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OFFICE MEMORANDUM

TO : THE RECORD

DATE: September 16, 1975

FROM : J. Mallin *JM*
SUBJECT : CHRISTMAS ISLAND SURVEY 9-16 AUGUST 1975
SYMBOL : J-DOT MS 672

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Professor Allyn Seymour, University of Washington; Dr. Mel Merritt, Sandia Laboratories; and I spent the period of 9 to 16 August 1975 on Christmas Island as guests of the Gilbert and Ellice Islands Development Authority (GEIDA). The purpose was to make a general survey, including radiological, of the island both for the GEIDA and ERDA. The island was used by the UK during 1957 and 1958 for the Grapple series of nuclear tests which included 7 air drops to the southwest of the island and 2 balloon supported events on the south end of the island. During 1962, the US conducted 25 events of which 24 were air drops and the other a Polaris delivered weapon, all to the west of the island as part of Operation Dominic. Subsequent to Dominic the UK maintained a regiment of Royal Engineers to stabilize and improve the testing facilities on the island. This effort was continued through 1964 at which time the facilities were put into the care of Atoll Plantations, Ltd. under a \$23,000 (Australian) per year maintenance contract which was continued until 1968.

Currently, Christmas Island is administered by the Gilbert and Ellice Islands Government. The islands are scheduled for internal self-government in 1976 and full independence in 1977. For this eventuality, the GEIDA was formed to better prepare the Gilbert and Ellice Islands and as a consequence, Christmas Island. Christmas is potentially a great asset to the Gilbert and Ellice Islanders; their islands are overpopulated, short of food, and their main source of income, guano, is about depleted. Christmas offers a large land mass, good climate, excellent fishing, a developed coconut plantation, and much potential for further growth. GEIDA has been actively attempting to develop that potential.

Our purpose in visiting the island was to make a radiological survey as part of the ERDA program in surveying past US test sites, e.g. the Eniwetok and Bikini surveys, and to learn the present status of the island which lies near one of the corners of the triangle in which the US would conduct atmospheric nuclear tests in the event of such need. Kingman Reef is the site designated for high-yield tests which currently

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are restricted to surface events for reasons of safety; Christmas lies only about 200 nautical miles to the south-east and would be of great concern in executing such events. Consequently, when tendered an invitation by the GEIDA we accepted it. The plan was to leave Honolulu at 0800 9 August on an Air Micronesia charter flight, stopping at Hilo to refuel, arriving at Christmas Island about noon; the charter would return to Christmas on 16 August to bring the party back to Honolulu. We were scheduled for a briefing on 8 August which turned out to be a discussion over coffee at the Ala Moana Hotel. We were to be guests of GEIDA with transportation and all amenities furnished at no charge. The aircraft to Christmas Island carried a large freezer, assorted freight, and 17 passengers. The passengers were: Manager and Deputy Manager of GEIDA, a Scot sea captain who served as head of fisheries for the government, Treasurer of the Gilbert and Ellice Island government, Dr. Cattell from Environmental Consultants, Inc. and 3 assistants, a captain from Capital Airlines, 2 engineers from the UK, a family of 3 Gilbertese, and the 3 of us. We were met by over 100 natives, processed through immigration and customs (they ran out of forms so the latter was nil), and after some delay and confusion taken to the residence of the head of fisheries. Some of the others were quartered with the manager of the plantation and the remainder at a guest house. These houses were 3 bedrooms, bath, kitchen, and living room; we were considered house guests. The houses were on either side of the District Commissioner's house on the west shore of the south end of the peninsula on which is located the village of London. (The Commissioner's house is the best on the island - a two-story structure well designed to take advantage of the winds and very luxuriously furnished by comparison.)

