

63-41



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AS AD NO. 40716

407164

**REPORT OF RESULTS**  
**PROJECT AF 61-2**  
**EASTERN PACIFIC SURVEY**

**VOL. III**



**15 JUNE 1963**

**1370TH PHOTO-MAPPING WING**  
**AIR PHOTOGRAPHIC & CHARTING SERVICE (MATS)**

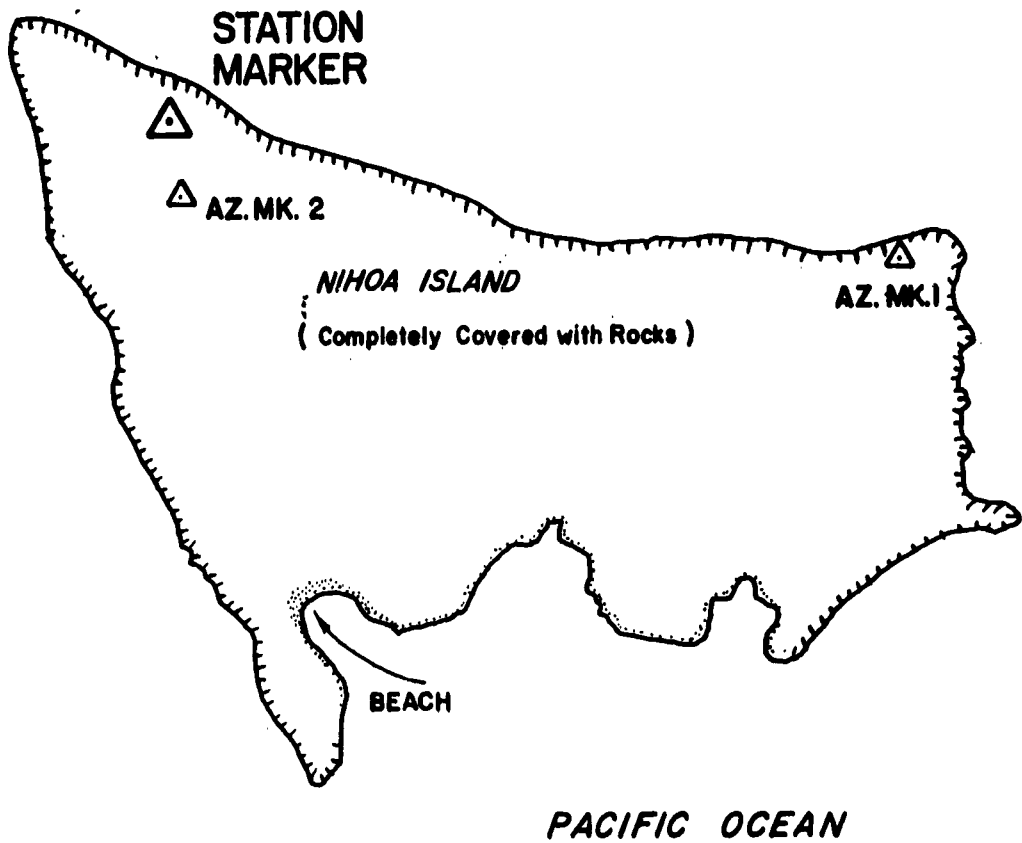
JUN 20  
1963



NIHOA (9)

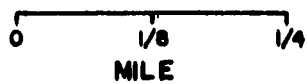
currents around the island. The helicopter landing facilities are best at the west end of the flat area in the northwest part of the island. The sheer bluff facings of the island cause wind turbulence for helicopter operations under almost all conditions. Helicopter operations become unsafe when winds exceed 20 knots.

