

THE NIKU III PRELIMINARY EXPEDITION

January 27 to February 10, 1996



During the closing months of 1995, in the process of preparing for TIGHAR's third major research trip to Nikumaroro in September of 1996, new information came to light which made apparent the need for a short preliminary expedition to the island.

Metallic Objects

Shortly after the 1991 trip (Niku II) we became interested in an anomalous vegetation-free area which appeared along the atoll's remote northeastern beachfront in early aerial photography of the island. In December 1995, digital analysis of copy negatives obtained from archives in New Zealand was carried out by Jeff Glickman at Photek in Champaign, Illinois. Glickman's application of state-of-the-art forensic imaging techniques disclosed the presence of one or more large metallic objects in a photo of the cleared area taken by the U.S. Navy on June 20, 1941. Possible corroboration in an overhead mapping photo taken by the USN on April 30, 1939 led to the identification of two specific features—designated “Candidate #1” and “Candidate #2”—which might be aircraft or aircraft debris. Far from the known inhabited sections of the atoll, the area matched the general location where former U.S. Coastguardsmen reported seeing a “water collection device” and other objects in 1944.

Signs Of Recent Habitation

Enhancement of an aerial view taken in December 1938 (at a time of severe drought and prior to the arrival of the first official inhabitants) disclosed the presence of what appear to be trails criss-crossing the area. The features appear very much like footpaths visible in later aerial photography of the village and suggest purposeful routes which have been used over a period of weeks, if not months. With no wildlife on the atoll large enough to create trails, the paths are difficult to explain. A visit by turtle or bird hunters from another island group is a possibility, but in 1938 inter-island canoe travel by indigenous peoples had been vigorously discouraged by the British Colonial Service for many years. The location of the area on the atoll's dangerous windward shore also argues against a landing there by anyone arriving by sea. In an aerial photo taken six months later, after normal rainfall had returned to the island, the trails are no longer apparent.

Because the site is discernible in a July 9, 1937 aerial photo of the island taken during the

U.S. Navy's search for Earhart, the possibility had to be considered that the "...signs of recent habitation" which were "clearly visible" to flight leader Lt. John Lambrecht were seen in this location. Also, the only credible post-disappearance radio message from the lost aircraft which includes position information (received by the USN radio station at Wailupe, Hawaii on July 4, 1937) contains the cryptic phrase "...281 north." From this site on Nikumaroro the equator is exactly 281 nautical miles north.

The Responsible Course Of Action

The possibility that this was the place where Earhart's aircraft had landed, and where its crew had made an unsuccessful bid for survival, presented a quandary. If the aircraft was really there—and more or less intact—it would be imperative that the September expedition go equipped with both the clearances and the assets required to effect a recovery. The only way to know for sure was to go and look. However, public disclosure of the aircraft's existence and location would present an unacceptable security risk. The responsible course of action was clearly to restrict advance knowledge of the evaluative expedition to individuals who had a need to know. Sponsorship was solicited and obtained for the trip and a seven-person team was assembled from qualified TIGHAR members. These were:

