

Site name:	London Gateway	Site code:	
Conservator:	LPW	Context:	
Date finished:	03.10.2014	Object number:	WA303

Simple name:	circuit board
Materials:	card, 'Bakelite', aluminium alloy

IMAGES:

W:\Projects\London Gateway\London Gateway 2012\72439 materials conservation\72438 conservation\2013 onwards\conservation images\WA303:

Image name	Image description
WA303_1 & WA303_2	before cleaning
WA303_3 & WA303_4	after cleaning
WA303_5 & WA303_6	after desalination and drying
WA303_7 - WA303_9	damage as dielectric expanded
WA303_10 & WA303_11	after reconstruction

DESCRIPTION:

Part of cockpit instrumentation from a Junkers 88 aircraft.

A card composite circuit board supports 2 or 3 transistor/ resistors. A second smaller card composite circuit board is attached with aluminium alloy (?) screws and supports another electrical component that bears the number 3083AK/13. The letter 'F' is written in pencil on this piece of board. Numerous aluminium alloy (?) connectors are present.

Hand written in white ink on the circuit board is Nr.40534-4.

A double 'Bakelite' switching dial is attached to either side of the main circuit board. The hand written number 42/62 is visible on the inside surface of one side of the dial. This side also has a set of white numbers (1-4) printed around the edge.

Several wires are attached or associated with this component.

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CONDITION:

The component is intact apart from a few detached wires. Patches of iron corrosion suggest that parts of the component have been lost.

The component is waterlogged and has been in a marine environment for approximately 70 years.

Some marine concretions are present.

TREATMENT:

Some corrosion, aluminium chloride and soft concretions were removed with a wooden point and dental tool.

The component was placed in baths of tap water to remove most of the salts. Desalination lasted 25 weeks with 7 changes of water. Salt levels were monitored using 1% silver nitrate solution, using the chloride level of tap water for comparison.

Towards the end of the process, a small amount of gelatinous aluminium chloride was produced. This was removed with a wooden point and soft brush and soaking continued until no more aluminium chloride was seen.

The component was removed from the last bath and allowed to air dry for 2hr. It was then placed in a box with buffering silica gel conditioned to 50%RH and control dried slowly over the following 2 weeks. Between 70RH and 50%RH, the dielectric packing inside the 'Bakelite' switching dial expanded and turned to a red/ brown dust, causing the 'Bakelite' to crack and become detached from the circuit board.

The dielectric material that remained packed inside the 'Bakelite' was consolidated with 3% 'Mowital' (polyvinyl butyral) in industrial methylated spirit (IMS). Loose material was retained separately.

Proprietary 'Paraloid B72' (acrylic co-polymer) was used to re-attach the 'Bakelite' dials.

RECOMMENDATIONS:

Stable, mid-range storage (50%RH).

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