# AREA SKETCH NIHOA (9)

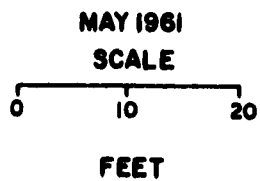
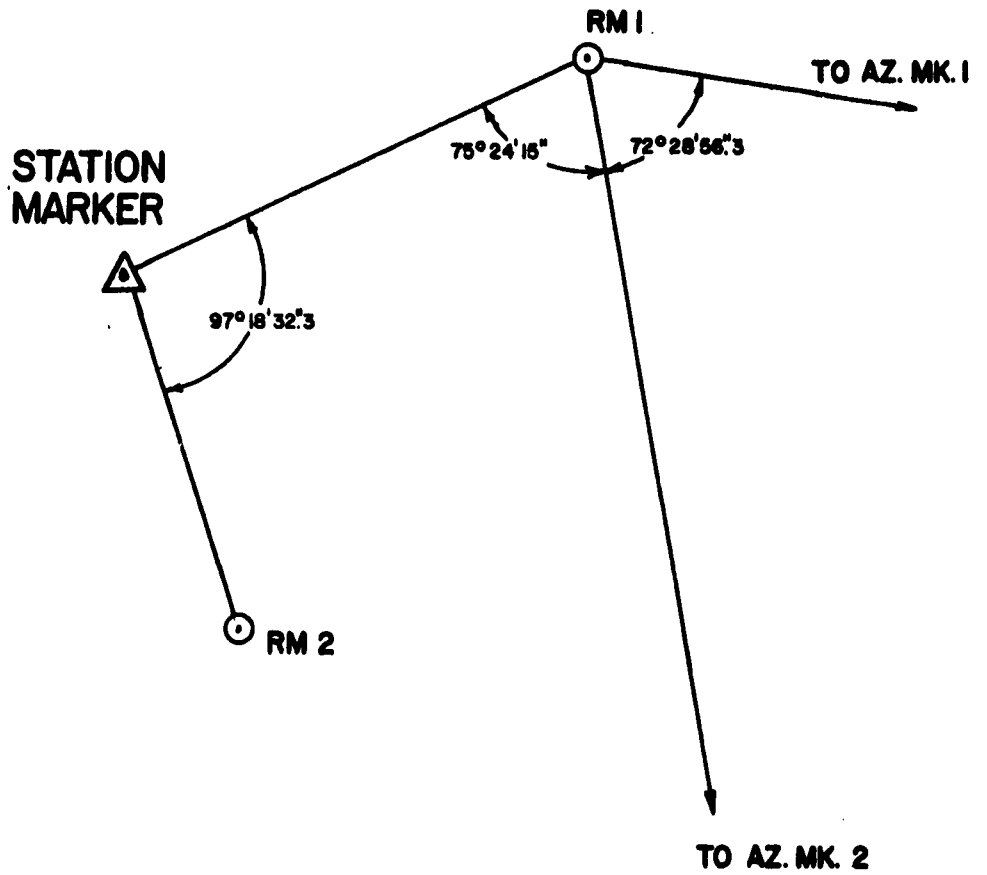