Richard Gillespie—Executive Director of TIGHAR and leader of the expedition

Patricia Thrasher—President of TIGHAR and expedition photographer

H. Donald Widdoes—TIGHAR #1033CBE

Joseph Hudson—TIGHAR #1689CE

John Clauss—TIGHAR # 0142CE

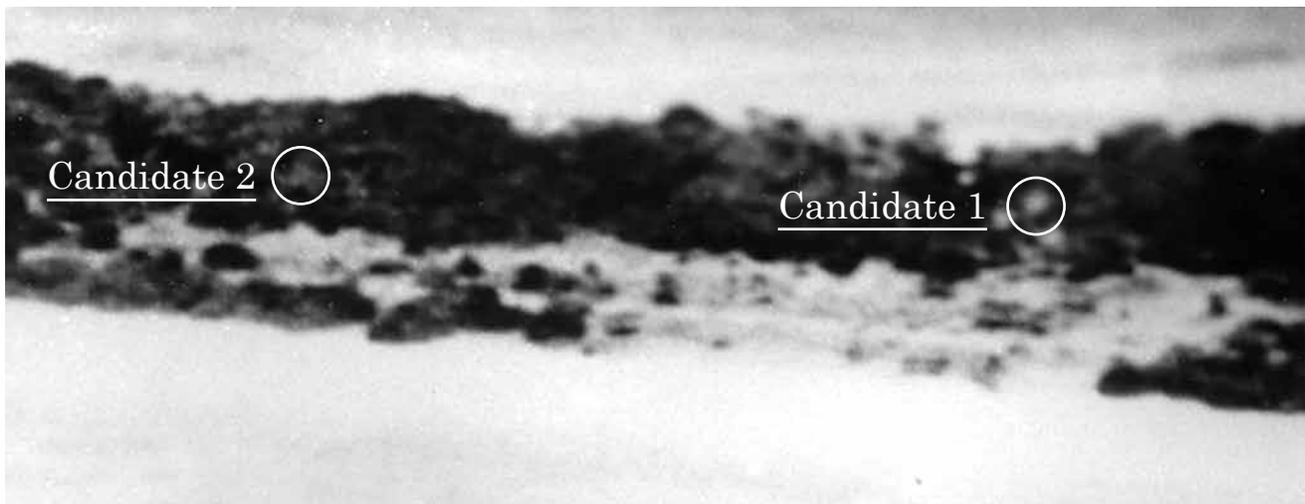
Veryl Fenlason—TIGHAR #0053CE

Russell Matthews—TIGHAR #0509CE

Diplomatic clearance was granted by the Republic of Kiribati and customs official Manikaa Teuatabo (the same representative who accompanied the 1991 expedition) became the eighth member of the team.

Summary Of Results

The expedition succeeded in locating and identifying the features seen in the enhanced aerial photographs. It was found that the objects in this particular location are not associated with the Earhart disappearance. Some searching also was done in the remains of the abandoned settlement at the atoll's west end. As on the two preceding expeditions, a number of interesting artifacts were found in this area and, with the permission of the Kiribati government representative, several objects were recovered for analysis. The expedition also gathered important logistical information about changes in the island environment since our last visit five years ago. Of particular note was the impact of storms on surviving cultural features in the village. Because the expedition did not make discoveries so dramatic as to present a security risk if their location is disclosed, the confidentiality which preceded the trip is no longer necessary.



The Expedition

The TIGHAR team departed Los Angeles on 27 January arriving in Fiji the next day. Mr. Teuatabo joined the team at Nadi, Fiji on 29 January and, after a short commuter flight to the Fijian island of Taveuni, the expedition took ship aboard M/V Matagi Princess II for the four day voyage to Nikumaroro.

