16173, Grade I.

NOTE: Thickness prior to sanding for high build primer alternate material to MIL-C-16173 may be approved by written authorization from Gulfstream Technical Operations.

Parts housed in or permanently coated with oils or greases - Paint coatings shall not be applied to those parts which are permanently coated with or housed in lubricating oils, hydraulic fluids or greases.

Surfaces of Similar Metals, Finishing Requirements

(a) General requirements - All joints and seams in which the faying surfaces are similar metals, (as defined in Table 209), shall be protected by applying the same number of coats of Skydrol resistant primer, conforming to Epoxy Primer Coating - Hydraulic Fluid Resistant (Finish 2012), 51-07-10, Repair and Epoxy Primer Coating - Preparation and Application (Including Finish 2012), 51-07-10, Repair for finish No. 2012 and Waterborne Epoxy Primer - Preparation and Application (Finish 3012), 51-07-10, Repair for finish 3012, as required for interior surfaces per Table 207, with the following exceptions:

1. Where Table 207 requires the application of three or more coats of primer, only two coats of primer need be applied.

2. Welded faying surfaces need not be primed prior to assembly.

3. Faying surfaces in assemblies which are surface treated as assemblies need not be primed prior to assembly.

4. Primer need not be applied to lapped surfaces.

5. Faying surfaces which are to be adhesively bonded shall not be painted.

Surfaces of Dissimilar Metals, Finishing Requirements

(a) General requirements - Unless otherwise specified in Step 5.C.(13) or Step 5.C.(14)(c), all surfaces shall each receive a minimum of two coats of finish No. 2012 or No. 3012.

(b) Break all edges prior to painting to minimize chipping of paint.

(c) Special precautions shall be taken to ensure that all cut edges are painted.

(d) Dissimilar metals, usage restrictions - Dissimilar metals, as defined in MIL-STD-889, shall not be used in contact with each other unless adequately protected against electrolytic corrosion.

1. When parts of an assembly consists of a combination of dissimilar metals, an interposing material, compatible with each, shall be used to preclude galvanic action.

2. Table 209 shall be used as a general guide for dissimilar metals contained in equipment exposed to normal GIV environments and fluids.
Protection against electrolytic corrosion - Where it is necessary that any combination of
dissimilar metals be assembled, the following methods or combination of methods shall be
employed to alleviate electrolytic corrosion, unless electrical considerations preclude the
usage of such methods:

1. Interposition of a material compatible to each, to decrease electrolytic potential
differences, such as a cadmium or zinc plating on steel in contact with aluminum.

2. Interposition of an inert material between dissimilar metals to act as a mechanical
and insulating barrier.

3. Application of organic coatings to the contact surfaces of each of the dissimilar
metals.

4. Application of corrosion inhibitors to the faces of each of the dissimilar metals.

5. Design of dissimilar or similar metal contacts, in order that the area of the cathodic
metal is relatively smaller than the area of the anodic metal.

6. All dissimilar surfaces of contact shall be limited in the amount of aeration reaching
the dissimilar faces through the use of No. 2012 or No. 3012, mylar films or
equivalent.

7. Alternate methods of protection designed to alleviate electrolytic corrosion shall be
subject to engineering for approval.

General Finish Requirements

(a) Fluid tight seams - Gas tight, fuel tight and water tight seams - Where necessary to
prevent leakage of fuel, carbon monoxide, oxygen, water or other such fluids, seams shall
be sealed and / or filleted to preclude such leakage.

(b) Such sealing shall be accomplished in accordance with the applicable specifications or
engineering drawings, and the materials used shall be subject to approval by Gulfstream
Engineering. See GIV Sealing Specification, 51-14-00, Repair.

1. Sealing of fixtures, rivets, etc., prior to organic finishing - Tails or heads of rivets,
bolts or other fasteners used for the installation of fixtures, ribs, covers, skins, etc.,
when installed in areas where fuel or oil leakage may occur shall be sealed by
completely overcoating with MIL-S-8802, Class B sealant, on the interior side and
faired out a minimum of 1/4 inch around the fastener, unless otherwise specified.

(c) Slip fits - Slip fits shall be assembled using zinc chromate paste. The edges of such parts
shall receive a minimum of one coat of finish No. 2012 or No. 3012.

(d) Press fits - Press fits shall be accomplished using oil or other suitable corrosion inhibiting
material.

1. After surface cleaning, the completed assembly shall be finished in accordance with
the requirements in Table 207 and Table 208.

(e) Pretreatment and Finish of Interior Surfaces of Fuel Tanks

1. Interior surface and components - The inside surface of the GIV integral fuel tanks
shall be suitably cleaned, pretreated and sealed to prevent corrosion.

2. The wing planks shall be chromic acid anodized and dichromate sealed per MIL-A-
8625, Type I, Class I, (finish code No 88).

1. Integral fuel tank coating (IFTC) shall be applied prior to assembly, (finish code
No. 144).
3 Sealing of fluid leak paths shall be effected by use of polysulfide sealants per MIL-S-8802 and MIL-S-81733. See Sealing the GIV Wing, 51-22-10, Repair and the requirements of GIV Sealing Specification, 51-14-00, Repair.

   a Interior and exterior surfaces of details and structures, other than integral fuel tanks, shall be sealed per Sealing Pressurized Areas, Skin Joints, Faying Surfaces, Access Closures and Coating Exterior Surfaces, 51-22-00, Repair.

4 Aluminum sheet detail parts, fuel tank interior - Aluminum sheet detail parts inside the fuel tank areas shall have finish code No. 88, and No. 144 or No. 213 and No. 144, as required, prior to installation.

5 Aluminum machine detail parts, fuel tank interior - Aluminum machine detail parts inside the fuel tank areas shall have finish codes No. 88 and No. 144 or finish codes No. 213 and No. 144 applied prior to installation.

6 Low alloy steel detail parts, fuel tank interior - Low alloy steel detail parts heat treated to under 200 ksi shall be cadmium plated per QQ-P-416 Type II Class 2, (finish code No. 2).

   a Low alloy steel detail parts heat treated to 200 ksi or above shall be vacuum cadmium plated in accordance with MIL-C-8837 Type II Class 2, (finish code No. 75).

   b Finish code No. 144 shall be applied after cadmium plating has been completed and prior to installation.

7 Interior parts inside fuel tank areas - All interior parts inside fuel tank areas shall be protected with finish No. 144 as follows:

   • Lower cover and adjacent details - 2 coats
   • Upper cover and adjacent details - 1 coats

8 Fuel tank access cover installation - Prior to installation of fuel tank access covers, all through tank fasteners, excepting the index head interference fit fasteners, shall be overcoated and sealed on the fuel side using materials and procedures as outlined in Sealing the GIV Wing, 51-22-10, Repair and Step 5.C.(10)(e)7, unless otherwise specified.

9 Fuel tanks, interiors fasteners - All interior (non through tank) fasteners shall be overcoated with finish code No. 144, unless otherwise specified, for purposes of corrosion protection. Sealing is not required for fasteners which do not penetrate the fuel tank.

   (f) Protection of dissimilar metals, interior fuel tank areas - Protection of dissimilar metals in fuel tanks shall be handled as in Step 5.C.(9). In addition, the following protective measures shall be employed:

   1 Each dissimilar metal shall receive a minimum of two coats of finish No. 144 prior to installation.

   2 Surfaces outside the fuel tank shall receive two coats of finish No. 2012 or No. 3012 or finish No. 144.

11 Exterior Surface of Wing

   (a) Wing skins - The exterior surfaces of the wing shall be chromic acid anodized per MIL-A-8625 Type I Class 1.

      1 All aluminum detail parts (not electrically bonded) outside the fuel tanks shall be
chromic acid anodized per MIL-A-8625 Type I Class 1.

2 All detail parts within the fuel tank shall be protected per the requirements of Table 207 and Table 208.

3 All aluminum detail parts (not bonded) outside the fuel tanks shall be treated with finish No. 213 and No. 2012 or No. 3012 and No. 2013 or No. 3013 as required.

(b) Fuel tanks, exterior surfaces - The outside surface of the GIV integral fuel tanks shall be suitably cleaned, pretreated and sealed to prevent corrosion.

(c) The wing planks shall be chromic acid anodized and dichromate sealed per MIL-A-8625, Type I, Class I (finish code No. 88).

(d) Fluid resistant primer (FRP) shall be applied prior to assembly, (finish code No. 2012 or No. 3012).

(e) Sealing of fluid leak paths shall be effected by use of polysulfide sealants per MIL-S-8802 and MIL-S-81733. See Sealing Pressurized Areas, Skin Joints, Faying Surfaces, Access Closures and Coating Exterior Surfaces, 51-22-00, Repair, Sealing the GIV Wing, 51-22-10, Repair and GIV Sealing Specification, 51-14-00, Repair.

