

More Reasons Why a New Base Must Not/Cannot Be Built at Henoko, Okinawa

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Translated by C. Douglas Lummis

An unofficial translation by C. Douglas Lummis of excerpts from Chapter 5 of *Henoko ni kichi wa tsukurenai (A Base Cannot Be Built at Henoko)* by Yamashiro Hiroji and Kitaueda Tsuyoshi (Iwanami Booklet No. 987, 2018). Comments and words added by the translator are placed in square brackets. Three dots indicate sections left out. The purpose of translating just this section is to show that the engineering difficulties faced by the Henoko base project are not the inventions/exaggerations of anti-base activists, but are based on hard scientific data. The data concerning the probable earthquake fault is the result of research carried out by seismologists; the data indicating height limit violations comes from the Okinawa Defense Bureau and has been supported by surveys carried out by skilled surveyors; the tests that produced the N-zero result for part of the sea bottom were also carried out by the Defense Bureau. CDL



Protesters oppose construction of a new

base at Henoko and the destruction of Oura Bay

Earthquake Danger

It has been pointed out that there are active earthquake faults directly beneath Oura Bay.

In October, 2000 the Japanese Defense Agency [later upgraded to Ministry] held a meeting on the proposed replacement facility for MCAS Futenma. A graph depicting the soil stratification under the proposed site was presented, which showed a sunken area of approximately 60 meters in depth. On the graph was the comment, "This could have been caused by an earthquake fault." Ryukyu University Honorary Professor Kato Yuzo and others have also stated that this sunken area can be assumed to have been caused by an earthquake fault.

Beneath Henoko's shoreline area there extend the Henoko Fault and the Soku Fault. In *The Geology of Nago and Yanbaru* (Nago Museum Publications) these two faults are categorized as "active", and in *Japan's Active Faults* (Tokyo University) the lineaments (surface formations that indicate active faults beneath) are categorized as having a certainty level of III [indicating that an active fault is "possible"] . The extensions of these faults under Oura Bay correspond with the sunken area shown in the

Defense Agency's graph.

The Japanese Government's response to this is, "As there is no mention in the existing literature of active earthquake faults in the Henoko area, it has not been established that there are such faults. Therefore the safety of the sea bottom in the Henoko coastal area can be considered established." (Underlining added by authors)

At a meeting held in December 2017 between Defense Ministry officials and environmental group members, it was revealed that the government's "existing literature" consisted of the "Active Fault Data Base" (Sangyo Gijutsu Sogo Kenkyujo) and the "Active Fault Detailed Digital Map" (Tokyo University). Neither of these sources states positively that these faults do not exist.

But this is not a matter to be settled by reference to "the existing literature". The Defense Bureau [the Okinawa branch of the Defense Ministry] has been testing the sea bottom with boring equipment almost daily since 2014. If the Ministry wants to deny the existence of earthquake faults it has the responsibility to give a scientific explanation using the data from its boring and sonar tests.

Osozawa Soichi, lecturer at Tohoku University and author of the above-mentioned *Geology of Nago and Yanbaru*, after studying all available data from geological surveys and sonar tests, has stated, "The valley-shaped depression at the bottom of Oura Bay was caused by the Henoko Fault. This fault has been very active from 20,000 years ago, and is extremely dangerous. (Quoted in Governor Onaga's message explaining his reasons for revoking the reclamation permit).

That one does not build a military base, with all its fuels, explosives and dangerous chemicals over an earthquake fault, should go without saying. An earthquake directly beneath it, or a resulting tsunami, could result in unimaginable

disaster and environmental destruction. This calls into question the basic conditions for choosing that location for the new base. That was one of the reasons Governor Onaga Takeshi gave for revoking the reclamation permit.

Mayonnaise Sea Bottom

In March 2018, in response to a request to the Defense Bureau by the authors for copies of public documents, two documents were made available to the public for the first time. These were reports on the soil testing that has been going on since 2014: "Schwab (H24) Soil Report" and "Schwab (H25) Soil Report" [Camp Schwab is the name of the already existing base where the new air facility is to be built]. The information they contained was shocking.

In Oura Bay, in the area where a caisson seawall is to be built, the sea bottom at a depth of thirty meters is the surface of a 40 meter-thick stratum made up almost entirely of material with the ultra-soft N-value of zero. . . . These documents were prepared in March 2016, but were not revealed to the public for two years.

N-value is the measurement used in the Standard Penetration Test (SPT). In this test, a tube used for boring soil samples is lowered vertically to the sea bottom. A 140-pound hammer is dropped on it from a height of 30 inches, and the number of blows required to drive it 12 inches into the soil is the N-value: the higher the number, the firmer the ground. Large structures require N-values of over 50. The N-value of zero means no blows were required: the tube sank of its own weight. According to Nihon University's Kamao Shoji, this amounts to the consistency of mayonnaise.

On this location 38 caissons are to be placed. The larger of these will weigh more than 7000 [metric] tons. The riprap stones will weigh as

much as 200 km. each. Placed on a sea bottom with an N-value of zero, they will of course sink the 40 meters down to the bottom of that layer of slime. In short, the present construction plan using caissons and riprap stones is impossible at that location.