The First Day

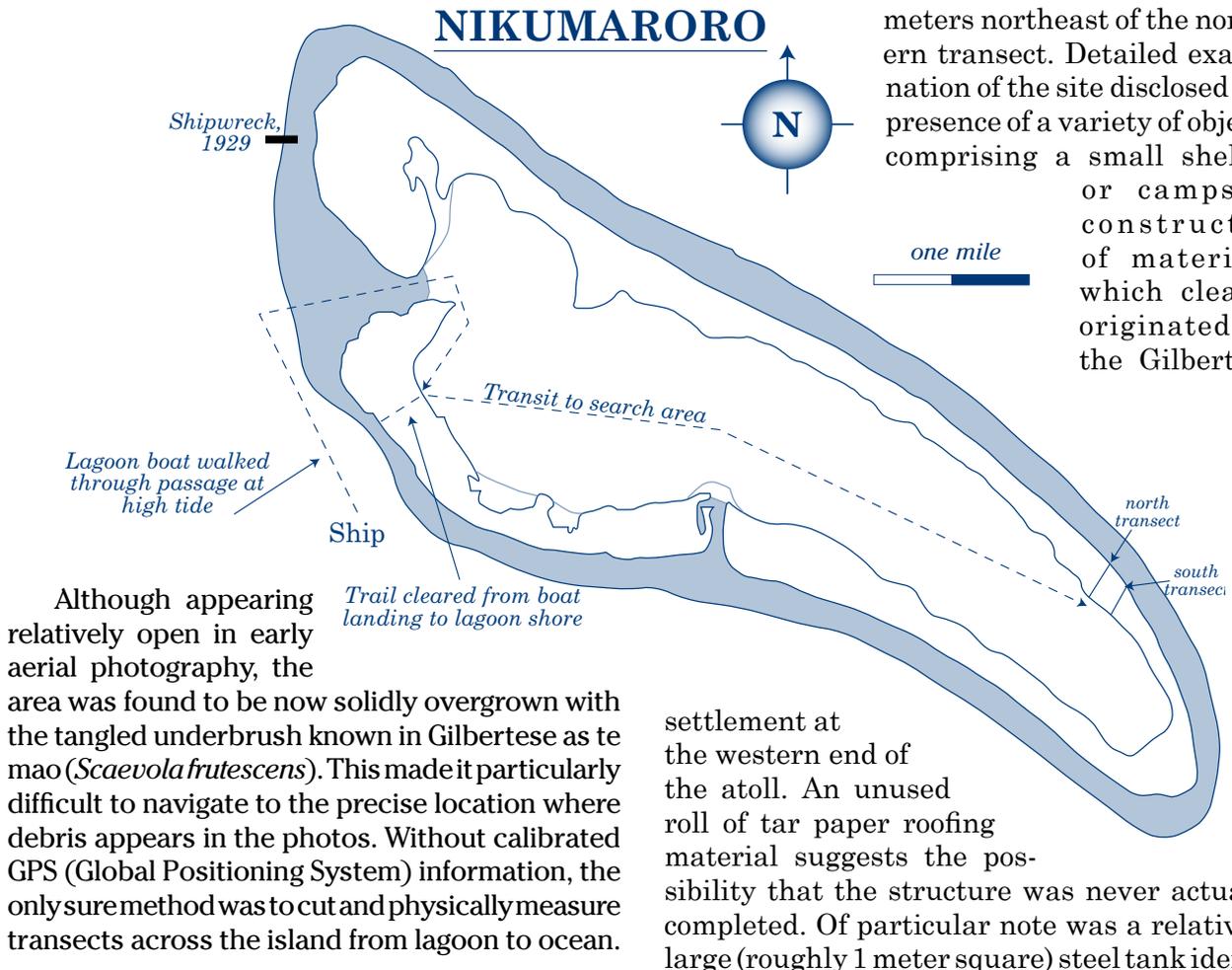
Early on the morning of 2 February the island came up on the ship's radar and by 0700 the first team members were ashore at the landing and clearing a trail across to the lagoon shore. By fortunate coincidence, the tide was high which permitted a launch to be walked through the main passage into the lagoon without delay. The lagoon boat was in place and the trail from the landing completed at 0835. The team then embarked for the trip down the lagoon, arriving at the search area at 0900.

Only by finding the area where the width of the land matched the scaled distance in the photo could we be certain that we were in the right place. This was a frustrating and labor-intensive procedure which involved many hours of machete work in temperatures averaging 106°F. By the end of the day two transects had been cut and measured thus making it possible to define the areas to be searched. The team departed the site at 1635 and was back aboard ship by 1800.

The Second Day

The team was on site at 0755 and began building and searching boxes of terrain. From a known point on a transect a line was cut 90° into the bush 10 meters in length. From this point, another 10 meter line was cut paralleling the original transect, then back again to form a box. Surveyor's flagging was used to create a physical boundary, thus permitting a thorough visual inspection of the boxed area despite the nearly impenetrable vegetation.

At 1012 cultural (man-made) debris was encountered in an area 38.2 meters northeast of the northern transect. Detailed examination of the site disclosed the presence of a variety of objects comprising a small shelter or campsite constructed of materials which clearly originated in the Gilbertese



cal to others seen in the abandoned village and which appears to have served as a cistern. An M-1 carbine shell casing found nearby testifies to the site having been visited by U.S. Coastguardsmen in 1944 or '45. It seems logical that this is the “water collection device” reported and sketched by USCG veteran Richard Evans.

The remains of a steel barrel or drum was found in a location which matches reflections from a large metallic object, designated “Candidate #1” in the 1941 photo.



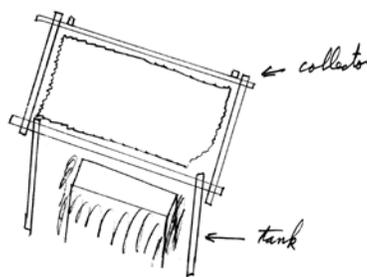
TIGHAR photo by P. Thrasher.

While part of the team examined the shelter site, others continued to progressively search designated sections of bush. By the end of the day no new cultural sites had been found but strips of vegetation-free coral had been encountered and mapped. These appeared to match in location and orientation, although not in overall dimensions, the “cleared” strips visible in the early aerial photography. All team members were back aboard ship by 1750.

