Conservation of a WWII Supermarine Spitfire wing

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Conclusions & Future Perspectives

- Identification of the heritage value of the wing: major historical, emotional, technical, scientific value
- Development of a new treatment for painted aluminum alloys: cleaning by spray application of agar gel
- Protection tests during Procraft project – selection of the most effective protection
- Project for exhibition of the wing in the local town hall, in memory of the pilot

Identification of the heritage value of the wing: major historical, emotional, technical, scientific value

Many Spitfires produced during WWII, but only 140 examples of the model Spitfire H.F.Mk VII. The wing of William James Atkinson, Australian pilot, was discovered off Saint Brieuc (France) in 1987, then stored 34 years in a garden. It is a major historical and emotional value because of the pilot’s contribution to the war effort. The Technical and Scientific value lies in the technical innovation with a fuel tank in the wing and the presence of marine concretions. Conservation is essential to preserve this heritage for future generations.

Diagnostic

Wing discovered off Saint Brieuc (France) in 1987, then stored 34 years in a garden

Presence of marine concretions
Presence of brush
Heterogeneous degradations

Treatment

Agar gel by spray

Application by spray: Agar 3%w + TAC 5%w in aqueous solution

Results: uniform cleaning, reduction of rust stains, good removal of dirt and grime

Surface Cleaning - Tests

The best results are:

<table>
<thead>
<tr>
<th>Surface</th>
<th>Mechanical technique</th>
<th>Gel cleaning</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Al Alloy</td>
<td>Sandblasting</td>
<td>Xanthan or Agar Gel + EDTA-pH=8</td>
<td>Caution: cationic resin can be very aggressive</td>
</tr>
<tr>
<td>Al Alloy with corrosion</td>
<td>Sandblasting with vegetal abrasive</td>
<td>Xanthan or Agar Gel + EDTA-pH=8</td>
<td>Romany causes residue, need for extensive rinsing</td>
</tr>
<tr>
<td>Al Alloy with joint</td>
<td>Sandblasting with vegetal abrasive</td>
<td>Brush with water</td>
<td>Caution: mechanical cleaning sometimes too aggressive</td>
</tr>
</tbody>
</table>

Consolidation

Exfoliation: Paraloid B44 15%w in acetone for deep consolidations and 30% for surfaces consolidations
Dubbing of the stringers: Paraloid B72 60%w in acetone

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