We found many changes on the island from our recollections of 1962. There are now three villages on the island with nearly 800 people in residence on renewable 2-year contracts. The District Commissioner and family are Ellice Islanders; there is one Fijian 2 or 3 Europeans, and the rest are Gilbertese. London and Poland have been rebuilt with frame construction replacing the previous picturesque native materials. The new village is Banana Wells, which is between Main Camp and the Cassidy airstrip. The houses, as are all buildings on the island, are prefab construction using 8 x 8 ft. panels which can be solid or have windows or doors; roofs are made with standard wood tresses using sheet aluminum for roofing. Combinations of the panels provide varied house designs including those of the house in which we were staying. Administrative buildings also used this construction material. The concept was laid out by the Royal Engineers.

Each of the villages is served by a water well which is a trench into the fresh water lens which underlies large parts of the island. The trench is covered by a gabled aluminum roof and pumped by one or two windmills. The wells for Poland and London are several miles from the village with a three-inch pipeline connecting elevated supply tanks at the well and village. The well at Banana is in the village; plans are being made to move this village to the Main Camp area to avoid contaminating the lens. The well water is used for washing; rain water collected from the roofs in tanks is used for cooking and for drinking after boiling. The UK engineers estimate that the water lens can supply 1.2 million gallons of water per day. (This, I doubt.) For the time being, however, the wells can supply sufficient water for all purposes with present population levels. Sewage is taken care of with septic tanks; each tank generally serves four houses and common latrines. GEIDA is contemplating ultimately replacing the septic tanks with a common sewer system as well as using salt water for some purposes, e.g., toilets.

Also planned for the Main Camp area are a 20-room hotel and a hospital, both to be built of concrete blocks and fully air-conditioned. The blocks are to be fabricated on the island. The hotel is expected to be completed by June 1976 to meet the schedule set for installation of a Japanese satellite tracking station since a main purpose of the hotel is to house the personnel operating the station. GEIDA also hopes to rent vehicles to those personnel as well.

A major concern of GEIDA is off-loading heavy equipment, e.g. the satellite tracking antenna from ship to shore. The water depth at the pier at London appears deep enough for a large barge, but the channel has filled with sediment precluding use of the pier except for shallow draft boats. They had no solution at the time we were there.

The Royal Engineers subsequent to 1962 built a 4-line pipeline from the pier to the airstrip with 20 large fuel tanks along the ocean shore just outside London. The pipelines are of 6 in. aluminum pipe with welded joints; the tank capacity is of the order of a million gallons. They apparently planned to bring tankers to the pier to fill the tanks. We were told the tanks were full when the troops left in 1964. The old tanks (13) in London appear in good condition but do not tie into the new system.

There are elementary schools at Poland and at London. They are taught by Gilbertese in Gilbertese. The school at London has about 120 pupils; 30 to 40 pupils are going on to secondary school in Tarawa. The return of students sent to secondary schools back to Christmas upon completion has been good. The school building at London appears to have been the headquarters building of the UK forces.

The coconut plantation is managed by Atoll Plantations, Ltd. which controls all such operations for the Gilbert and Ellice Islands government which in turn owns and controls the island. The manager of the company is a European under contract; currently, it is a Scotsman. All other employees are Gilbertese also under contract. Planting, maintaining, and harvesting of the copra are the main occupations of the company, but it also investigates better methods for growing and managing the coconut groves. Since 1962, much more of the area has been planted to coconuts; there remain some area in the north which is probably useful but test plots are also being tried at the southern end as well. The coconuts are gathered weekly from the groves; pay is on a piecework basis. A man (including wife and children) has a norm of 300 units per day though some can do 1000. Upon collection of the fallen coconuts they are sliced in two with a heavy straight knife, the copra sliced out with the end of the knife, and the husk and shell are left in the grove. The harvested copra is dried in wheeled racks on rails so that the copra can be rolled under a shed to protect it from inclement weather. Annual harvest has been 1000 to 1600 tons. Twice per year the copra is picked up by a freighter (of Scot registry) for shipment to the UK. It is mainly used to make cooking oil and oleomargarine.