1 Aluminum sheet detail parts - Aluminum sheet detail parts outside of the fuel tank areas shall have finish No. 213 and finish No. 2012 and No. 3012 prior to installation.

2 Aluminum machine detail parts, exterior fuel tank areas - Aluminum machine detail parts outside the fuel tank areas shall have finish No. 88 and finish No. 2012 and No. 3012 applied prior to installation.

3 Low alloy steel detail parts, exterior fuel tank areas - Low alloy steel detail parts heat treated to under 200 ksi shall be cadmium plated per QQ-P-416 Type II Class 2, (finish code No. 2).

a Low alloy steel detail parts heat treated to 200 ksi or above shall be vacuum cadmium plated in accordance with MIL-C-8837 Type II Class 2, (finish code No. 75).

b Finish code No. 2012 or No. 3012 shall be applied after cadmium plating has been completed and prior to installation.

4 Wing exterior parts outside fuel tank areas - All wing exterior parts outside fuel tank areas shall be protected with finish No. 2012 or No. 3012 as follows:

• Lower cover and adjacent details - 2 coats
• Upper cover and adjacent details - 1 coats

5 Fuel tank fasteners - Prior to installation of fuel tank access covers, all through tank fasteners, excepting the index head interference fit fasteners, shall be overcoated and sealed on the fuel side using materials and procedures as outlined in Sealing the GIV Wing, 51-22-10, Repair and Step 5.C.(10)(b)1, unless otherwise specified.

a Fuel tanks, exterior fasteners - All exterior (non through tank) fasteners shall be overcoated with finish code No. 144 or finish code No. 2012 or No. 3012, as applicable.

b Sealing is not required for removable cadmium plated or anodized fasteners which do not penetrate the fuel tank.

c Fasteners on air passage surfaces need not be finished prior to outfit painting.
(a) Plumbing lines (fuel, water, hydraulic tubing, and other nonstructural tubing) - No paint coating shall be applied to the interior surfaces of airspeed indicator tubing or other plumbing lines except for the following which shall receive one coat of finish code No. 2012 or No. 3012:

- Deep drawn or welded steel fittings susceptible to corrosion
- Interiors of filler necks

(b) Steel tubing (structural) - The interior of steel tubular assemblies not entirely closed by welding shall be finished in the same manner as exterior surfaces.

(c) Assemblies completely closed by welding or to which application of primer is not practical or effective, such as crimped end tubing not closed by welding or tubing heat treated after assembly, shall be treated after assembly, and / or heat treatment, with MIL-C-16173 corrosion preventive compound (liquid) in lieu of the primer coats.

(d) The liquid shall be applied by forcing it into the hollow member under pressure, through the holes drilled therein, or by immersing the part in a bath of the liquid.

(e) In the case of a large structure, interconnected holes may be drilled between the various members so that the liquid will circulate.

(f) The presence of the hot material in each member may be checked by noting the increase in the temperature of the member.

(g) Parts which are immersed shall be manipulated to ensure the absence of air pockets and shall remain in the bath until all bubbling has ceased.

(h) The members shall be thoroughly drained after treatment and wiped free of any residual liquid on all exterior surfaces.

(i) All accessible holes drilled in the member shall be closed with cadmium or zinc plated self tapping screws, or equivalent.

(j) Solder shall not be used to close the holes.

(k) Tubing having an ID of 3/8 inch or less need not be treated.

(l) Assemblies completely closed by flash welding need not be treated.

   1 Steel tubing (oxygen lines) - CRES oxygen lines shall have no finishes or coating on the ID or OD.

(m) Aluminum alloy tubing - Interior surfaces of structural aluminum alloy tubing shall be protected in accordance with the general schedule for interior surfaces as practical. See Table 207 and Table 208.

(n) The interior surfaces of structural aluminum alloy tubing sealed by welding need not be painted.

   1 Aluminum alloy tubing (oxygen lines) - Aluminum oxygen lines shall have no finishes or coatings on the ID.

(o) Copper, corrosion resistant and heat resistant alloy tubing - Interior and exterior surfaces of copper alloy, corrosion resistant alloy and heat resistant alloy tubing need not be painted, except as required for dissimilar metal contact.

(p) Contact with AN or MS standard clamps shall not be considered dissimilar metal contact.

(13) Attaching Parts
(a) Close tolerance bolts - Close tolerance bolts and/or hardware passing through similar or dissimilar metals, or movable joints, such as flight control hinges and pivots shall be coated with corrosion preventive compound, conforming to MIL-C-16173 Grade I or wet zinc chromate primer, conforming to TT-P-1757 or wet FRP (fluid resistant primer) finish No. 2012 or No. 3012.

(b) Adjustable parts - Threads of adjustable parts such as tie rods, turnbuckles, etc., shall be lubricated and protected before and after assembly with an antiseize compound or rust preventive compound conforming to MIL-C-16173.

(c) General touchup - Touchup shall be omitted on interior surfaces which require only a single coat of Skydrol resistant primer (finish No. 2012 or No. 3012), and on standard parts which are not made of steel.

1 All hardware used on structures, such as bolts, nuts, hi-shear rivets, etc. shall be touched up locally with primer, except where subsequent lubrication is applied to the bolts. See Step 5.C.(13)(d).

2 Steel bolts and nuts used for attachment of equipment or of unpainted parts need not be touched up. See Step 5.C.(14)(c) for touchup of electrical and electronic items.

(d) General touchup methods - Touchup of all exterior fasteners on wings, exclusive of the exterior wing planks and empennage of the aircraft shall be achieved by pretreating in accordance per the appropriate specification and by spraying a 0.5 mil coat of finish No. 2012 and No. 3012 primer over the bolt or rivet pattern.

1 The overspray area need not be masked and the touchup area shall have a total dry film thickness not exceeding 1.0 mil.

(14) Special Finish Requirements

(a) Acid proofing - Structural surfaces or parts which are subject to acid spillage or spray shall be given one coat of finish No. 2012 or No. 3012 fluid resistant primer (FRP) and one topcoat of finish No. 2013 or No. 3013 fluid resistant topcoat (FRT).

(b) Electrical and electronic equipment, electrical disconnects, hardware, clamps and wires, shall not be painted with fluid resistant coatings.

(c) Electrical Bonding

1 Electrical bonding requirements - Materials and procedures as specified in Electrical Bonding Requirements, 51-80-00, Repair shall be applicable to all electrical bonding requirements of the GIV.

2 Where a conflict occurs between Electrical Bonding Requirements, 51-80-00, Repair and an approved engineering drawing, the drawing shall take precedence.

a Permanent electrical bonds - Permanent electrical bonds are intended to remain untouched over long periods of time.

b Typically a permanent electrical bond consist of the terminal of a bonding jumper placed next to an unanodized aluminum washer which, in turn, is placed next to a freshly cleaned surface.

c After securing the connection, the entire assembly, including the terminal securing hardware, is finished per the general aircraft finish schedule. See Table 207 and Table 208.

d Light duty (removable) electrical bonds - these electrical connections may be disconnected at will.
– Typically light duty electrical bonds consist of a through stud or screw.
– The bond to the structure is accomplished by means of unanodized aluminum washers under both the screw head and securing nut or spring lock washer.
– Contact areas on the structure shall be freshly cleaned prior to assembly.
– When the stud, and securing hardware are tightened in place, the structure and the juncture of the aluminum washers with the structure is finished per the general aircraft finish schedule. See Table 207 and Table 208.
– The remainder of the stud receives no finish, even after eventual assembly of the electrical connection.
– No refinishing is required unless the basic stud structure joint is disturbed.

Heavy duty electrical bonds - This type of connection requires the use of an aluminum tab designed to carry the currents involved.
– This precleaned, unanodized tab shall be placed against freshly cleaned structure and riveted or bolted in place. The surrounding area, including the joint, shall be finished according to the general airplane finish schedule. See Table 207 and Table 208.
– The portion of the tab projecting from the structure is to remain clean to allow good electrical connections to be made.
– No additional finishing or refinishing is required, unless the tab is replaced.

Conduits and boxes - Electrical conduits and junction boxes shall receive the following protective coatings. See Table 207 and Table 208.

a Clad 2014, Clad 2017, Clad 2024, Clad 7075, 5052 and 6061: Class C on exterior only.
– Class H on interior surfaces of the junction boxes shall be finished to provide insulation, when specified on the drawing.
– Exterior surfaces of junction boxes shall be painted to match the color of the surrounding area, as required by the drawing.

b Nonmetallic conduit and boxes: Class H, except for identification markings. (This marking shall be applied in white or black, such that good contrast is provided with the unfinished surface.)

c Plastic and braided wire, wire and cable Class H.

d Disconnect plugs and receptacles: Class H, unless otherwise specified on the drawings.