The Third Day

Once more on-site by 0755, part of the team began the process of photographing, documenting and mapping the shelter site while the rest of the team took up the search for “Candidate #2.” Having resolved our on-the-ground location with relation to the early aerial photographs, it was a relatively simple matter to navigate to, box off, and examine the suspect area. An exhaustive search turned up no cultural debris. In the spot most closely matching that of Candidate

Astern sketch



#2, the team encountered a very old buka tree (*Pisonia grandis*)—the only one in that particular area and, in all prob-

ability, the anomaly seen in the photo.

At 1530 the work on this part of the island was judged to be completed and a decision was made to use the remainder of the day to correct an oversight from the Niku II expedition. The map location of the gravesite excavated in 1991, near which the remains of shoes believed to be those belonging to Earhart and Noonan were found, had never been accurately established. The team therefore relocated that site and measured its azimuth and distance from landmarks identifiable on the map. The site exhibited considerably more ground vegetation (specifically, networks of light vines) than had been present in 1991, and looked very much as it had when first noticed in 1989 during Niku I. A severely oxidized ferrous fitting with what appears to be a brass cap was collected near the site in the hope that it will provide some clue about the various types of activity the area has seen over the years. The team departed the area at 1635 and everyone was back aboard the ship an hour later.

The Fourth Day

With the need to begin the return voyage to Fiji that evening, this was to be the last day of work on the island. The team was ashore by 0700 and the decision was made to spend the available time in re-examining locations and features in the village where airplane debris had been found in the past. By 0807 the “carpenter’s shop” had been re-located along the shore of Taziman Passage. It was near this spot that Artifact 2-18, the “dado,” had been found in 1989. Although one wall and some shelving had been standing then, the site was now leveled by subsequent storm activity and identifiable only by the presence of massive objects (the iron

wheel and frame of a cart, a coil of heavy cable). Smaller artifacts were either swept inland or buried under up to 5cm of sand. While some of the team began a partial excavation of the carpenter's shop, others attempted to re-locate another site along the shoreline where a sheet of aircraft-grade aluminum, cataloged as Artifact 2-2, had been found in 1989. Bordered by poles set in the ground which were notched at the top to support cross beams, the site had been littered with glass bottles and other debris prompting the Niku I team to dub this site "Noonan's Tavern." Efforts to re-locate this site were, however, unsuccessful and it is feared that it has been virtually obliterated by storms.

At approximately 1030 the excavation of the carpenter's shop site produced two lengths of shielded electrical cable. On the end of each cable was a single-pin connector surrounded by a knurled tightening ring. The cables were very unlike the other objects which had been found during the excavation (mostly heavy ferrous tools and machine parts) and, while badly deteriorated, appeared to have most of their component parts intact. On-site evaluation was that these were consistent with cables and connectors for an American radio of less than 100 watts output. Because the island radio station had British equipment, and the U.S. Coast Guard station at the other end of the atoll would likely have had a communications radio of more than 100 watts, the cables were judged to be of sufficient interest to merit their collection for further analysis. They were recovered as Artifact 2-3-V-1 (TIGHAR project #2, expedition #3, Village site, object #1). Nothing further was collected from this site.

In the afternoon an effort was made to re-locate a former dwelling site where several aircraft parts were recovered in 1991. By 1340 a spot had been located which was suspected of being that same location. (Later mapping and comparison to 1991 Field Notes, however, established that identification to be incorrect.) The site is sufficiently far inland from the shore to show little or no sign of storm damage. A close examination of the ground surface revealed the presence of several small objects and scraps

of material apparently left over from projects of handiwork. Among these were items which appeared consistent with aircraft materials. These included:

- A roughly 6cm x 12cm (2.5 in. x 4.5 in.) sheet of uncolored transparent plastic 3mm (1/8 or .125 in.) in thickness from which rectangular pieces had been cut. A smaller shard of the same material found nearby fits a break in the bigger piece. Both pieces exhibit a slight but uniform arc over their surface and were apparently once part of a larger sheet. These were collected as Artifact 2-3-V-2. (See "Part #40552," p. 12.)
- A 15cm (6 in.) length of what appears to be thin-gauge high-grade stainless steel wire twisted together in a manner consistent with aircraft safety wire. This was collected as Artifact 2-3-V-3.
- A rectangular object 4.5cm x 4cm (1.75 in. x 1.5 in.) made of non-ferrous metal (lead?) and giving the appearance of being a cast cover plate with indentations in the back. The front features a circular logo with the word "STURDEE." This was collected as Artifact 2-3-V-4.
- A roughly 50cm x 30cm (1.5 ft. x 1 ft.) sheet of apparent stainless steel estimated to be as much as .060 in. in thickness from which rectangular pieces had been cut. Designated Artifact 2-3-V-5, this object was not collected but was left in situ.
- An electrical "cannon plug." This was collected as Artifact 2-3-V-6.
- A very small ferrous object, possibly a fuse holder, collected as Artifact 2-3-V-7.

Work on the island was concluded at 1600 and all were back aboard ship by 1620 at which time Mr. Teuatabo approved the export of the artifacts for research purposes. The return voyage to Suva, Fiji was accomplished in five days and, on February 10, 1996 the TIGHAR team returned by air to Los Angeles. Mr. Teuatabo returned by air to Tarawa on February 11, 1996.



Preliminary Findings

Investigation of Cleared Area

It is apparent that this area was naturally quite open in the late 1930s and that, sometime between April of 1939 and June of 1941, additional clearing occurred, probably through human intervention. The “shelter site” found and surveyed during the expedition may be the structure referenced in the following passage from P.B. Laxton’s article “Nikumaroro” published in the *Journal of the Polynesian Society* in 1951.

Turning the [southeastern] tip to return along the northern rim, narrow, thundering with surf driven by the north-east trade winds, the path ends in a house built for Gallagher on a strip of land cleared from lagoon to ocean beach so that the fresh winds blow easily through. Beyond this there is no path, save along the steeply sloping, sandy ocean beach.

Gerald B. Gallagher was the island’s only resident British administrator. He fulfilled his duties as Acting Officer-In-Charge, Phoenix Island Settlement Scheme from his headquarters on Nikumaroro from October of 1940 until his death from tuberculosis at age 29 in September of 1941. Laxton does not explain why a house should have been built for Gallagher at such a distance from the village but the reference to “fresh winds” may indicate that this was intended as a sort of sanatorium where he might find some relief from his respiratory affliction.

Although we would have obviously preferred an aircraft in the bush to a house at the shore, we were none the less encouraged by the project’s ability to spot genuine anomalous features in very old photographs and then find and identify them on the ground nearly sixty years later. We were also struck by how well the island’s underbrush can hide large objects from even a determined search. In 1991 a TIGHAR team had spent several days on this part of the island specifically searching for the reported “water-collection device” and found nothing. In 1996, with the advantage of having a specific

target visible in an aerial photograph, it took fully 76 man-hours of active search operations to find what the island had hidden. An intact Lockheed Electra would have been no easier.

The expedition accomplished its purpose of finding a reasonable explanation for the phenomena observed in the aerial photographs—with one exception. If the features visible in the 1938 photo are, indeed, trails or footpaths they present a lingering and disturbing question about who made them. However, unless additional information comes to light, further search operations in this location are not contemplated.

Village Survey

Once again, the abandoned village yielded interesting artifacts. Initial analytical work has yielded the following information on two of the objects recovered.

2-3-V-1 Cables

The shielded cables are consistent with those used on American aircraft radio receivers. Whether they meet military specifications or are more likely to have been in a civilian aircraft is still being researched. The connectors have been identified as products of the Howard P. Jones Company of Chicago, Illinois. Known as

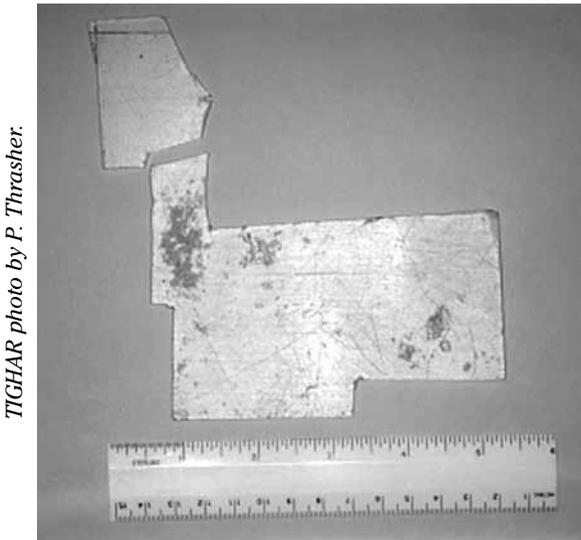


TIGHAR photo by P. Thrasher

“Part Number 101”, they were first produced in the mid-to-late 1930s (exact date not yet determined) and remained in use through World War II. This type of connector was used for certain Bendix, Western Electric, and Sperry receivers. Earhart used Bendix and Western Electric receivers. Further research is in progress.