We looked for other plants which could be used by the islanders for food. There are a few breadfruit, papaya and pandanus trees generally without fruit though they seem to do well once established. At one house at Banana, we saw a pit into the water lens which had taro and at one house in London, I noted a squash vine. Tomatoes were growing at the house of the head of fisheries. Except for a few instances of individual effort, there seems to be no plan to investigate ways of growing food other than coconuts. There are a few pigs and chickens on the island which are fed coconuts (grated for the chickens) and table scraps. The natives mostly eat fish and rice. The chickens, pigs and the large crayfish (langouste) found on the reef are used for feasts such as after a wedding.

The GEIDA has contracted with Enivironmental Consultants Inc. to investigate the feasibility of establishing a brine shrimp fishery for the island. Some four years ago a gallon of brine shrimp eggs were placed in the Isles Lagoon. Eggs have since been blown into other ponds by being caught up in the algal foam and thence carried across the land area. Brine Shrimp prefer a salinity of about 120 ppm (sea water is about 35 ppm); the ponds run from 40 to over 200 ppm so there has been trenching and damming of the ponds and the main lagoon to change water levels between ponds to better distribute the water. Influx to the ponds is from underwater springs and rain. Yet to be solved completely is a method for collecting the eggs; some eggs are, however, on the market to test their sales capability. The market is expected to be commercial fish farms as well as tropical fish fanciers (which is the current

primary market). San Francisco Bay, Great Salt Lake and a few salt water lakes in the mid-east and Africa are the main competitors. The large number of ponds and cheap labor are expected to make Christmas a viable competitor. The fishery is expected to be commercial in 1976; the industry will be managed by a European and use natives for all other positions. The product is expected to be vacuum frozen eggs which keep for years. For their operations ECI has a laboratory/living building plus work shed at the junction of Carver Way and the Al road at the southern end of the Bay of Wrecks. They have been maintaining one person at the site. They now have communication, including teletype, to Hawaii. They expect to transfer their efforts in 1976 to the new manager retaining a consulting role.

During the period 1962-1964, the UK maintained a regiment of engineers to upgrade facilities on the island. This included installation of the petroleum storage plant noted above, tropicalizing vehicles and other equipment for storage in warehouses, rebuilding their Port Camp area, sealing buildings in Main Camp and JOC, that is, generally putting the testing facilities in a standby situation. From 1964 to 1968 the maintenance contract with the Atoll Plantations, Ltd. kept the material in good condition; after termination of the contract things were left alone and remained in fair condition until 1971 when the District Commissioner, a European at that time, made the decision to let the natives use what material they wished of the stores. As a result, buildings were scavenged for building material, mostly roofing; vehicles were filled with aviation gas and driven up and down the island burning up the engines after which they were pushed over the reef; wrappings on the materiel were removed to ascertain the contents and mostly discarded; reefers were opened and food dumped in the ocean, etc. The general result was to destroy everything which was stored and to turn the Main Camp and the JOC into rubble. Buildings in these areas are nearly unrecognizable as to their original purpose. Of the test-related facilities of the island, all that remains of use are the two airstrips, both in good condition, and the road system; scaevola is encroaching upon the roads, however, and unless a maintenance program is established soon it will be breaking through the paving. The UK built fuel system too is in nearly usable condition; some short sections of the line to the airstrip will require replacement as well as at the pier. The entrance channel to the pier will require dredging before unloading of ships may be accomplished readily.

For the future it is expected there will be several thousand Gilbertese living on the island, the coconut plantation operation will spread over most of the island, a brine shrimp industry will be in operation, there will be a satellite tracking station for the Japanese on the north end of the island,

there will be a hotel and hospital at the Main Camp area, the village of Banana will be moved to the Main Camp area and several other villages are to be expected, at least one at the south end possibly near A-Site. It is also expected that there will be a number of fishing boats to supply fish to the people on Christmas and also the Gilberts; some of these boats would be for rent by sportsmen. In 1976 it is expected Capitol Airlines will have a scheduled weekly run to the island making the circuit Honolulu, Christmas, Tarawa, Honolulu one week and Honolulu, Tarawa, Christmas, Honolulu the next week, thus supplying fortnightly service between Christmas and the Gilbert Islands. This general development is expected to proceed rapidly during 1976 and 1976 and be well along by 1977 when they expect to attain their independence.