Radome, finishing and electrical bonding to structure - The following requirements shall be applicable to all GIV radome installations.

a Radome striker plates - Burnish the striker plates located at the 3, 5, 7 and 9 o'clock positions of the radome and aircraft structure.
– Apply finish No. 213 (Alodine 600) on radome side only.
– Apply brush cad plate (finish code No. 123) per QQ-P-416 on striker plate (aircraft side only).
– Ensure that all striker plates are making good electrical contact.

b Radome striker plate electrical requirements - Electrical resistance between the radome and the aircraft structure shall be less than 1 ohm.
Drilled or reamed holes (wing, fuselage or empennage) - Holes drilled or reamed in aluminum parts shall be touched up using brush chromate conversion coating finish per Chromate Conversion Coating of Aluminum Alloys, 51-21-00, Repair.

- This requirement does not apply to holes drilled or reamed for solid rivets, blind rivets or interference fit fastener installation.
- Holes drilled or reamed in low alloy steel parts (including fasteners) shall be brush cadmium plated (finish code No. 123) per QQ-P-416 Type II unless otherwise specified on the engineering document.

D. Inspection

(1) Test Requirements

(a) Tape test - The coatings applied to the completed aircraft shall be wet tape tested for adhesion after a minimum air dry period of 24 hours, using 3M No. 250 tape. See Surface Preparation and Painting Procedure, 51-07-10, Repair.

(b) Coating weight and thickness testing - All metallic and organic coatings shall be tested for coating weight and thickness, as applicable, per the appropriate specification.

Parts with coating weight or thickness out of tolerance shall be reported to Gulfstream Technical Operations.

(c) Salt spray test - Salt spray tests shall be performed per Section Chromate Conversion Coating of Aluminum Alloys, 51-21-00, Repair on chromate conversion coated aluminum test specimens and per GAMPS 6102 on cadmium plated, ferrous alloy test specimens.

E. Notes

(1) Personnel protection - All personnel exposed to materials used in the finishing of Gulfstream IV aircraft shall wear appropriate protective clothing and / or protective equipment as specified by the manufacturer and Gulfstream Corporate Safety Policy and also must comply with all state and local regulations.

(a) All safety requirements shall be adhered to.

(b) Additional safety data, including treatment schedules for exposure, may be obtained from the Gulfstream Industrial Health and Safety Department.

Table 205: Applicable Documents - Finishing

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<td>MIL-A-8625</td>
</tr>
<tr>
<td>MIL-S-8802</td>
</tr>
<tr>
<td>MIL-C-16173</td>
</tr>
<tr>
<td>MIL-C-27725</td>
</tr>
<tr>
<td>MIL-L-81352</td>
</tr>
<tr>
<td>MIL-S-81733</td>
</tr>
<tr>
<td>MIL-S-83231</td>
</tr>
<tr>
<td>MIL-C-83286</td>
</tr>
<tr>
<td>MIL-S-8837</td>
</tr>
<tr>
<td>MIL-STD-889</td>
</tr>
<tr>
<td>DOD-STD-1866</td>
</tr>
</tbody>
</table>

### Process Specifications

- Individual Process and Finish Codes, 51-20-00, General
- Electrical Bonding Requirements, 51-80-00, Repair
- Integral Fuel Tank Coating - MIL-C-27725 Application, 51-22-00, Repair
- Epoxy Primer Coating - Preparation and Application (Including Finish 2012), 51-07-10, Repair
- Epoxy Primer Coating - Hydraulic Fluid Resistant (Finish 2012), 51-07-10, Repair
- Waterborne Epoxy Primer - Preparation and Application (Finish 3012), 51-07-10, Repair
- White Primer Coating / Sanding Sealer, 51-07-10, Repair
- Antistatic Epoxy Primer - General Application, 51-07-10, Repair
- Gloss Epoxy Finish - Application (Includes Finish 2013 and 3013), 51-07-10, Repair
- Corrosion Removal Techniques - Safety Precautions, 51-13-10, General
- Urethane Enamel - Preparation and Application, 51-07-10, Repair
- Surface Preparation and Painting Procedure, 51-07-10, Repair
- Epoxy Topcoat - Hydraulic Fluid Resistant Series 2000, 51-07-10, Repair
- Antistatic Epoxy Primer, 51-07-10, Repair
- Sealing of Surfaces for Aerodynamic Smoothness, 51-14-00, Repair
- Sealing the GIV Wing, 51-22-10, Repair
- Faying Surface Sealing Compound - Corrosion Inhibitive, 51-22-00, Repair
### Table 206: Approved Finish Materials

<table>
<thead>
<tr>
<th>NO.</th>
<th>MILITARY OR FEDERAL SPECIFICATIONS</th>
<th>MATERIALS</th>
<th>MANUFACTURER</th>
<th>APPLICABLE SECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Solvents (1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>ASTM D 329</td>
<td>Acetone</td>
<td>Commercial</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>ASTM D 770 / TT-I-735</td>
<td>Isopropyl alcohol</td>
<td>Commercial</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>ASTM D 740</td>
<td>MEK</td>
<td>Commercial</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>GAS115K</td>
<td>MPK</td>
<td>Eastman Chemical</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Surface treatment - metal glow No. 6</td>
<td>Turco</td>
<td>Surface Preparation and Painting Procedure, 51-07-10, Repair</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>MIL-A-8625</td>
<td>Chromic acid anodize</td>
<td>Individual Process and Finish Codes, 51-20-00, General finish No. 88</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Chromate conversion coating</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>MIL-C-81706</td>
<td>1200 Alodine</td>
<td>Amchem</td>
<td>Individual Process and Finish Codes, 51-20-00, General finish No. 76</td>
</tr>
<tr>
<td>4</td>
<td>MIL-C-81706</td>
<td>600 Alodine</td>
<td>Amchem</td>
<td>Individual Process and Finish Codes, 51-20-00, General finish No. 213</td>
</tr>
<tr>
<td>4</td>
<td>MIL-C-81706</td>
<td>Accelagold</td>
<td>Turco</td>
<td>Surface Preparation and Painting Procedure, 51-07-10, Repair</td>
</tr>
<tr>
<td>4</td>
<td>MIL-C-81706</td>
<td>Chromicoat L-25 (3)</td>
<td>Oakite</td>
<td>Chromate Conversion Coating of Aluminum Alloys, 51-21-00, Repair</td>
</tr>
<tr>
<td>4</td>
<td>MIL-C-81706</td>
<td>Alumigold</td>
<td>Turco</td>
<td>Surface Preparation and Painting Procedure, 51-07-10, Repair</td>
</tr>
<tr>
<td>5</td>
<td>Integral Fuel Tank Coating</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>MIL-C-27725</td>
<td>823-011 / 910-099</td>
<td>DeSoto</td>
<td>Individual Process and Finish Codes, 51-20-00, General finish No. 144</td>
</tr>
<tr>
<td>5</td>
<td>MIL-C-27725</td>
<td>833K086 / 930K088</td>
<td>DeSoto</td>
<td>Individual Process and Finish Codes, 51-20-00, General finish No. 144</td>
</tr>
<tr>
<td>6</td>
<td>MIL-S-38228</td>
<td>Aerodynamic fillers noted</td>
<td>Commercial</td>
<td>Sealing of Surfaces for Aerodynamic Smoothness, 51-14-00, Repair</td>
</tr>
<tr>
<td>7</td>
<td>Paints, Misc.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>MIL-C-83231</td>
<td>Type II, (See QPL)</td>
<td>Commercial</td>
<td>Individual Process and Finish Codes, 51-20-00, General finish No. 92</td>
</tr>
<tr>
<td>7</td>
<td>MIL-C-83231</td>
<td>Commercial</td>
<td>Individual Process and Finish Codes, 51-20-00, General finish No. 95</td>
<td></td>
</tr>
</tbody>
</table>

---

**51-14-00**

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<table>
<thead>
<tr>
<th>NO.</th>
<th>MILITARY OR FEDERAL SPECIFICATIONS</th>
<th>MATERIALS</th>
<th>MANUFACTURER</th>
<th>APPLICABLE SECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>None</td>
<td>820-731 / 910-730</td>
<td>DeSoto</td>
<td>Individual Process and Finish Codes, 51-20-00, General finish No. 191</td>
</tr>
<tr>
<td>7</td>
<td>None</td>
<td>820-731 / 910-730</td>
<td>DeSoto</td>
<td>Individual Process and Finish Codes, 51-20-00, General finish No. 192</td>
</tr>
<tr>
<td>7</td>
<td>None</td>
<td>Magna 4R1</td>
<td>Dexter</td>
<td>Individual Process and Finish Codes, 51-20-00, General finish No. 199</td>
</tr>
<tr>
<td>7</td>
<td>MIL-L-81352</td>
<td>Commercial</td>
<td></td>
<td>Individual Process and Finish Codes, 51-20-00, General finish No. 150</td>
</tr>
<tr>
<td>7</td>
<td>MIL-C-85285</td>
<td></td>
<td></td>
<td>Individual Process and Finish Codes, 51-20-00, General finish No. 217</td>
</tr>
<tr>
<td>7</td>
<td>None</td>
<td>521X002 / 910X307</td>
<td>DeSoto</td>
<td>Individual Process and Finish Codes, 51-20-00, General finish No. 2013 or 3013</td>
</tr>
</tbody>
</table>