2-3-V-2 Transparent Sheet

Compositional analysis of this material by the Winterthur Museum Analytical Laboratory has shown it to be polymethyl methacrylate. First marketed in Germany in 1927, polymethyl methacrylate first saw large scale production by Rohm & Haas and DuPont in the United States in 1936 under the trade name Plexiglas. In Britain it was produced by ICI, Ltd under the tradename Perspex. According to sources at Rohm & Haas, pre-war use of Plexiglas was limited to aviation and, in colors, for the manufacture of jukeboxes. During the war the material was, of course, widely used in aircraft.



Two aspects of the collected artifact provide clues to its origin. First, it is $\frac{1}{8}$ inch (.125) in thickness. Second, it has a uniform curvature which appears to be original to the sheet. Research to date has established that the thickness and curvature precisely match the specifications for the cabin windows of the Lockheed Model 10 at the time these windows were replaced in NR16020 (February 1937). Neither the thickness nor the curvature matches windows used in B-24 aircraft. (See “Part #40552,” p. 12, for a complete discussion of this artifact.)

Conclusions

1. Pending new evidence, further on-the-ground search operations along the island’s northeastern “windward” shoreline are not warranted.
2. There is no doubt that the inhabitants of the village at Nikumaroro used aircraft parts and materials for local decorative and utilitarian purposes. The extent of this activity, the source or sources of the parts, and the specific period during which this activity took place are not well understood. Information available at this time indicates that this activity was limited rather than common; that all of the aircraft parts used can be traced to two distinct sources; and that little or no such activity was taking place during the time covered by the resident British administrator Gerald B. Gallagher’s quarterly reports (October 1940 to March 1941).
3. It is known from the identification of part numbers that one of the source aircraft was a Consolidated B-24C or B-24D within a particular block of serial numbers encompassing some 1,653 individual aircraft. It is also known that no such airplane ever crashed at Nikumaroro. A “large four-engined” aircraft is reported to have crashed late in the war at Sydney Island (now Manra) some 200 miles to the east. This wreck is said to have been extensively used as a local source of metal for decorative objects. We know there was post-war traffic between Manra and Nikumaroro and former residents of Nikumaroro now living in the Solomon Islands identify the Manra wreck as the source of airplane material found on Nikumaroro. (See “Solomon Islands Expedition,” p. 14.)
4. A significant number, possibly as many as half, of the aircraft-related artifacts found in the village are not consistent with a B-24 nor any other known World War II aircraft. They are, instead, entirely consistent with archival documents describing Amelia Earhart’s Lockheed Electra. The nature and condition of the components suggests that they were removed from a relatively intact aircraft which was on land and standing on its landing gear.
5. Clearly, additional archaeological survey work in the village is warranted. Recent comparison of historical photographs of the village with areas searched on the three TIGHAR expeditions has pointed up several relatively untouched and potentially fruitful sectors.

6. The question of where the aircraft was, or is, remains. Because the B-24 parts were clearly imported from elsewhere, it is certainly possible that the same is true of the Electra parts. However, the wealth of archival documentation which supports Nikumaroro as the most likely site of the Earhart flight's end; the repeatedly corroborated anecdotal accounts which describe the discovery of the skeletons, clothing and shoes of man and a woman by the island's first settlers; and the well-demonstrated ability of the island's environment to conceal large objects for many years, mandate a thorough inspection of Nikumaroro's remaining unsearched regions before giving serious consideration to an alternative hypothesis.

7. Experience has shown the advantage of having specific targets to inspect, and the deployment of reliable remote-sensing technology over those areas of Nikumaroro's dense vegetation is a high priority. Exactly how this might be best accomplished is presently under investigation while preparations move forward toward the Niku III expedition in September 1996.

