NA114/A12/A9
ON6-6/CAE/MK
Serial: 002

SECRET

U. S. NAVAL AIR STATION
NAVY NUMBER 27 (Two Seven)
c/o FLEET POST OFFICE
SAN FRANCISCO, CALIFORNIA

25 January 1945

From: Commanding Officer.
To: Chief of Naval Operations.

Subj: Submission of Unit History.

Ref: (a) Aviation Circular ltr. #74-44, Op-33-J-6 JEJ Serial 356333, dated 25 July 1944.
(b) Manual for Historical Officers, Nav. Aer. 00-25Q-26.

1. In accordance with existing instructions, enclosure is forwarded herewith.

2. Subject history is delayed due to late receipt of Reference (b) on this station.

F. L. HAYNES

RECEIVED 3-0 FILES
33 ROOM 2055
15 MAR 1945
NA114
3126

Encl: Historical Report.

A

CHRONOLOGY

17 September 1942. The Office of Hawaiian Air Bases at Pearl Harbor by contract instructed Mr. R. M. Towill of Honolulu to make a topographic survey on the site of the proposed Naval Air Station, Kahului.

3 November 1942. The firm of Holmes and Narver was appointed Architect-Engineer for the Kahului Naval Air Station on the Island of Maui. A flight was made to view the site.

4 November 1942. Mr. Towill was instructed to furnish topographic information to Holmes and Narver.

5 November 1942. A survey party flew over the job for reconnaissance.

7 November 1942. The engineering force of Holmes and Narver proceeded to Kahului.

12 November 1942. Office quarters of Holmes and Narver were sufficiently completed for the drafting work to start.

15 November 1942. Field equipment arrived by barge.

16 November 1942. Field work was begun at noon. [1]

1. Completion Report for Naval Air Station, Kahului, Maui, T.H. Holmes and Narver, Industrial and Architectural Engineers, 639 South Spring Street, Los Angeles, California. U. S. Navy Contract NOy-5854. April 28, 1943. (Variously paged.)

15 March 1943. Naval Air Station, Kahului, placed in commission under command of Commander Phil LeRoy Haynes. [1]

12 May 1943. At 0800 the Marine Guard took over the guard duties.[2]

1 September 1943. CASU 32 under Lieutenant-Commander M. E. Selby, U.S.N., was commissioned and facilities for the carrier groups established.[3]

20 September 1943. "Operations were officially begun by the arrival and landing of a JRF piloted by the Commanding Officer, Naval Air Station, Kahului, at 11:30, followed immediately by nine SBDs and one F6F aircraft of Composite Squadron 23 under command of Senior Naval Aviator Present, with personnel and gear on hand for duty."[4]

1. Log, Naval Air Station, Kahului, March 1943.

2. Log, Naval Air Station, Kahului, May 1943.

3. War Diary, Naval Air Station, Kahului, 10 December 1943. NA114/A12-1/A16-3 Serial 033.

4. War Diary, Naval Air Station, Kahului, 12 October 1943. NA114/A12-1/A16-3 Serial 033.

II

NARRATIVE

Work of Civilian Contractor

In a contract dated 17 September 1942 the office of Hawaiian Air Bases, Fourteenth Naval District, Pearl Harbor, instructed Mr. R. M. Towill of Honolulu to make a topographic survey on the projected site of Naval Air Station, Kahului, Maui, T. H. Word was received at Pearl Harbor on 3 November 1942 that the firm of Holmes and Narver was to act as Architect-Engineer for the new station. On that day a flight was made over the site and on 5 November 1942 a survey party was flown to the job. In a conference at Pearl Harbor held 4 November 1942 Mr. Towill was instructed to present topographic information to Holmes and Narver and the latter firm was instructed to proceed with topographical work not accomplished by Mr. Towill. The entire engineering force of Holmes and Narver arrived at Kahului on 7 November 1942 and by 12 November 1942 the office quarters were completed sufficiently for the drafting force to start work on the design of the station.

Field equipment arrived by barge on 15 November 1942 and was delivered to the office 16 November 1942. Field work began at noon, 16 November 1942 and continued with full personnel until 11 February 1943. By 11 March 1943 all standard drawings for

the construction of the station were finished.

> "Reduction of forces due to completion of work was started on 31 March 1943, when 15 men were released to return to the mainland. Eight more men from this department left 15 April 1943, and the remainder are expected to leave around April 28, 1943."

The project site was indicated to the firm of Holmes and Narver by the assistant to the project manager, Hawaiian Air Bases. It consisted of thirteen hundred acres of gently rolling terrain adjacent to the northerly shore of the Island of Maui between Kahului and Spreckelsville. Approximately half of the area was, on the arrival of the Architect-Engineer, in growing sugar cane and the remainder was a dense growth of Kiawe trees.

> "The site, having been previously determined, it was necessary to ascertain the direction of the runway which would best suit take-off and landing requirements in all seasons of the year. Only a few months' records of wind direction and velocity at the site were available and by comparison with all-year records taken at Kaneohe Bay fairly accurate averages were obtained. Trade winds from the north-easterly direction predominate, but occasional strong Kona winds from the south have to be taken into account...it was ascertained that the trade winds are deflected southward in passing between Mt. Haleakala and the west Maui mountains and that the average direction is to a point 35 degrees east of north. Navy Bureau of Aeronautics records taken at the site, supplemented by readings from a wind direction base set up by Holmes and Narver closely confirmed 35 degrees east of north would provide the best all-year angle."