8(1)(4) Paint, Primer

<table>
<thead>
<tr>
<th>NO.</th>
<th>MILITARY OR FEDERAL SPECIFICATIONS</th>
<th>MATERIALS</th>
<th>MANUFACTURER</th>
<th>APPLICABLE SECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>None</td>
<td>515-X-333 / 910-X-350</td>
<td>DeSoto</td>
<td>Individual Process and Finish Codes, 51-20-00, General finish No. 2012 or 3012</td>
</tr>
<tr>
<td>8</td>
<td>MIL-P-23377</td>
<td>S9001 / S3001</td>
<td>U.S. Paints</td>
<td>Epoxy Primer Coating - Preparation and Application (Including Finish 2012), 51-07-10, Repair</td>
</tr>
<tr>
<td>8</td>
<td>None</td>
<td>R4001 / R3203</td>
<td></td>
<td>Epoxy Primer Coating - Preparation and Application (Including Finish 2012), 51-07-10, Repair</td>
</tr>
<tr>
<td>8</td>
<td>None</td>
<td>483-660 / 120-888</td>
<td>Pratt and Lambert</td>
<td>Epoxy Primer Coating - Preparation and Application (Including Finish 2012), 51-07-10, Repair</td>
</tr>
<tr>
<td>8</td>
<td>None</td>
<td>483-928 / 120-828</td>
<td>Pratt and Lambert</td>
<td>Epoxy Primer Coating - Preparation and Application (Including Finish 2012), 51-07-10, Repair</td>
</tr>
</tbody>
</table>

8(1)(4) Paint Surfacer

<table>
<thead>
<tr>
<th>NO.</th>
<th>MILITARY OR FEDERAL SPECIFICATIONS</th>
<th>MATERIALS</th>
<th>MANUFACTURER</th>
<th>APPLICABLE SECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>None</td>
<td>G8005 / G3001</td>
<td>U.S. Paints</td>
<td>White Primer Coating / Sanding Sealer, 51-07-10, Repair</td>
</tr>
<tr>
<td>8</td>
<td>None</td>
<td>K8032 / K3002</td>
<td>U.S. Paints</td>
<td>White Primer Coating / Sanding Sealer, 51-07-10, Repair</td>
</tr>
<tr>
<td>8</td>
<td>None</td>
<td>560-563 / 120-888</td>
<td>Pratt and Lambert</td>
<td>White Primer Coating / Sanding Sealer, 51-07-10, Repair</td>
</tr>
<tr>
<td>8</td>
<td>None</td>
<td>480-920 / 120-911</td>
<td>Pratt and Lambert</td>
<td>White Primer Coating / Sanding Sealer, 51-07-10, Repair</td>
</tr>
</tbody>
</table>

8(1)(4) Paint, Topcoat

<table>
<thead>
<tr>
<th>NO.</th>
<th>MILITARY OR FEDERAL SPECIFICATIONS</th>
<th>MATERIALS</th>
<th>MANUFACTURER</th>
<th>APPLICABLE SECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>None</td>
<td>ALUMIGRIP / G3010</td>
<td>U.S. Paints</td>
<td>Urethane Enamel - Preparation and Application, 51-07-10, Repair</td>
</tr>
<tr>
<td>8</td>
<td>None</td>
<td>KXXX / K3002 / A0001</td>
<td>U.S. Paints</td>
<td>Urethane Enamel - Preparation and Application, 51-07-10, Repair</td>
</tr>
<tr>
<td>None</td>
<td>None</td>
<td>57X-XXX / 578-520</td>
<td>Pratt and Lambert</td>
<td>Urethane Enamel - Preparation and Application, 51-07-10, Repair</td>
</tr>
<tr>
<td>None</td>
<td>None</td>
<td>810-XXX / 818-001 / 818-005</td>
<td>Pratt and Lambert</td>
<td>Urethane Enamel - Preparation and Application, 51-07-10, Repair</td>
</tr>
</tbody>
</table>

(1) See restrictions in Step 3.A.(2).
(2) Surface preparation per Surface Preparation and Painting Procedure, 51-07-10, Repair.
(3) Oaklite L - 25 shall be used only during production of detail parts.
(4) The exterior organic finish systems listed are the recommended exterior organic finish systems approved by Gulfstream Production Engineering.
### Table 207: Protective System (Coat of Paint)

<table>
<thead>
<tr>
<th>CLASS</th>
<th>PRIMER - FINISH 2012 OR 3012</th>
<th>TOP COATS (1) (2) (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>B</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>C</td>
<td>1</td>
<td>2</td>
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<tr>
<td>D</td>
<td>3</td>
<td>—</td>
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<tr>
<td>E</td>
<td>2</td>
<td>—</td>
</tr>
<tr>
<td>F</td>
<td>1</td>
<td>—</td>
</tr>
<tr>
<td>G</td>
<td>N / A</td>
<td>—</td>
</tr>
<tr>
<td>H</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

(1) The use of the word coat, as noted above, shall be construed to mean a standard dried film paint of thickness as outlined in Step 3.C.(6)(h).

(2) Materials other than those listed herein may be employed only with specific written authorization from Gulfstream Technical Operations.

(3) When enamel or polyurethane is specified, the number of topcoats in this column may be reduced by one.

### Table 208: Organic Finish Requirements for Selected Metals

<table>
<thead>
<tr>
<th>ITEM</th>
<th>MATERIAL</th>
<th>PROTECTIVE SYSTEM (SEE TABLE 207)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Internal</td>
</tr>
<tr>
<td>1</td>
<td>Aluminum alloys 5052, 6061, Clad 2014, Clad 2024, Clad 7075</td>
<td>F</td>
</tr>
<tr>
<td>2</td>
<td>Nonclad 2024, 7075, 7050, 7175 and other high strength aluminum alloys</td>
<td>E</td>
</tr>
<tr>
<td>3</td>
<td>Plated, metal sprayed</td>
<td>F</td>
</tr>
<tr>
<td>4</td>
<td>Titanium, corrosion and heat resistant alloys</td>
<td>H</td>
</tr>
<tr>
<td>5</td>
<td>Magnesium alloys</td>
<td>D</td>
</tr>
<tr>
<td>6</td>
<td>All metals not covered above</td>
<td>E</td>
</tr>
</tbody>
</table>
Table 209: Galvanic Series for Commonly Used Airframe Metals and Alloys

<table>
<thead>
<tr>
<th>GROUP</th>
<th>METAL OR ALLOY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most anodic</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Aluminum alloys: 5052, 5056, 6061 and 2024</td>
</tr>
<tr>
<td></td>
<td>Magnesium and alloys</td>
</tr>
<tr>
<td>2</td>
<td>Cadmium and alloys</td>
</tr>
<tr>
<td></td>
<td>Zinc and alloys</td>
</tr>
<tr>
<td></td>
<td>Aluminum and alloys (including aluminum alloys from group 1)</td>
</tr>
<tr>
<td>3</td>
<td>Iron and alloys except stainless steels</td>
</tr>
<tr>
<td></td>
<td>Lead and alloys</td>
</tr>
<tr>
<td></td>
<td>Tin and alloys</td>
</tr>
<tr>
<td>4</td>
<td>Copper and alloys</td>
</tr>
<tr>
<td></td>
<td>Chromium and alloys</td>
</tr>
<tr>
<td></td>
<td>Nickel and alloys</td>
</tr>
<tr>
<td></td>
<td>Silver and alloys</td>
</tr>
<tr>
<td></td>
<td>Gold and alloys</td>
</tr>
<tr>
<td></td>
<td>Platinum and alloys</td>
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<td></td>
<td>Titanium and alloys</td>
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<tr>
<td></td>
<td>Cobalt and alloys</td>
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<tr>
<td></td>
<td>Rhodium and alloys</td>
</tr>
<tr>
<td></td>
<td>Stainless steels</td>
</tr>
<tr>
<td>Most cathodic</td>
<td>Graphite</td>
</tr>
</tbody>
</table>

4. GIV Sealing Specification

A. General

(1) Sealing Section

Scope - This specification defines the areas, materials and requirements for sealing and filling where the proper fitting of the subassembly, assembly or part is not sufficient to affect perfect closure of the pressurized areas and where the use of sealing materials necessary to meet water tightness and aerodynamic smoothness requirements.

Specifically excluded from this specification are the areas which are sealed with detail parts such as rubber strips, gaskets, pneumatic seals, O-rings, sealing type rivets and sealing washers, except as otherwise specified.