JM/gc

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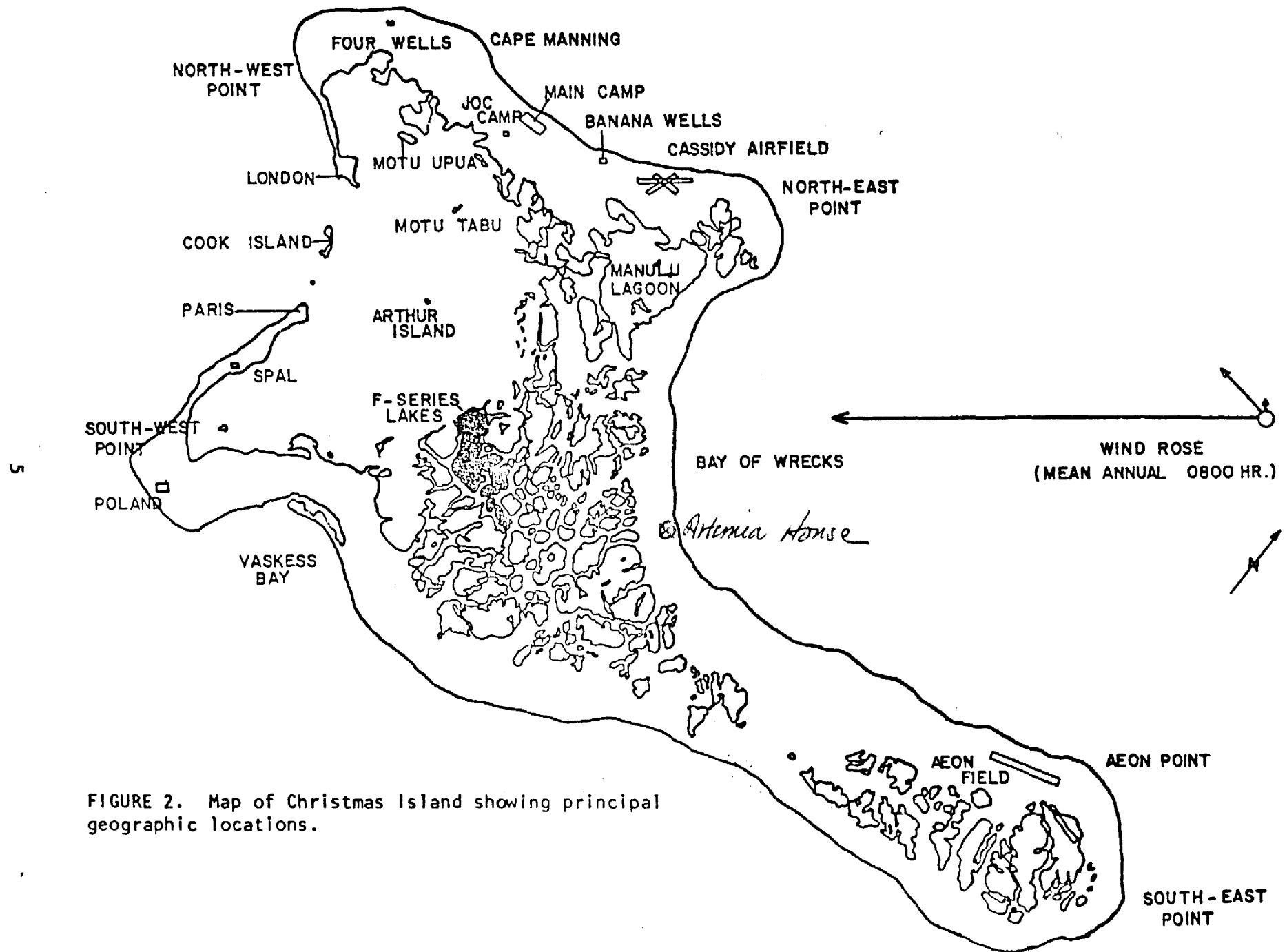


FIGURE 2. Map of Christmas Island showing principal geographic locations.