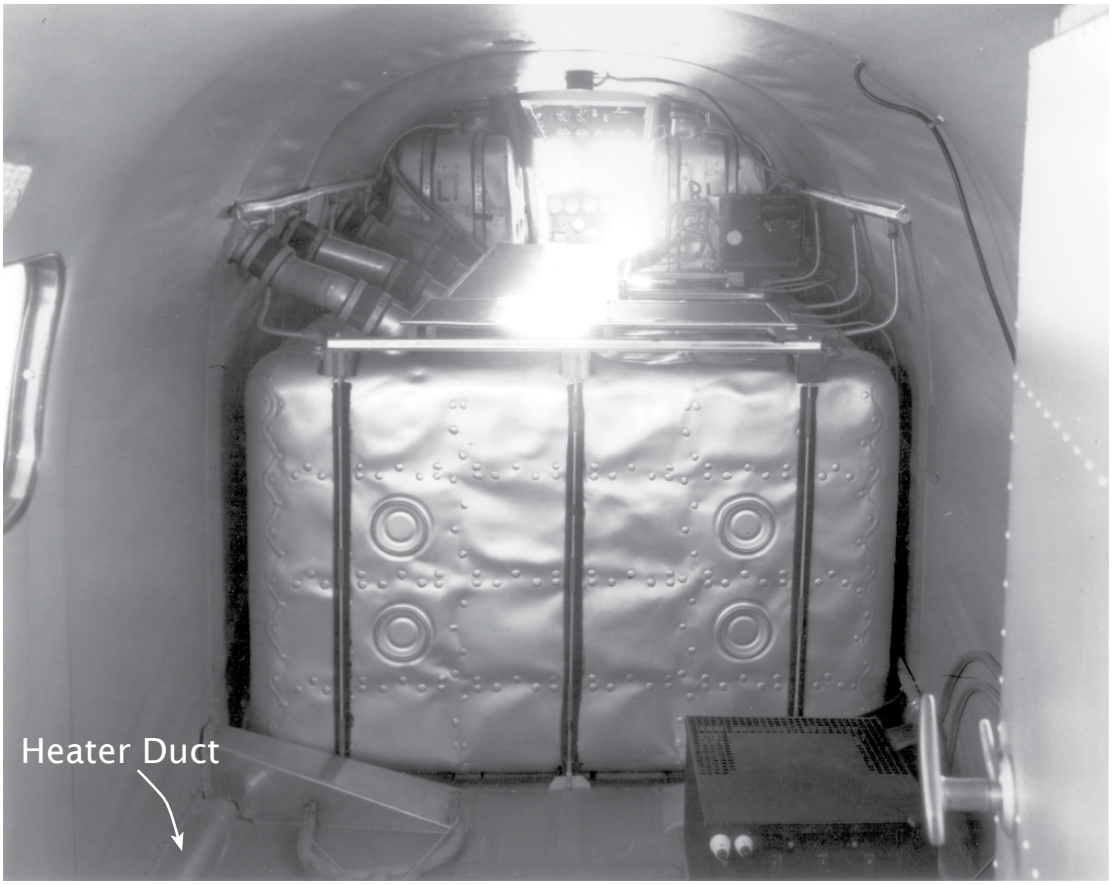
THE UN-DADOS

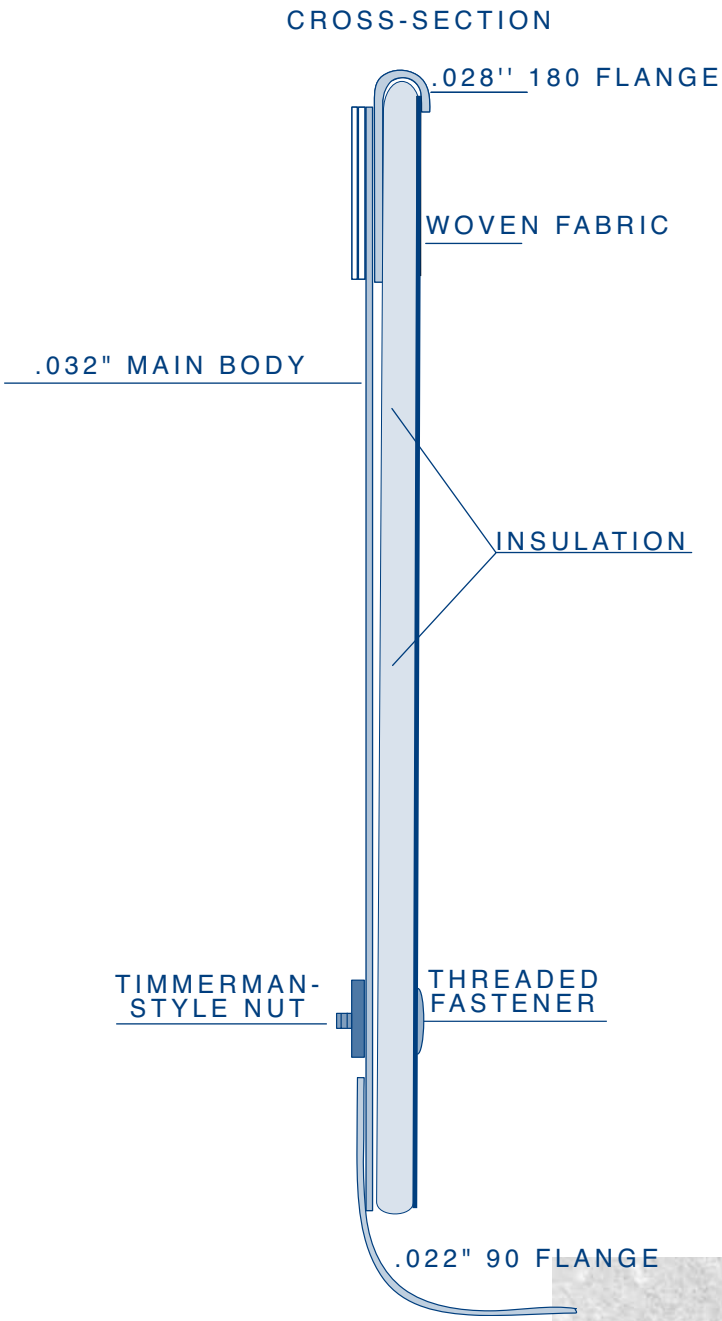
Even before the Ketchikan wreck provided details of how Lockheed Electra cabins were outfitted we knew that there were two problems with our original "dado" hypothesis.

We had originally theorized that our dados were installed along the juncture of the cabin wall and floor (as shown in the illustration on page 3), but the passenger cabin of a Lockheed 10 was heated with hot air that was fed into aluminum ducting which ran along the juncture between the cabin wall and the floor. If installed against the wall, our dados would have to be mounted behind the heater duct. Although the cabin of Earhart's 10E Special was not set up to accommodate passengers, photos show that the standard heating ducts were installed.

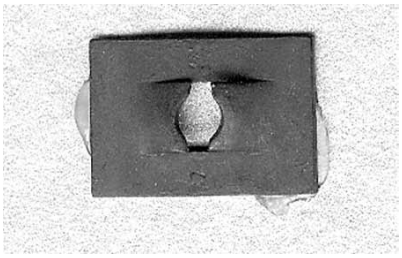