(2) Sealing Restrictions

(a) MIL-S-81733 Corrosion Inhibiting Sealants

MIL-S-81733 corrosion inhibiting sealants - Unless otherwise specified by Gulfstream Engineering, MIL-S-81733 corrosion inhibiting sealants shall be used for faying surface sealing on the GIV wing assembly only.
Application or usage elsewhere on the GIV airframe is not required. Use of MIL-S-81733 requires fillet seal or topcoat of MIL-S-8802, Type II.

(b) Sealing
Sealing - Sealing shall be performed after conversion coating, except where there is a possibility of fluid entrapment.
Where there is a possibility of fluid entrapment, sealing shall be performed prior to conversion coating.

(c) Resealing
Resealing - Resealing shall be effected after conversion coating, except where there is a possibility of fluid entrapment.
Where there is a possibility of fluid entrapment, sealing shall be performed prior to conversion coating.

(d) Wing to Body Fairing Seal
Wing to body fairing seal - The fore and aft, wing to body fairings (composite) shall be faying surface sealed only.
No fillet seal shall be applied.
These sealing requirements are to facilitate removal and installation of fairings.
Zone 1 and zone 2 maximum / minimum step requirements of Aerodynamic Contour Smoothness, 51-14-00, Repair shall not apply to wing to body fairing in areas where the fairing transitions to fuselage.

(e) Fuselage Butt Joint Seal
Fuselage butt joint seal - Where fuselage skin panels form butt joints requiring sealing, sealant shall be extruded approximately 0.01 inch higher than surrounding air passage surface (for finishing purposes).
NOTE: This requirement does not apply to final exterior outfitting finish.

(3) Classification
Sealants conforming to military or federal specification shall be classified according to their method of application (i.e. viscosity) and rate of cure.

(a) Classes
Classes - Class designation shall precede dash number. Sealant classes shall follow military or federal classification. Example: MIL-S-8802 conforms to the following classes:
- Class A - Brushable sealing and repair material
- Class B - Sealing and repair material for application by injection, extrusion, or spatula
- Class C - Faying surface sealing and repair material

Dash numbers - Dash numbers following sealant class letter shall designate application time in hours. Example:
- Class A-2 designates a brushable material within 2 hours of application.
- Class B-4 designates an extrudable material within 4 hours of application.
- Class C-20 designates a faying surface material with a 20 hour application time.

(b) Sealant Specification Conformance
Sealants conforming to other approved military specifications shall follow various classifications set forth in the pertinent documents.

B. Applicable Documents

(1) Government documents - The following government documents of latest issue shall form a part of this specification to extent specified. See Table 210.

(a) Availability of government documents - Government documents referenced in this specification may be obtained upon request from the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402.

(b) Availability of non-government documents - Copies of this specification and other applicable Gulfstream documents may be obtained upon request to the Gulfstream Corporation, P.O. Box 2206, Savannah, Georgia, 31402. ATTENTION GIV PROGRAM.

(c) Precedence - In cases of conflict, the contract shall take precedence over any specification.

1 When a conflict arises between the contents of this specification or other specifications and engineering drawings or design specifications, the engineering drawing shall take precedence.

C. Sealing Requirements

(1) Approved sealing materials - All sealants and sealing material noted shall conform to the requirements of the applicable specifications.

(a) Sealants and sealing materials conformity shall be responsibility of the operator.

(b) Approved sealing materials shall be specified in Table 211 and shall comply with applicable specifications.

(2) General Sealing Requirements

(a) Workmanship of sealed areas - Shall be of highest quality and conform to all applicable specifications, standards and drawings.

(b) Documentation of sealing process codes - Sealing process codes applicable to requirements of this specification are documented in Individual Process and Finish Codes, 51-20-00, General.

1 The following process codes and their associated specifications shall form a part of requirements as stated within pertinent paragraphs of this specification.

(3) General Surface Preparation Prior to Sealing

(a) General cleaning requirements - To ensure maximum adhesion of sealants, surfaces which are to be sealed shall be solvent cleaned in accordance with requirements of this document.

1 Sealant adhesion promoters - Sealant adhesion promoters may be used, after cleaning has been completed for all polysulfide sealants approved in Table 211. See Sealing the GIV Wing, 51-22-10, Repair for approved promoters.

2 Identification of sealant adhesion promoters - Sealant adhesion promoters are generally color coded for solvent type: Blue tint indicates ketone solvent base. Red tint indicates chlorinated solvent base.
3 Sealant adhesion promoter restriction - Sealant adhesion promoters containing chlorinated solvents, halogens, methyl alcohol or ethyl alcohol shall not be used on titanium parts or fasteners if the subject parts or fasteners will be subjected to temperatures in excess of 200°F.

4 Sealant tack free accelerators - Sealant tack free accelerators may be used for all polysulfide type sealants, to decrease length of time required to develop a tack free surface on sealant. See Sealing the GIV Wing, 51-22-10, Repair for approved accelerators.

5 The tack free accelerator cures only the surface and regular cure time requirements still apply.

(b) Contamination precautions - Personnel shall use extreme care to prevent contamination of parts, materials and personnel required in application of sealants.

1 Masking materials - Masking tapes for sealant application shall be selected from approved tapes. See Surface Preparation and Painting Procedure, 51-07-10, Repair.

2 Personnel protection - Appropriate personal protection shall be worn by all individuals working with sealant materials.
   a The level of required protection is defined by the manufacturer's recommendations and Gulfstream Corporate Safety Policy.
   b For additional information about safety requirements, contact Gulfstream Industrial Health and Safety Department.

(c) Masking tape usage - Masking Tape applied around sealed areas shall be removed after sealant application and smoothing, but prior to curing.

(d) Recommended procedure is to remove tape in a direction normal to the edge of seam while sealant is still wet or semi cured.

(e) Removal of tape from cured sealant requires the same procedure, with care to minimize tearing of tape or sealant.

1 Sealant masking for standout - All exterior air passage surface sealing shall be accomplished by masking adjacent area, on either side of sealed joint, so maskant is approximately 0.01 inches higher than skin surface.
   a This may be effected using multiple layers of 3M No. 218 tape or equivalent.
   b The required width, from inside edge to inside edge of tape, across the area sealed, shall be centered on the gap and exceed gap width by more than 1/8 inch but not more than 3/8 inch.

(4) Mixing of sealants - Mixing of sealant material shall be in accordance with requirements of this document and applicable sealant specification.

(a) Mixing ratios - Materials requiring mixing of two or more components shall be carefully weighed or measured to maintain correct mixing ratios.

(b) Approved scales or beam balances shall be used for determining mix ratios by weight.

(c) Calibrated volumetric containers shall be used to determine mix ratios by volume.

(d) Failures to adhere to correct mixing ratios shall require remixing of components in proper mixing ratios.

1 Hot sealant mixing - Purposeful overcatalyzation of sealing materials in the attempt
to fast cure the sealant is expressly forbidden.

NOTE: Such overcatalyzation causes porosity changes, decreases fluid and temperature resistance, may cause reversion problems and will entail resealing of parts.

2 Solvent thinning of sealant - Solvent thinning of sealants is expressly forbidden.
   a Thinning causes porosity changes, decrease fluid and temperature resistance, may cause reversion problems and will entail remixing sealant.
   b The only exception shall be when adhering to requirements for sprayable polysulfide application. See Compound Sealant Polysulfide, 51-22-00, General.

(e) Time to mix - Under no circumstances is it permissible to add sealant components together and mix at a later time.
   1 Mixing of components shall be effected immediately.
   2 Pot life and cure times are figured from the moment of first catalyst to resin contact.
   3 Failure to immediately mix the components will result in irregular curing and physical properties.
   4 Noncompliance will require remixing of sealant components.

(f) Mixing procedure - Mixing of sealants shall be performed in such a manner as to minimize air entrapment.

(5) Specific Sealing Requirements

(a) Sealing pressurized and unpressurized areas - Pressurized and unpressurized areas shall be sealed by qualified personnel using approved materials and procedures.

   1 Sealing of angles at exterior joints and flat seams - Angles at exterior joints and exterior flat seams shall be fillet sealed with MIL-S-8802, Class B material.
      a A uniform bead of sealant shall be applied in the corner of seam to be sealed.
      b For flat seams, the bead of the sealant shall be forced into the seam and faired from one surface to the other by drawing a suitable tool over the fillet. See Sealing Pressurized Areas, Skin Joints, Faying Surfaces, Access Closures and Coating Exterior Surfaces, 51-22-00, Repair.

   2 Sealing of external countersunk screws and rivets for aerodynamic smoothness - External countersunk fasteners and their associated joints and seams, shall be sealed for aerodynamic smoothness in accordance with the smoothness requirements using approved materials. See Aerodynamic Contour Smoothness, 51-14-00, Repair, Aerodynamic Sealant Compound, 51-21-00, Repair and Sealing of Surfaces for Aerodynamic Smoothness, 51-14-00, Repair.

