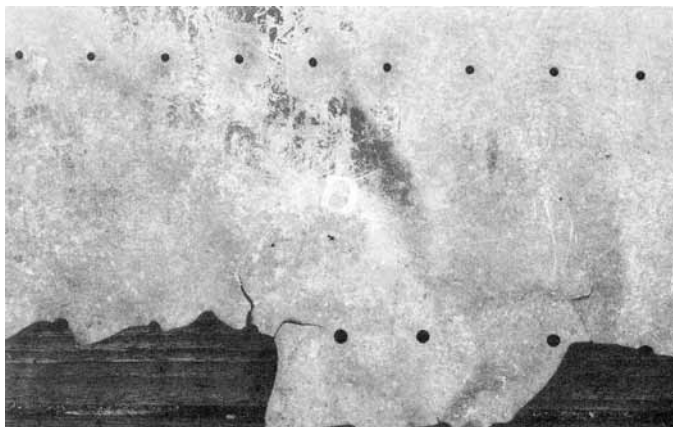


Matching The Markings

Of the many points of evidence which link artifacts found on Nikumaroro with the Earhart aircraft, none is more intriguing than the remnants of manufacturer's markings seen on Artifact 2-2-V-1, the section of aircraft skin discovered on the island's western beach. Although the unique pattern of its rivet holes has been the subject of heated debate (see *TIGHAR Tracks* Vol. 8, No. 3, "Through The Flak"), the discernible traces of two letters etched into the skin's exterior surface are an equally important subject of investigation.

Faintly visible, but undeniably present, are the letters "A" and "D," each measuring $\frac{1}{2}$ inch in height and spaced roughly a third of that distance apart. The letters are set on a line which runs at an angle of 8° to that of the rivet holes, and are rendered in a distinctive sans serif type style. The left-hand leg of the A is noticeably skinnier than the right and the crossbar is set relatively low on the legs. The arc of the D is relatively thick but tapers to join the vertical shaft. Both letters are canted very slightly to the right.



The "D" etched into Artifact 2-2-V-1 is apparent in this photo. The "A" to its left is much fainter.

With the help of Alcoa Aluminum in Pittsburgh, Pennsylvania, we were able to confirm that the letters are remnants of the product labeling stamped onto the metal with red ink at the time of manufacture. As the ink wore away it caused a differential in the degree of corrosion in this particular spot resulting in the preservation of the letters' shape. Why

this etching effect occurred here and nowhere else on the artifact is unknown. Although it wasn't much to go on, we reasoned that if we could match the size and style of the letters with labeling surviving on other aircraft we might be able to complete the picture.

An exhaustive search of aircraft of World War Two and earlier vintage produced only three examples of aluminum bearing these exact markings:

1. Lockheed 10A, cn 1052, delivered February 19, 1936 (Earhart's was Lockheed 10E, cn 1055, delivered July 24, 1936). Matching labeling was found on the interior surface of a flap actuator cover.



Labeling on flap actuator cover, Lockheed Electra cn 1052.

2. Lockheed 10A, cn 1015, delivered March 7, 1935 (later converted to 10E). Matching labeling was found on fuselage panels reskinned when the cabin windows' shape was changed from rounded edge to square edge. Why or when the change was made is unknown but, interestingly, the modification involved the omission of stiffeners and corresponding tightening of rivet pattern which some have claimed couldn't happen on Electras.

3. Douglas C-47A, s/n 92841, delivered in April 1944. Matching labeling was found on skin used to patch a small area on the port side of the nose (above and beside the pilot's rudder pedals). When or where the repair was done is unknown.

In all three cases, the entire sequence of labeling reads:

ALCOA ^{REG.} _{T.M.} **.032"**
ALCLAD 24 S – T 3 AN – A – 13

Translated, this means that the aluminum was manufactured by the Aluminum Company of America whose registered trademark is “Alcoa.” It is thirty-two thousandths of an inch thick and made of a high strength alloy called 24S (today known as 2024) which



Labeling on fuselage modifications, Lockheed Electra cn 1015.

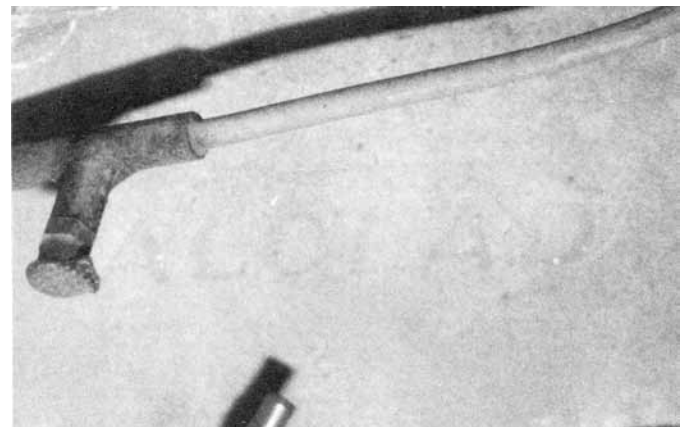
has been heat tempered to the T3 standard, and sandwiched between thin layers of pure aluminum in a corrosion-protective process known as Alcladding. That happens to be an exact description of Artifact 2-2-V-1 and the conclusion appears justified that the letters visible on the artifact are the last two in the word “ALCLAD” in a sequence identical to that shown above. The “AN-A-13” is a specification designator which predates the “QQA” standards which were in place by 1941. Its precise significance has not yet been determined.

During World War II, each of the three Alcoa plants which produced aluminum sheet for aircraft (Pittsburgh, Pennsylvania; Edgewater, New Jersey; and New Kensington, Kentucky) labeled their product with a different type style for the purpose of identification. Although research is still underway, no match has yet been found between a type style used during World War Two and the style found on the two Electras, the C-47 patch, and Artifact 2-2-V-1. Adding to the likelihood that the aluminum found on Niku-

maroro was produced prior to the war is the fact that the labeling was applied at an angle to the grain of the metal – a clear indication of hand-stamping which was replaced by automatically rolled-on labeling when aluminum production skyrocketed in 1939/40. Also, pre-war stocks of aluminum were quickly exhausted when production boomed and, according to Alcoa, the chance that a World War II aircraft would be built of 1930s aluminum is remote.

If we were to construct a hypothesis explaining the origin of the piece of aluminum found on Nikumaroro based solely upon what we’ve learned about the manufacturer’s labeling it would go something like this:

Sometime in 1935 Alcoa produced a run of .032” Alclad sheet labeled in the manner described. Some of it was delivered to Lockheed Aircraft Corporation where it was used over a period of about two years to build components for new Electras and to perform modifications and repairs on customers’ aircraft. At least some aluminum from that same run found application for repair purposes well into World War II.



Labeling on small repair patch, Douglas C-47A s/n 92841.

Obviously, if aluminum markings like this can be on a World War II C-47 repair the aluminum skin found on Nikumaroro could also be from a World War II repair – except that we can’t resolve the combination of skin dimensions, rivet size, and stringer taper with any aircraft type which served in the Pacific. However, all of those features match the repairs performed on Lockheed 10E, cn 1055, in May 1937.