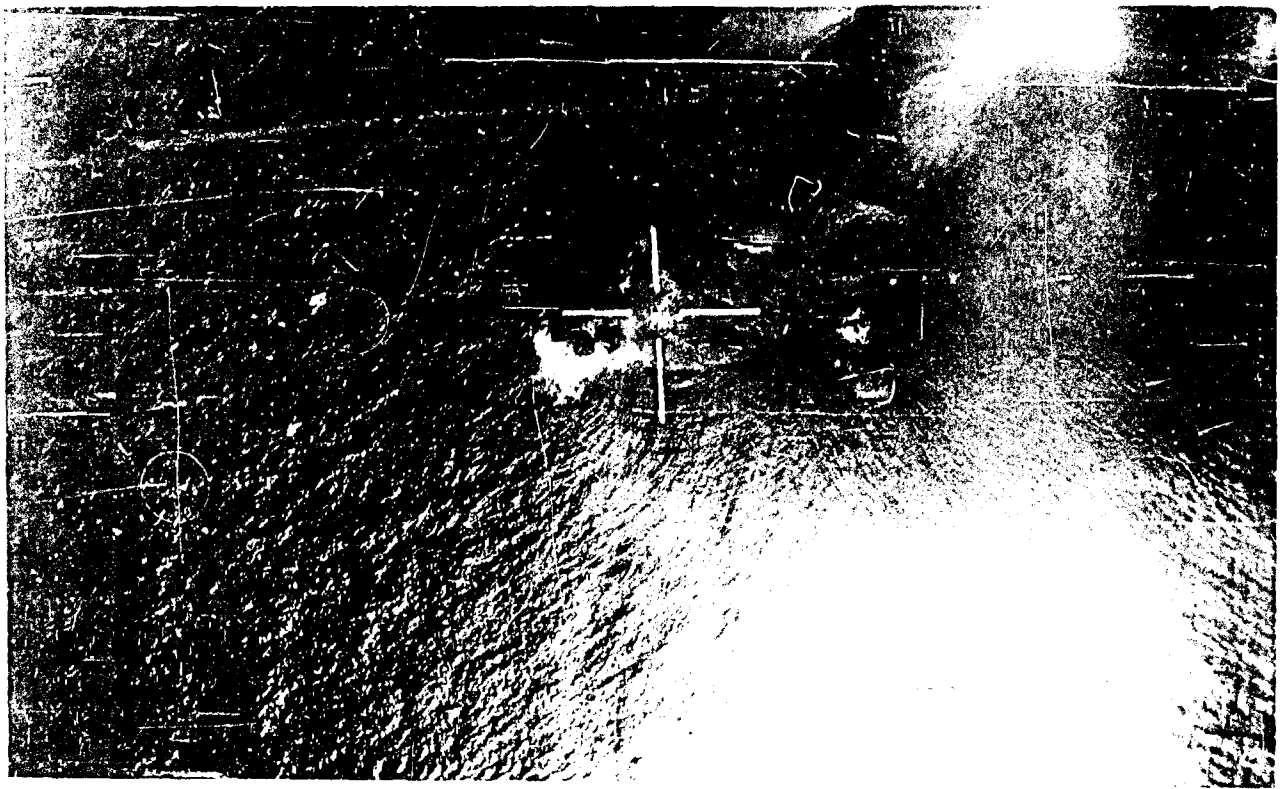
MAY 1961

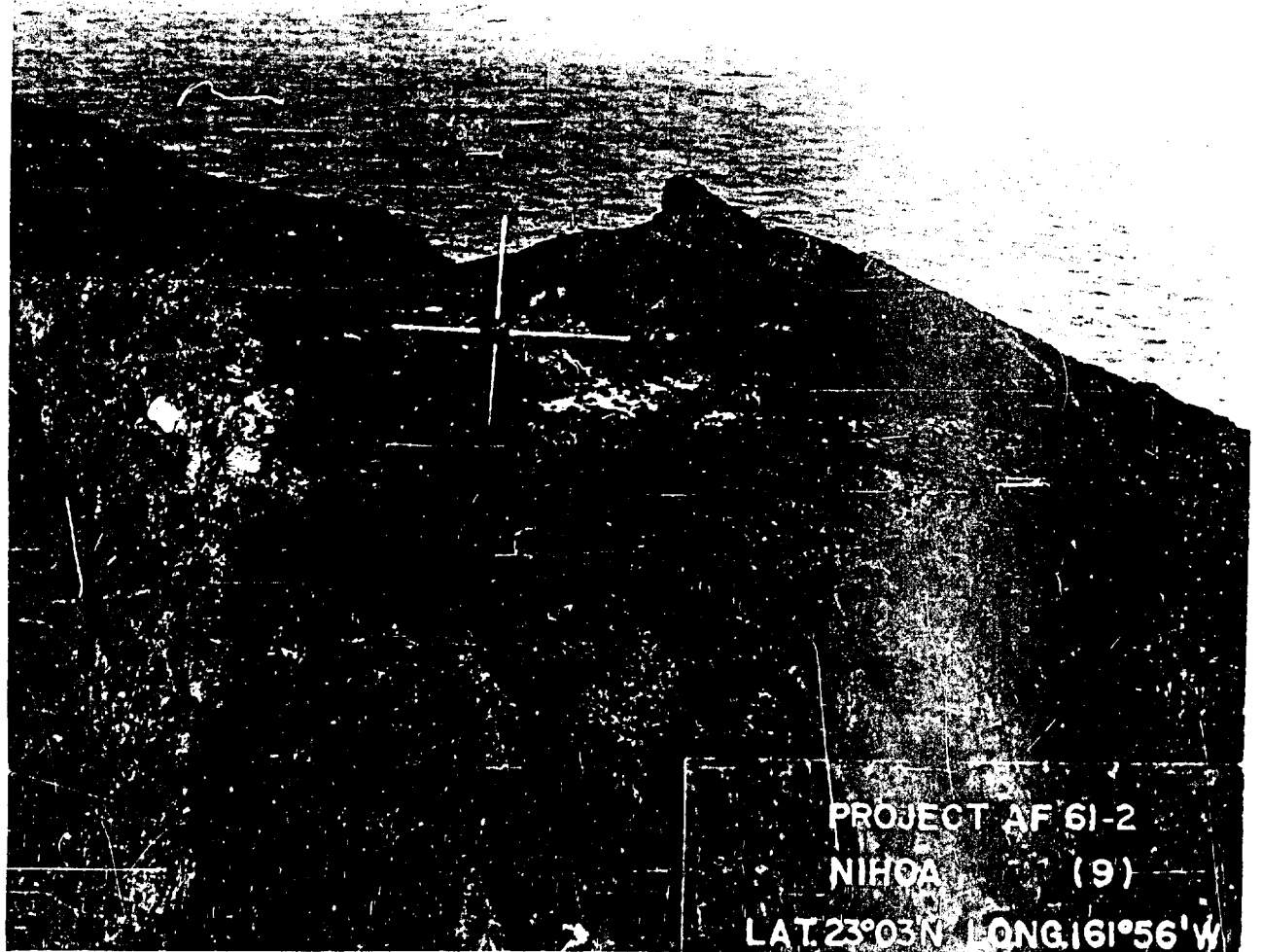
SCALE



# STATION SKETCH NIHOA (9)