Due north and south was decided upon for the direction of the secondary runway and provision was made for the third possible runway more nearly east and west, if such were found

necessary. Since rock comes very near to the surface near the intersection of the main runways, studies were made to locate the runways so as to involve the least excavation and fill, especially in the rock sector, and to obtain minimum straight grades. As finally located the maximum grade for the NE-SW runway is 0.875% and for the N-S runway, 1.098%. Grades were also carefully adjusted to provide for a third runway and for the extention of the seven thousand-foot runway to an ultimate of ten thousand in length. Including the one hundred-foot taxiway the width of each of the main runways is six hundred feet and the maximum transverse grade is 1.0%.

Grading of the runways was designed under the limitations which allowed very little lattitude for adapting a large amount of earth moving to relative good or bad ground conditions. These were:

1. The possibility that the runway would be extended to ten thousand feet in length.

2. The maximum gradient of 2% allowed.

3. That a six-foot man on any part of the runway could see another six-foot man anywhere on the same runway, and

4. That the fixed direction of the runways be based on the prevailing wind.

Soil conditions at the site were found to be exceptionally favorable as far as the drainage is concerned. Sub-grade drainage was found not to be necessary, since storm water quickly subsided

to approximate sea level through the porous formation. Even where surface water temporarily formed puddles, mud was not formed, nor did deep floods develop under traffic. The use of cinders from a near-by cone planned for sub-grade purposes and suitable rock were also found in the vicinity. Three inches of asphaltic concrete for runways and two inches of the same for the more important roads was agreed upon. For strict economy an oil stabilized cinder surfacing was indicated for the lesser travelled streets.

The work of the Engineer-Architect for this project included mapping, testing designs for workability, computation, drafting, plans, surveys for control, and special surveys. Development of certain areas was delayed due to the fact that areas seven and eight were not cleared of cane although lines were established through the cane and preliminary road lay-out made. The entire west revetment area was being used as a lumber storage yard and no layout stakes could be placed there, the northern portion of the two-twenty runway was not completely cleared of trees, the northern portion of both runway locations was in ponded water, and much of the initial layout was destroyed by movements of trucks, tractors and other construction equipment.

The drainage problem in the area is not great. For a brief time after each rain water stands in pools at a few points, but

quickly disappears due to the porous nature of the soil. Extensive paving, however, concentrates the run-off to the extent requiring the provision of storm drains, which, with the necessary ditches and drainage structures, were designed. For the narrower taxiways and roads it was thought sufficient merely to direct the water away from the pavements to make certain that no part of the travelled way would be even temporarily covered with water.

Holmes and Narver recommended that the water supply be obtained from two sources, either one of which they thought adequate to supply the entire domestic demand in any emergency, the Wailuku-Kahului Water system, and the water from the tail race of the Haheka hydro-electric power plant taken from the Lowrie ditch. The Architect-Engineers were directed to design the electrical distribution at the station along the general lines as that designed by the public works section of the Puunene station, but, since it was found that the island's generating facilities had sufficient capacity and were so interconnected as to guarantee a maximum of service continuity, the Architect-Engineers recommended that a stand-by power plant was not warranted. Because of the unfavorable underlying soil conditions and because of the expense and the required use of quantities of heavy lumber and reinforced concrete in the

building, it was recommended that septic tanks and cesspools be not built, but that a sewer system be constructed, draining to the low area, there to be elevated by a pumping station to a treatment plant to be built largely above the ground. A treatment plant to be built without the use of critical materials was preferred to the discharge of the sewerage into the ocean where it would soon become a nuisance along the shoreline. Although the plant was located close to the building area, reasonable precaution was taken to control odors.

For paving the type of soil encountered on the site was very good. A large percentage of disentegrated igneous rock, considerable coral sand, and sufficient amount of colloidal matter to encourage firm compaction were found. Roads on the natural soil were found not to rut deeply under heavy trucking, even in wet weather. Holmes and Narver recommended an asphalt surfacing since it lends itself to inexpensive and quick repair. They recommended that runway filled areas be made by adding not more than six inches at a time and with each layer thoroughly compacted. Other recommendations were that a density sub-grade sufficient to sustain a load of 60 pounds per square inch should be obtained for each and every layer of fill, that for both cuts and fills on runways the sub-grade be brought to nine inches below the finished surface, and that six inches of well compacted cinders be mixed with just sufficient dirt to form the densest composition.

Considerable work was done on the bomb-sight vault and repair shop, Marine barracks, telephone building, officers' mess, BOQs and dispensary. Mechanical plans that were originated and fully developed by this office were those for the aviation gasoline storage distribution and automobile service stations.

Of the total field forces, six percent were disabled by accident or illness. The largest contributing factor to such loss of working time was infections from injury caused by the Kiawe thorns which appeared to have a poisonous reaction. Workers with cuts and wounds due to injury were hospitalized immediately and none became serious. One man, however, developed a serious neurosis and after treatment in Honolulu was returned to the mainland. Six hundred and three man-hours were lost during the project due to illness and injury.

The size of the projected station as it was concieved by those who did the preliminary work is indicated by the following statistics:

Personnel provisions - Officers and men	2,667
Number of buildings and utilities	166
Length of NE-SW runway	7,000 feet
Length of North-South runway	5,000 feet
Capacity of bomber revetments	12 planes
Capacity of fighter revetments	61 planes
Water storage capacity	1,550,000 gallons
Gasoline storage capacity	525,000 gallons
Excavation	1,525,400 cubic yards
Fill	1,497,800 cubic yards
Length of roads	12.24 miles

Other paved areas	409,000 square yards
Length of water mains	85,300 feet
Length of sewer lines	34,300 feet
Length of primary electric circuits	43,480 feet
Length of secondary electric circuits	14,760 feet
Number of standard drawings made	334
Number of secondary drawings and sketches	115 [1]

1. For the material in the Narrative section to this point, see Completion Report for Naval Air Station, Kahului, Maui, T. H., Holmes and Narver. (Variously paged.)