There are rust marks on the face of our most intact dado on the side opposite the insulation holes which clearly indicate the former presence of a fixture similar to a "Timmerman nut." We had originally identified these holes as "mounting holes" where a screw had attached the dado to some part of the aircraft structure, but that is not possible if there was a nut of some kind abutted directly to the face where we see the stain. It appears that what we had been calling "mounting holes" are, in fact, merely an accommodation for fasteners that helped secure the insulation to face of the dado.



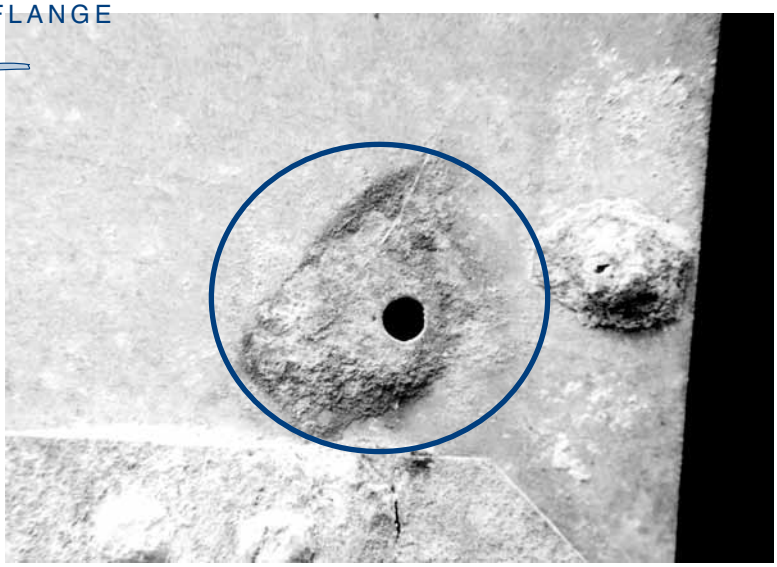
This photo clearly shows the heater ducts installed in the cabin of NR16020. Although it can't be seen whether they also extend forward beside the fuel tanks, hot air entered the system well forward of this point. If the ductwork that is visible had any function there must have been ductwork forward.