PROJECT AF 61-2

NIHOA (9)

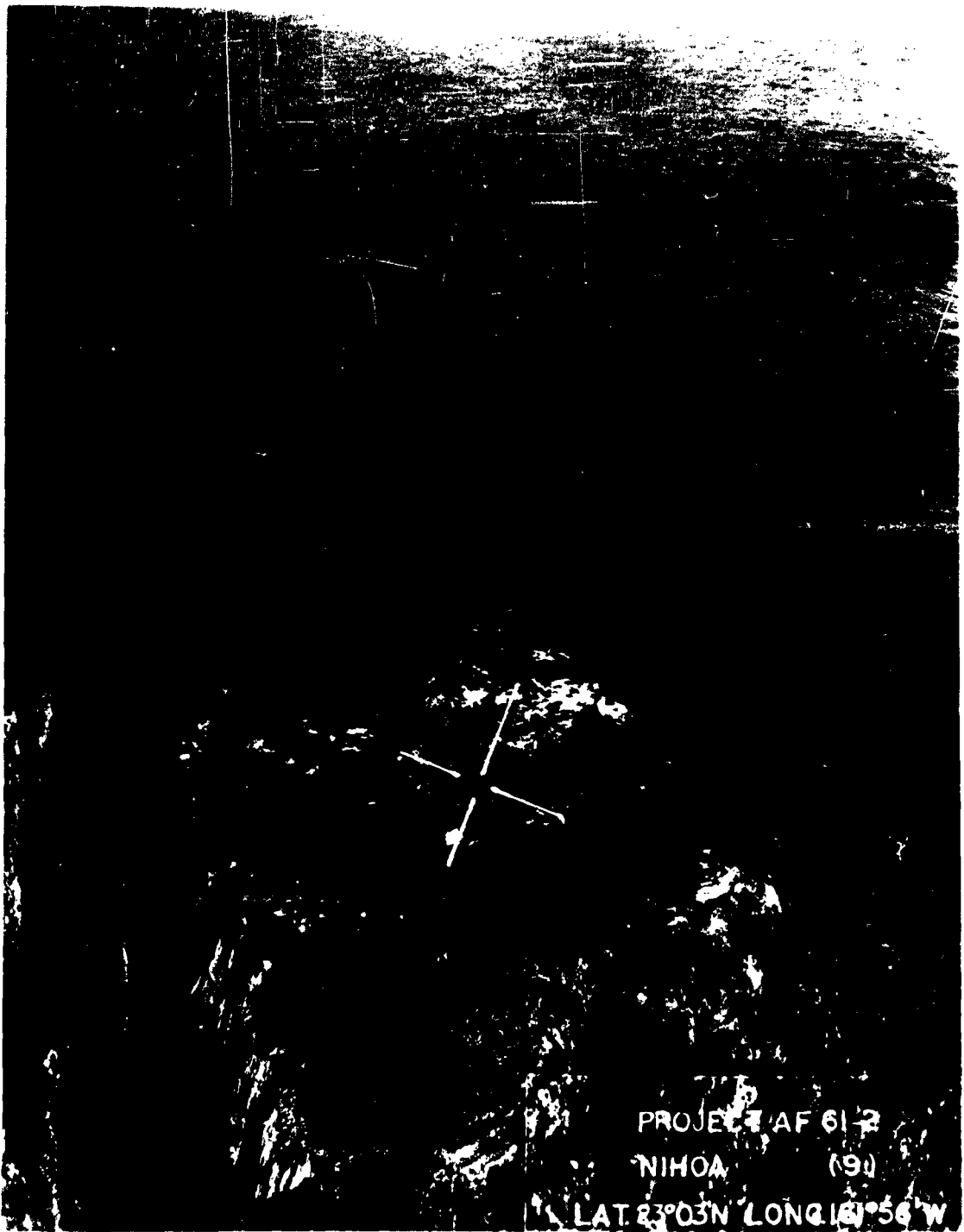
LAT. 23°03'N LONG. 161°56'W



PROJECT AF 61 2

NIHOA (9)