   NOTE: Countersunk screws and rivets located in the wing fuel cell area shall be cleaned prior to sealant application.

   3 Sealant application to air passage surfaces - The production application of sealant to air passage surfaces shall require that butt joint sealing be masked 1/2 inch wide and 10 - 15 mils deep prior to application.
      – This over sealing procedure is required to facilitate the glass like finish required on the lower fuselage areas.
Excess sealant applied per this requirement shall be sanded flush prior to application of base primer.

Excessive sealant - Sealant shall not be applied, at any location, in excess of that quantity which is required for a proper and durable seal.

**NOTE:** Failure to comply with this requirement may compromise seal characteristics and add unnecessary weight.

4 Trimming of seams - After sealant has cured to tack free, all external surface seams and joints which do not conform smoothly to aerodynamic contour requirements, shall be trimmed using a plastic knife or rubber disc mounted in a small hand motor. See Aerodynamic Contour Smoothness, 51-14-00, Repair, unless otherwise specified by engineering documents.

Trimming shall blend filled or sealed areas smoothly to contour of adjacent surfaces and conform to requirements of Aerodynamic Contour Smoothness, 51-14-00, Repair.

5 Dielectric sealing of electrical fittings and connectors - Electrical connectors and electrical bulkhead fittings (feed through fittings), between a pressurized and an unpressurized area shall be dielectrically sealed.

General dielectric sealant application requirements - A uniform bead of sealing material conforming to MIL-S-8802, Class B-2 shall be applied to the faying surfaces of electrical fittings and connectors.

Excess sealant shall be faired in around the edges into fillet.

The fillet shall be formed such that the width of the fillet shall approximately equal its height.

The fitting or connector shall be permanently attached before the sealant has cured.

The sealant shall be topcoated, after cure, with a minimum of one coat of finish No. 2012 or 3012. See Individual Process and Finish Codes, 51-20-00, General.

Dielectric pressure side sealing and topcoating - A fillet of MIL-S-8516 or MIL-S-8802, Class B-2 shall be applied on pressure side of the connector or fitting.

- The connector or fitting shall be permanently attached before sealant has cured.
- The sealant shall be topcoated, after cure, with a minimum of two coats of finish No. 2012 or 3012.

Priming of electrical wires for dielectric sealing - Electrical wires which are to be potted in bulkhead feed through fittings shall be solvent cleaned and primed where they pass through fitting.

Dielectric potting of wires through pressure feed through fittings - Electrical wires and cables going through bulkhead feed through fittings shall be primed and potted in place using sealing compound.

Dielectric Sealing Compound Application Procedure

- Mix the sealing compound per manufacturer’s requirements.
- Surface clean and prepare wire insulation as outlined in applicable section.
- Prime wires in wire bundle, where bundle passes through fitting or
connector.
- Coat wires in wire bundle, where they pass through fitting or connector, with potting compound from applicable specification.
- Install cables or leads through bulkhead feed through fittings and secure them to prevent any relative movement.
- Temporarily attach a rubber or plastic cup dam around the feed through fitting in such a manner that potting material may be poured into cup.
- Apply sealant and cure.
- Remove cup dam and trim excess sealant as required.
- Overcoat with a minimum of one coat of Finish No. 2012 or 3012. See Individual Process and Finish Codes, 51-20-00, General.

(6) Treatment of Holes, Voids and Cavities

(a) Drilling of holes in skin surfaces - When faying surface sealant is required on skin surfaces, all rivet holes shall be drilled to full final dimensions before rivet installation.

1. Faying surfaces shall be separated and deburred with all chips removed prior to sealant application.
2. Drilling and other operations shall be performed per requirements specified in this document or other approved Gulfstream documents.

(b) Sealing of voids, holes and cavities - Voids, holes and cavities which are not considered manufacturing defects, shall be sealed with materials and procedures specified in this document and any applicable Gulfstream documents.

(c) Sealing of large spaces or deep joggles - Apply the sealant in following manner when sealing large spaces or deep joggles.

1. Fill area with EC-612 sealant.
2. Overcoat with MIL-S-4383 and allow to dry for a minimum of 30 minutes.
3. Topcoat with MIL-S-8802, Class A and fair in approximately 1/4 inch around the space, hole or joggle.
4. Restrictions
   a. Spaces and joggles sealed in this manner shall not exceed 3/16 inch diameter.
   b. Holes or voids larger than 3/16 inch shall be sealed with MIL-S-8802, backed on the pressure side with an aluminum mesh filler conforming to 0.017 inch diameter No. 18 mesh aluminum alloy screen of commercial quality or with fiberglass cloth.
   c. Sealants shall not be cut / diluted with MEK or any other solvent (refer to ASTM D 740).

(d) Sealing of joggles at skin joints - Joggles formed where stringers run over doublers at skin joints may be sealed as follows:

1. A coat of MIL-S-8802, Class B sealing material shall be applied to one of the mating surfaces prior to riveting.
2. The squeezed out sealant shall be filleted along the joint, when applicable.
3. Joggles that have not been sealed during assembly shall be filled with MIL-S-8802, Class B sealant material, filleted along the joint.

(e) Tooling holes - All tooling holes in the doublers and skin joints or joining sections shall be...
(7) Sealing of Plastics

(a) Plastics precautions - To prevent the crazing of acrylics or polycarbonates, MIL-S-8802 Class A sealing materials shall not be used in conjunction with or adjacent to these materials.

(b) Fillet sealing of antennas, lights and other plastic parts on the exterior skins - The edge surfaces of plastic parts shall be sealed in specific areas as noted on applicable Gulfstream document.

(c) Unless otherwise specified, the junction of plastic part to aircraft shall be sealed with a fillet of sealing material conforming to MIL-S-8784 or MIL-S-8802, Class B. See Sealing Pressurized Areas, Skin Joints, Faying Surfaces, Access Closures and Coating Exterior Surfaces, 51-22-00, Repair.

(d) Faying surface sealing of antennas, lights and other plastic parts on exterior skins - When it is necessary to fay surface seal antennas, lights and other plastic parts on the exterior skins with MIL-S-8802 sealant, first apply a coating of release agent to one of faying surfaces, to facilitate nondestructive removal of part. See Sealing Pressurized Areas, Skin Joints, Faying Surfaces, Access Closures and Coating Exterior Surfaces, 51-22-00, Repair and Table 211.

(e) Shims sealing requirements - The following criteria shall be adhered to when shims are installed in or on GIV aircraft structure.

1. Aluminum alloy shims faying surface sealing - Shims fabricated of aluminum alloys shall be finished prior to installation and sealing. See GIV Finish Specification, 51-14-00, Repair. All aluminum alloy shims shall be faying surface sealed, unless otherwise specified on any applicable engineering document, using MIL-S-81733, Type IV or MIL-S-8802, Class C sealing materials.

2. Aluminum alloy shims fillet sealing - All aluminum alloy shims shall be fillet sealed. See Sealing the GIV Wing, 51-22-10, Repair unless otherwise specified on the applicable engineering document.

3. Stainless steel shims faying surface sealing - Shims fabricated of stainless steel shall be finished prior to installation and sealing. See GIV Finish Specification, 51-14-00, Repair. All stainless steel shims shall be faying surface sealed, unless otherwise specified on the applicable engineering drawing, using MIL-S-81733, Type IV or MIL-S-8802 Class C sealing materials.

4. Stainless steel shims fillet requirements - All stainless steel shims shall be fillet sealed. See Sealing the GIV Wing, 51-22-10, Repair unless otherwise specified on the applicable drawing.

5. Cast plastic shims sealing requirements - Cast plastic shall be overcoated with MIL-S-8802, Class A, per the requirements of Sealing Pressurized Areas, Skin Joints, Faying Surfaces, Access Closures and Coating Exterior Surfaces, 51-22-00, Repair or Sealing the GIV Wing, 51-22-10, Repair as applicable, after assembly of detail parts.

6. Peelable metallic shims sealing requirements - All peelable metallic shims shall be faying surface sealed, using MIL-S-81733, Type IV, MIL-S-8802 Class C sealing materials and fillet sealed using MIL-S-8802, Class A or B sealing materials.

(f) Sealing of polycarbonate and acrylic plastics - Polycarbonate and acrylic plastics shall be sealed with MIL-S-8802, Class B sealant or equivalent.
sealed as follows:

1. Polycarbonate shall be protected by an application of fuel and oil resistant coating, clear flat or clear gloss, (finish No. 192 and finish No. 191, respectively), as required per drawing requirements. See Individual Process and Finish Codes, 51-20-00, General.

2. MIL-S-8802 Class A, MIL-S-81733 Class A and MIL-S-4383 sealant materials shall not be utilized to seal polycarbonate or acrylic plastics or shall these sealant materials be used on or adjacent to polycarbonates or acrylcs.