Timmerman nut. TIGHAR photo by F. Lombardo.



Rust marks on the face of Artifact 2-1-V-8, the dado found in 1989, indicate the former presence of a rectangular securing nut. TIGHAR photo by F. Lombardo,



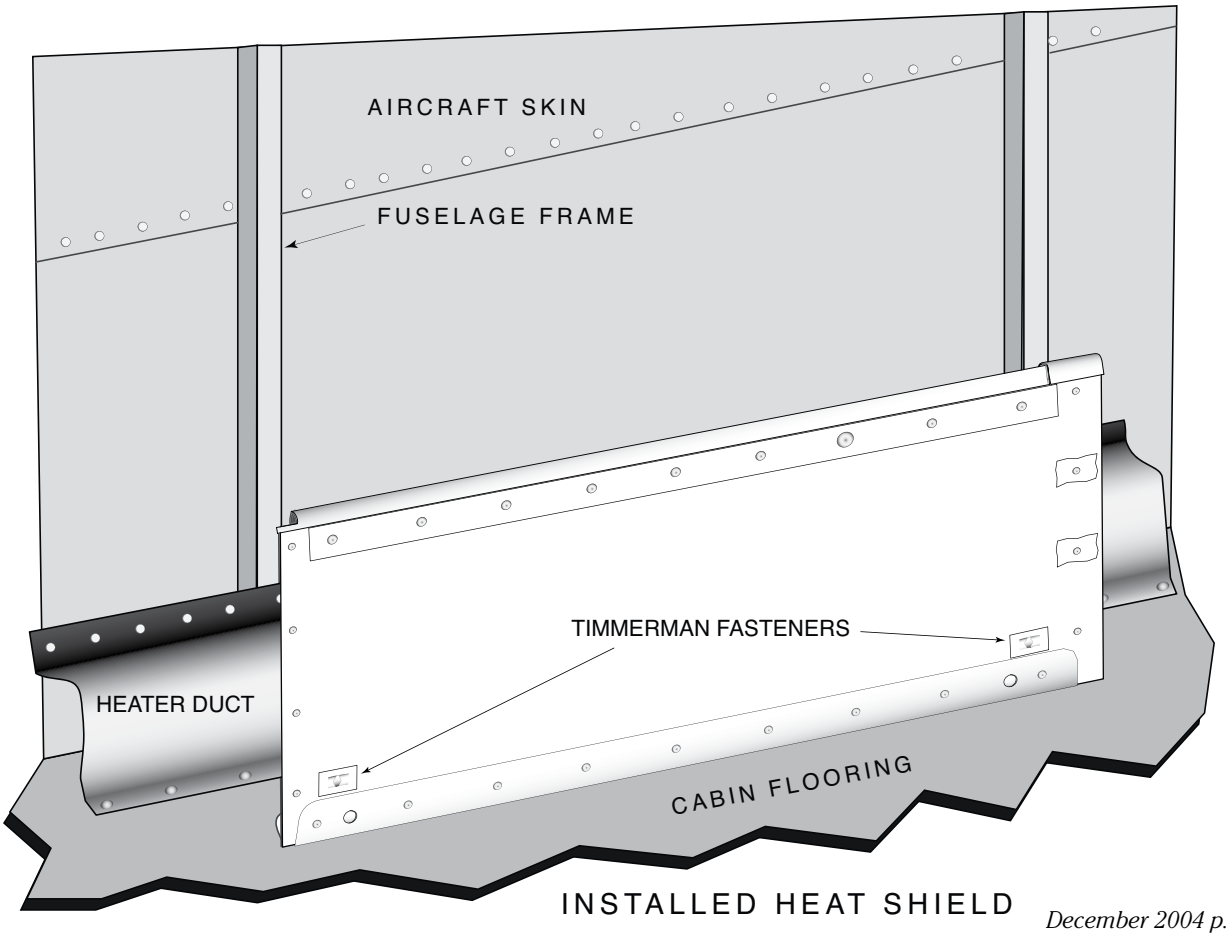
A NEW HYPOTHESIS

The absence of mounting holes means that the dados – or rather, the components we have been calling dados – were attached to the aircraft solely by means of the screws or nails in the 90° flange along the bottom. The presence of what appear to be pry marks on the bottom of the flange suggests that nails were used. Nails may seem like unusual fasteners to find in airplane but the floor of a Lockheed 10 was comprised of plywood panels covered with linoleum that was nailed in place.