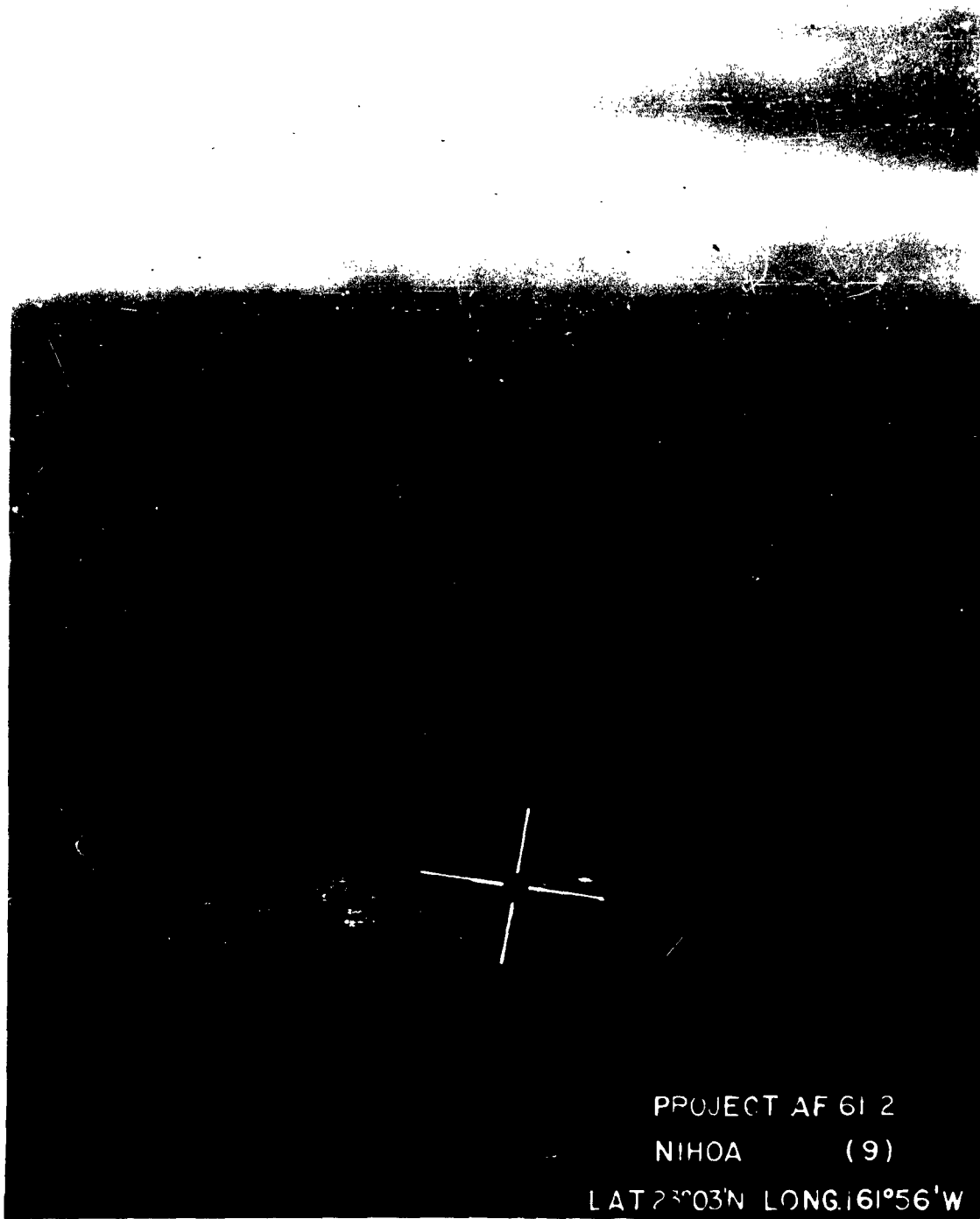
LAT 23°03'N LONG 161°56'W



PROJECT AF 61-2

NIHOA (19)