(g) Rubber sealing strips, trimming - Where rubber sealing strips protrude from corners or frames which are to be sealed, the rubber shall be trimmed back to minimum to afford the maximum metal contact for the sealant.

1. Sealing of rubber sealing strips - When specified, on approved Gulfstream Engineering documents, rubber sealing strips shall be bonded or sealed in place. All requirements pertaining to bonding or sealing shall be specified on the engineering documents.

(8) Sealing of Pressurized Areas

(a) Sealing of pressurized faying surfaces - Pressurized faying surfaces shall be sealed with MIL-S-8802 Class as required, in accordance with Sealing Pressurized Areas, Skin Joints, Faying Surfaces, Access Closures and Coating Exterior Surfaces, 51-22-00, Repair and as follows:

1. In pressurized areas, e.g., window belt between stringers No. 7 thru No. 15, and edges of fail safe skin shall be sealed with fillet sealant conforming to MIL-S-8802, Class C.

2. Pressurized bulkheads, decks and corners shall be sealed with MIL-S-8802, Class C applied to each faying surface.

3. Pressurized mating surfaces shall be fastened together while sealant is wet.

4. While sealant is wet, where permanent fastening is not possible or desirable temporary fasteners (clecos) are permissible.

5. Temporary fasteners (when used) shall be evenly distributed along line joints such that not less than 50% of holes to be fastened are secured, before application life of sealant is exceeded.

6. Squeezed out sealant shall be filleted along joints formed by skins and doublers and butt joints.

7. When extruded sealant is insufficient to form a complete fillet, additional sealant material shall be applied to provide necessary edge seal.

NOTE: Must conform to MIL-S-8802 Class B.

(b) Sealing of pressurized floors, bulkheads, joined sections and enclosures - The pressurized faying surface shall be sealed with MIL-S-8802, Class A, sealing materials as specified in Step 4.C.(8)(a).

(c) The squeezed out sealant on the pressure side shall be filleted along the joint formed by the mated surfaces.

(d) When extruded sealant is insufficient to form a fillet, additional MIL-S-8802, Class B sealing material shall be applied to provide fillet.
(e) Voids, holes and gaps shall be sealed in accordance with Step 4.C.(6).

(f) Heads of rivets, bolts and other fasteners shall be sealed, on pressure side, as specified in Step 4.C.(9)(b).

(g) Sealing removable floor panels - Removable floor panels between Fuselage Station (FS) 321.5 and 452.5 shall be sealed with MIL-S-8802, Class A sealant.

(h) The sealant shall be applied to the removable floor panels and a suitable parting agent applied to the underlying structure.

(i) As an alternate method, Presstite No. 590.5 tape sealant or Presstite 591.1g sealing compound may be used.

(9) Sealing of Fasteners and Hinges

(a) Hi-Loks and Hi-Shear rivets - Hi-Loks, Hi-Shear rivets and other fasteners passing from pressurized to unpressurized areas shall be coated on pressurized side with MIL-S-8802, Class B sealant. The sealant shall be faired in approximately 1/4 inch around fastener.

(b) Open end anchor nuts - Open end anchor nuts attached to pressurized bulkheads, floors etc., shall be sealed as follows:

1. Sealing material conforming to MIL-S-8802, Class B, shall be applied between the flange of the anchor nut and the mating surface.

(c) Pressure side sealing of fasteners - Rivet, bolts and other fasteners which are used for installation of fixtures, ribs and other items to pressurized members such as bulkheads and cockpit floor, shall be sealed on the pressurized side as follows:

1. The fastener shall be installed wet with MIL-S-8802, Class B-2 sealant, except where electrical grounding requirements specified on the engineering drawings or Electrical Bonding Requirements, 51-80-00, Repair, are defined that wet sealing is not permitted.

(10) General Sealing of Structural Members

(a) Pressure bulkheads at skin joints - Joints formed where pressure bulkheads join exterior skin shall be sealed with a fillet of sealing material, on the pressure side, conforming to MIL-S-8802, Class B, in accordance with Sealing Pressurized Areas, Skin Joints, Faying Surfaces, Access Closures and Coating Exterior Surfaces, 51-22-00, Repair and this document.

(b) Doubler at skin joints - Edges of doublers shall be sealed with a fillet of material conforming to MIL-S-8802, Class B, on pressure side.

(11) Sealing of Handholes, Access Covers and Seal Retainers

(a) Pressurized areas - All hand holes and access covers in pressurized areas shall be sealed with formed-in-place gaskets conforming to MIL-S-8802, Class B sealing material, in accordance with Sealing Pressurized Areas, Skin Joints, Faying Surfaces, Access Closures and Coating Exterior Surfaces, 51-22-00, Repair.

(b) Sealing handholes and access covers in unpressurized areas - Handholes and access covers in unpressurized areas and fairings shall be sealed with formed-in-place gaskets conforming to MIL-S-8802, Class B or MIL-S-8784, Class B sealing materials in accordance with requirements of this document and Sealing Pressurized Areas, Skin Joints, Faying Surfaces, Access Closures and Coating Exterior Surfaces, 51-22-00, Repair.
(c) Removable structures and assemblies - Removable structures and assemblies shall be fay surface sealed on one side (formed-in-place gasket) using MIL-S-8802 with a nonsilicone base release agent applied to at least one of parting surfaces. MIL-S-8784 does not require a release agent.

1 Silicone base release agents - Silicone base release agents shall not be used due to likely possibility of contamination to adjacent surfaces and difficulty in removal of silicone release agent.

(d) Sealing of seal retainers - The faying surfaces between seal retainers and structure to be joined shall be coated with MIL-S-8802, Class A material as specified in Step 4.C.(8)(a). The squeezed out sealant shall be filleted along joint formed by mating surfaces. When extruded sealant is sufficient to form a complete fillet, MIL-S-8802, Class B sealing material shall be applied as required to complete the fillet.

12) Sealing of GIV integral fuel cells and associated structures - Sealing of GIV integral fuel cells and associated structures shall be accomplished per requirements in Sealing the GIV Wing, 51-22-10, Repair and the following:

(a) Sealing lower portion of rear beam rib station 201.50 and 284.067 (reference BL 51.0 and BL 145.0 rib) - The rear beam shall be sealed with MIL-S-8802 sealant material per Sealing the GIV Wing, 51-22-10, Repair and as follows (see Step 4.C.(12)(a)).

1 Void spaces, joggles and holes not exceeding 3/16 shall be sealed using MIL-S-8802.

2 Overcoat entire area with MIL-S-8802 and fair in approximately 1/4 inch all around. Allow sealant to air dry (cure).

3 Cavities or work holes which are larger than 3/16 inch shall be backed with fiberglass cloth and sealed with MIL-S-8802.

(b) Sealing of hopper, upper aft area - Sealing of the hopper in the upper aft area shall be performed in the same manner as in Step 4.C.(12)(a).

(c) Sealing of nonmetalics in the integral fuel tank - Nonmetallic parts, such as plastic shims, shall be over coated with MIL-S-8802 after assembly of detail parts.

(d) Sealing of static wicks to wing trailing edges - Static wicks shall be mechanically attached to wing trailing edges in such a manner that required conductivity or resistivity requirements are maintained. Sealing shall be restricted to fillet sealing using materials approved to MIL-S-8802.

1 Static wick conductivity / resistivity requirements - Static wick conductivity / resistivity requirements are defined in Electrical Bonding Requirements, 51-80-00, Repair. Verification of these requirements shall be the responsibility of the operator.

13) Sealing of Joined Sections

(a) Sealing of faying surface joints - Faying surfaces of sections to be joined shall be coated with MIL-S-8802, Class C material. After joining, a fillet of MIL-S-8802, Class B material shall be applied at joint formed by edge of joining doubler and outer skin.

(b) Overcoating with epoxy primer (finish No. 2012 or 3012) - All sealed joints and rivets in areas below Stringer No. 15 and from FS 63.0 pressure bulkhead to FS 596.0 pressure bulkhead, shall be topcoated with a minimum of two coats of finish No. 2012 or 3012. All sealed areas in forward section of fuselage shall be overcoated with two brush coats of finish No. 2012 or 3012, applied in accordance with Epoxy Primer Coating - Preparation and Application (Including Finish 2012), 51-07-10, Repair.
(c) Sealing of fuselage mid section (FS 425.5 - FS 498) - Faying surfaces on pressure side shall be sealed with MIL-S-8802, Class C sealant as noted in Step 4.C.(8)(a).

(d) The squeezed out sealant on pressure side shall be filleted along joint formed by mated surfaces.

(e) When extruded sealant is insufficient to form a complete fillet, additional MIL-S-8802, Class B sealing material shall be applied to complete fillet.

(f) Void holes and gaps shall be sealed in accordance with requirements of this specification and Sealing Pressurized Areas, Skin Joints, Faying Surfaces, Access Closures and Coating Exterior Surfaces, 51-22-00, Repair.