These observations suggested to us that the components we found on Nikumaroro are not dados at all. Instead, they appear to have been free-standing cantilevered structures that were nailed to the floor and stood, end to end, like a 6.5 inch-tall fence. But why? What purpose might such a barrier serve? The presence of quarter-inch insulation firmly affixed to one face of the structure strongly suggests that the purpose of the "fence" was to act as an insulating barrier. But insulating what from what? The most obvious possibility is that it was used to insulate something that shouldn't get hot from something that was a source of heat. The only source of heat in an Electra cabin is the hot air duct that runs along the base of the wall on both sides of the cabin, but the whole point of the heater duct is to heat the cabin. What might there be in the cabin that shouldn't get hot? How about tanks full of gasoline, or more to the point, empty tanks full of gasoline fumes? A six and a half inch heat shield would seem about right for mitigating the effect of a two and a half-inch tall heater duct.

All very fine in theory – but was there really a need to insulate a gas tank installed in an Electra cabin from the heater duct? That's the question the Alaska wreck unexpectedly answered for us. When we decided to try to find and visit the site of the Gillam crash we were looking for examples Electra dados. We had no idea, until the team

Below: Our new hypothesis as to how the heat shields (formerly known as dados) may have been installed in the Earhart aircraft shows them attached to the cabin floor in the narrow space between the heater duct and the fuel tank with the insulation side facing the duct.



INSTALLED HEAT SHIELD

reached the site, that the plane had been modified to carry a fuel tank in the cabin. The method used to protect the tank was fairly crude – just a double layer of heavy asbestos matting covering the heater duct. Did the Lockheed factory shop in Burbank have a more elegant (and much lighter) way of approaching the same problem on the 10E Special several years earlier?

That question puts us back, for the moment, in the realm of very fine theory. There are no known photos of the cabin of Earhart's airplane just before the fuel tanks were installed, and after they're in place there is no way to see if anything is in the narrow space between them and the wall.

Maybe asbestos matting was used on NR16020 just as it was on Gillam's ship, but the material is quite heavy and, used in the quantity that would be required in the Earhart Electra, would carry a substantial weight penalty. The (putative) heat shields found on Nikumaroro are, by comparison, very light. It is also encouraging to find that the very function which the structures-formerly-known-as-dados seem to most logically perform is one that we now have good reason to believe was needed aboard the Earhart Electra.

Testing the new hypothesis will be difficult but, perhaps, not impossible. Previously unknown photos of NR16020 taken during the installation of the cabin fuel tanks could come to light – but that possibility seems remote. A more promising area of research might be to search for photos of the other Lockheed 10E Special, NR16059. Virtually identical to Earhart's, the airplane was known as the "Daily Express" and in May 1937 made the first commercial round-trip flight across the Atlantic carrying photos of the Hindenburg disaster nonstop from New York to England and returning nonstop a few days later with photos of the coronation of King George VI. The flights were an epic achievement that convincingly demonstrated the long range capabilities of the 10E Special but, ironically, precisely because they were successful they have been largely forgotten. How were the cabin fuel tanks of the Daily Express shielded from the heater ducts? Are there photos somewhere? For that matter, where is the Daily Express? Later that year it was sold to the Soviet Union and participated in the search for the lost trans-polar aviatior Sigismund Levanevsky. The search was eventually abandoned and the Lockheed presumably went to a new home in Stalin's Russia. Its fate is unknown.

SMOKING GUNS?

The Year of the Dado answered many questions and raised new ones. The objects found on Nikumaroro in 1989 and 2003, although somewhat similar to dados, do not appear to be dados at all but are probably free-standing heat shields. The objects are made of aircraft-grade aluminum with aircraft rivets and aviation industry precision. They almost certainly came from an aircraft. They are not stamped with part numbers and, therefore, do not appear to be military in origin. The objects appear to have once been attached to a wooden surface. Lockheed Electras had wooden floors.

One example of a Lockheed Electra with a fuel tank installed in the cabin has been found and documented. The tank was shielded from the heater duct. If it turns out that Lockheed shielded the tanks in the cabins of 10E Specials with unique structures like the ones we found on Nikumaroro, that makes the four TIGHAR artifacts the proverbial "smoking gun" evidence we've been looking for. The research continues.