As these reports state and as is confirmed by earlier reports of the soil tests, this result was entirely unanticipated by the Defense Bureau. The original plan for building a caisson seawall was based on the belief that the sea bottom consisted of “a 15-meter thick layer of alluvial soil (sand) with an N-value of 11”, and that “the sea bottom is mainly sand and gravel and there is no evidence of any soft clay that could sink under pressure over time.” (“Outline of Construction Plan”, in the Defense Bureau’s original September, 2014 application for a reclamation permit) The conditions on which the original construction plan was based were entirely mistaken, and a new plan is needed.

The report referred to above concludes that a careful study is needed of the stability of the construction with regard to the possibility of the foundation sinking under pressure or of liquefaction occurring [in the event of earthquake].

A comprehensive improvement of the sea bottom and a fundamental redesigning of the plan for a caisson seawall is needed [caissons are massive blocks of concrete, which would immediately sink out of sight if placed on the mayonnaise-like sea bottom].

One way to improve the sea bottom would be the Sand Compaction Pile method, using massive amounts of sand. But given the depth of the bay, this would be an extremely difficult operation, hugely expensive and requiring much time. But the problem is not only whether, from an engineering standpoint, the operation would be possible. To carry out such a project would be to deliver the death blow to the precious environment of Oura Bay.

And the problem is not only the foundation for the caisson seawall. According to the same report, in the area to be enclosed by the seawall and reclaimed, there are wide sections where the bottom soil is soft up to a depth of 46 meters. So it seems that not only the area under the seawall, but also in the area to be enclosed by the seawall, there are places where the sea bottom will need to be improved. . . .

Improving the sea bottom and altering the structure of the caissons would amount to a change in the “Construction Plan” as stated in the reclamation permit. In accordance with the law pertaining to reclamation of public lands, this would require a new permit from the Governor. If the Governor refused to issue this permit, that would bring construction to a halt.

To this the Government has responded, “With regard to the firmness of the sea bottom, in addition to the Standard Penetration Tests, which are continuing, boring tests and laboratory examinations of soil samples are taking place. We are not yet at a stage where we can make a correct judgment of the firmness of the soil”. (At a session of the Lower House Defense Committee, March 3, 2018) If these tests confirm that the sea bottom is soft, the Government will need to apply to the Governor for a permit to change the construction plan, which would put the fate of the project in the Governor’s hands. We can expect the Government will continue to evade the issue by claiming that testing is “still in progress” - at least until the coming gubernatorial election. [This was written before the November, 2018 election, when the Government still had hope of electing the LDP candidate as governor of Okinawa, which would presumably have solved its permit problem. That not having happened, the permit problem remains.]

Height Limits

In its April 9, 2018 edition, *The Okinawa Times* revealed that many structures near the new base's construction site violate the height limits required by the US Department of Defense. The regulations for planning and constructing military airports are set out in the DOD's *United Facilities Criteria* (UFC). According to this document, within a 7500 foot radius from the airstrip there must be no structure with a height exceeding 150 feet above the height of the tarmac. The new tarmac is planned to be just over 29 feet above sea level, so the height limit for that area should be just over 179 feet above sea level. However the Okinawa branch of the National Institute of Technology, the Kube Elementary and Middle School, a large part of the townships of Henoko and Toyohara, and a large number of telegraph and electrical transmission towers exceed that limit.

After these facts were made public, the issue was taken up in the National Diet. The Government's repeated answers were, "After discussions with the American side, we are making this an exception", and "the US and Japanese sides agree that the flight paths for takeoff and landing will be over the water and not over residential areas." However as early as 2016 the Defense Bureau notified both Okinawa Electric and the communications companies [but no one else] that "it will be necessary to remove all structures that exceed height limits". (Letter to Okinawa Electric, August 12, 2015) This contradicts the explanation given in the Diet.

Moreover, it is normal in Okinawa for US military aircraft not to fly only in flight paths. In the section on environmental protection attached to the Defense Bureau's request to the Prefecture for a reclamation permit, is the sentence, "For reasons of weather, directions

from an air traffic controller, safety, the specialized judgment of a pilot or other operational needs, aircraft will sometimes fly outside of established flight paths."

In the original plan for an offshore civil-military airport, the distance to Henoko township was 2.2 kilometers, so there was no height limit problem. Then in 2016 the Government replaced this with the present plan for a V-shaped airstrip on the coast. With that decision, the plan came into conflict with height regulations, but to this day the Government has provided no explanation to the people affected [that is, people living and working in buildings that violate height limits]. Moreover, requests to the government to state clearly which structures exceed the height limits and by how much have gone unanswered.

In this situation in June 2018 the All-Okinawa Kaigi had a survey carried out in which the height above sea level of the various structures was measured. The fact that the National Institute of Technology exceeds the height limits had been widely publicized, but as a result of this survey it was confirmed that not only Kube Elementary and Middle School, Kube Post Office and Toyohara Public Hall, but also in Henoko and Toyohara 75 residences and shops, four condominium buildings (with a total of 142 units) exceed the height limits. The Technical School has a student-faculty-staff population of 901 people; Kube Elementary and Middle School has an enrollment of 234 children (as of 2018). The Government's concern with transmission towers and unconcern with the safety of local people reveals an impermissible double standard.

In his statement explaining his cancellation of the reclamation permit, Governor Onaga Takeshi also gave this as one of the reasons for his action.

Yamashiro Hiroji is the Chairman of the Okinawa Peace Center, and one of the leaders of

the daily sit-in at the Henoko construction site.

Kitaueda Tsuyoshi is a retired civil engineer, whose technical skills have made a great contribution to the movement opposing the base.

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