(g) Heads of rivets, bolts and other fasteners shall be sealed as specified in Step 4.C.(9)(b) and Step 4.C.(9)(c).

(h) Sloping web - A fillet of MIL-S-8802, Class B sealant, shall be applied to pressure side of joint form where the web meets pressure deck and bulkhead 63. The triangular side panels shall receive a fillet of MIL-S-8802, Class B, on pressure side, where they meet bulkhead 63, pressure deck and sloping top plate of web.

(i) Nose wheel well - Joints formed by nose wheel well enclosure bulkheads 85 3/8 and 119, the pressure deck and exterior skins shall be sealed on pressure side with a fillet of MIL-S-8802, Class B sealant material.

(14) Sealing of Pressure Bulkheads

(a) Sealing of bulkhead FS 63 - A fillet of MIL-S-8802, Class B sealant shall be applied to pressure side of joints formed where bulkhead station 63 is joined with outer skins. All joggles shall be sealed in accordance with requirements of this procedure and Sealing Pressurized Areas, Skin Joints, Faying Surfaces, Access Closures and Coating Exterior Surfaces, 51-22-00, Repair.

(b) Sealing of bulkhead FS 63 and pressure deck (WL 86) - A fillet of MIL-S-8802, Class B sealing material shall be applied to pressure side of joints formed where bulkhead at FS 63 is tied to pressure deck (WL 86.0) All joggles shall be sealed in accordance with requirements in this procedure and Sealing Pressurized Areas, Skin Joints, Faying Surfaces, Access Closures and Coating Exterior Surfaces, 51-22-00, Repair.

(c) Sealing of bulkhead 85-3/8 - A fillet of MIL-S-8802, Class B sealant, shall be applied on the pressure side of the joints formed by the bulkhead and the outer skin. All joggles shall be sealed in accordance with the requirements in this procedure and Sealing Pressurized Areas, Skin Joints, Faying Surfaces, Access Closures and Coating Exterior Surfaces, 51-22-00, Repair.

(d) Sealing of bulkhead 119 - A fillet of MIL-S-8802, Class B sealant, shall be applied to pressure side of joints formed by bulkhead 119, side panels of nose enclosure and where bulkhead 119 joins outer skin at aft end of nose wheel well.

(e) Sealing of bulkhead station 498 at longeron No. 24 - Sealing of holes and voids at bulkhead station No. 498 and longeron No. 24 shall be accomplished per requirements in Step 4.C.(6)(b) and Step 4.C.(6)(c).

(15) Sealing of Pressure Decks
(a) Sealing of mid section pressure deck from FS 321.5 - FS 452.5 - All floor beams, faying surfaces and stringer No. 17 shall be sealed with MIL-S-8802, Class A material in accordance with Step 4.C.(8)(a). All floor boards shall be sealed with form-in-place gaskets using MIL-S-8802 sealant per requirements of Sealing Pressurized Areas, Skin Joints, Faying Surfaces, Access Closures and Coating Exterior Surfaces, 51-22-00, Repair.

(b) Sealing of station 498 at stringer No. 17 (reference BL 40)

1. Faying surfaces at station 498 and stringer No. 17 shall be sealed in accordance with Step 4.C.(8)(a).

2. Joggles that have not been sealed during assembly shall be filled with MIL-S-8802, Class B sealant and filleted along joint.

(c) Sealing of flat pressure bulkhead and aft engine mount supports at station 596.00. Sealing in this area shall be accomplished in accordance with requirements in Step 4.C.(8)(a) and Step 4.C.(16)(a).

16) Sealing of Engine Mount Supports

(a) Sealing of forward engine mount supports at station No. 539.75. - Sealing shall be accomplished as follows:

1. The faying surfaces shall be sealed in accordance with Step 4.C.(8)(a).

2. Holes and voids larger than 3/16 inch shall be backed with fiberglass cloth in accordance with Sealing Pressurized Areas, Skin Joints, Faying Surfaces, Access Closures and Coating Exterior Surfaces, 51-22-00, Repair and sealed with MIL-S-4383 sealant. Overcoat with MIL-S-8802 Class A sealing material.

17) Window Enclosures

(a) Sealing of window enclosures - Prior to installation of elliptical window frames (T-forgings) a bead of MIL-S-8802, Class B sealant shall be applied along the circumference of frames. The window frames shall be riveted to enclosure while sealant is still wet. Excess sealant on the pressure side shall be faired along the joint formed by the T-forging and the window enclosure. A fillet of MIL-S-8802, Class B shall be applied only to joint formed by fail safe skin and adjacent doubler.

(b) Cabin window rain seal - Passenger cabin windows shall be externally sealed with a form in place gasket rain seal using MIL-S-8802 sealant, class as required.

18) Pressurized Passenger Door and Enclosure

(a) Pressurized passenger door and enclosure - All faying surfaces of the door and around the enclosure shall be sealed in accordance with Step 4.C.(8)(a). The joint formed by the outer doubler and skin shall be sealed on the pressure side of the door with a fillet of MIL-S-8802, Class B sealing material. The joint formed by the inflatable seal retainer and the door shall be treated in the same manner.

(b) Passenger door window rain seal - Passenger cabin windows shall be externally sealed with a form in place gasket rain seal using MIL-S-8802 sealant, class as required.

NOTE: Particular care shall be taken to avoid coating the hinges, handles or other moving parts with sealant, so as to not impair their intended function.

19) Pressurized Baggage Door

(a) Sealing of pressurized baggage door - Sealing in this area shall be accomplished as
follows:

1. All faying surfaces on baggage door and enclosure shall be sealed in accordance with Step 4.C.(8)(a).

2. After riveting of exterior skin to door frame, seal the joint formed by frame and skin with a fillet of MIL-S-8802 Class B sealant on pressure side of door.

3. The joint formed by inflatable seal retainer and the door shall be sealed with MIL-S-8802, Class B sealant on pressure side of the door.

(b) Passenger door window rain seal - Passenger cabin windows shall be externally sealed with a form in place gasket rain seal using MIL-S-8802 sealant, class as required.

(20) Sealing of empennage area - Sealing of empennage areas shall be accomplished as required in applicable engineering drawings.

(21) Sealing of adhesively bonded assemblies - Adhesively bonded detail parts and assemblies shall be handled as follows:

(a) Bonding of detail parts shall be in accordance with techniques specified in Composite Components, 51-78-10, General and Metal Honeycomb and Metal to Metal Bonded Assemblies, 51-79-10, General. The appropriate bonding specification as required in pertinent Gulfstream Engineering document.

(b) Faying surfaces of details to be used in bonded assemblies shall not be conversion coated (e.g. finish No. 76 or finish No. 213), plated or otherwise coated, except for the requisite adhesive primer, as specified in appropriate bonding specification.

(c) Holes drilled or reamed in exterior surfaces at installation shall be touched up. See General Touchup Methods \ Drilled or Reamed Holes (Wing, Fuselage or Empennage) in GIV Finish Specification, 51-14-00, Repair.

(22) Repairs of Sealed Areas

(a) Repair of sealed areas - Repair of sealed areas after inspection or rework shall be performed in accordance with requirements of this procedure and Sealing Pressurized Areas, Skin Joints, Faying Surfaces, Access Closures and Coating Exterior Surfaces, 51-22-00, Repair.

(b) Repairs after inspection - If voids are detected during inspection, the surface of sealant around the void shall be cleaned of all chips, foreign matter and contamination. The repair shall be accomplished in same manner as original application of sealant.

D. Inspection

(1) Sealant Inspection

(a) Visual inspection - All sealed areas shall be inspected by operator in order to assure conformance to requirements of this and other applicable specifications and applicable engineering documents.

1. Specific Sealing Inspection Requirements - All sealed areas shall be inspected for quality of cure, absence of metal chips, foreign matter and voids, conformance to the aerodynamic contour smoothness requirements where applicable and general workmanship. See Aerodynamic Contour Smoothness, 51-14-00, Repair.
2 Sealed areas rejection and retest - Sealed areas not conforming to requirements of this or other applicable specifications shall be rejected. Sealed areas may be reworked or replaced to correct defects and resubmitted for acceptance. Before resubmitting, full particulars concerning previous rejections and actions taken to correct defects found in the original, shall be documented.

3 Sealant test requirements - All sealants shall be subjected to test requirements found in applicable Gulfstream, military or federal specifications.

E. Notes

(1) Personal protection - All personnel exposed to materials used in finishing of Gulfstream IV aircraft shall wear appropriate protective clothing and protective equipment as specified by the manufacturer and Gulfstream Corporate Safety Policy and also must comply with all state and local regulations.

(2) All safety requirements must be followed.

(3) Additional safety data, including treatment schedules for exposure may be obtained from the Gulfstream Industrial Health and Safety Department.

Table 210: Applicable Documents - Sealing

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