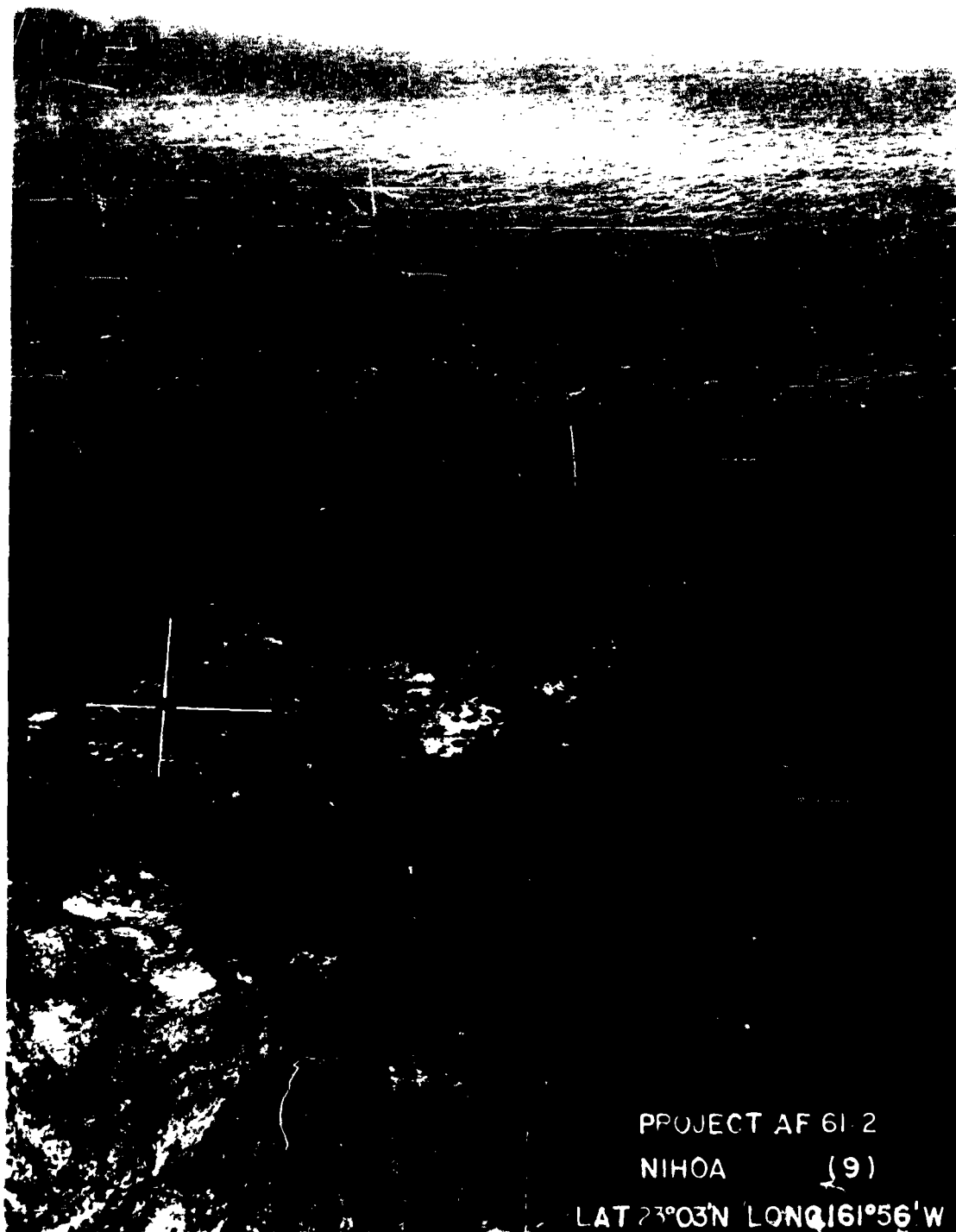
LAT. 8°03'N LONG 161°56'W



PROJECT AF 61 2

NIHOA (9)

LAT 23°03'N LONG. 161°56'W



PROJECT AF 61-2

NIHOA (9)

LAT 23°03'N LONG 161°56'W

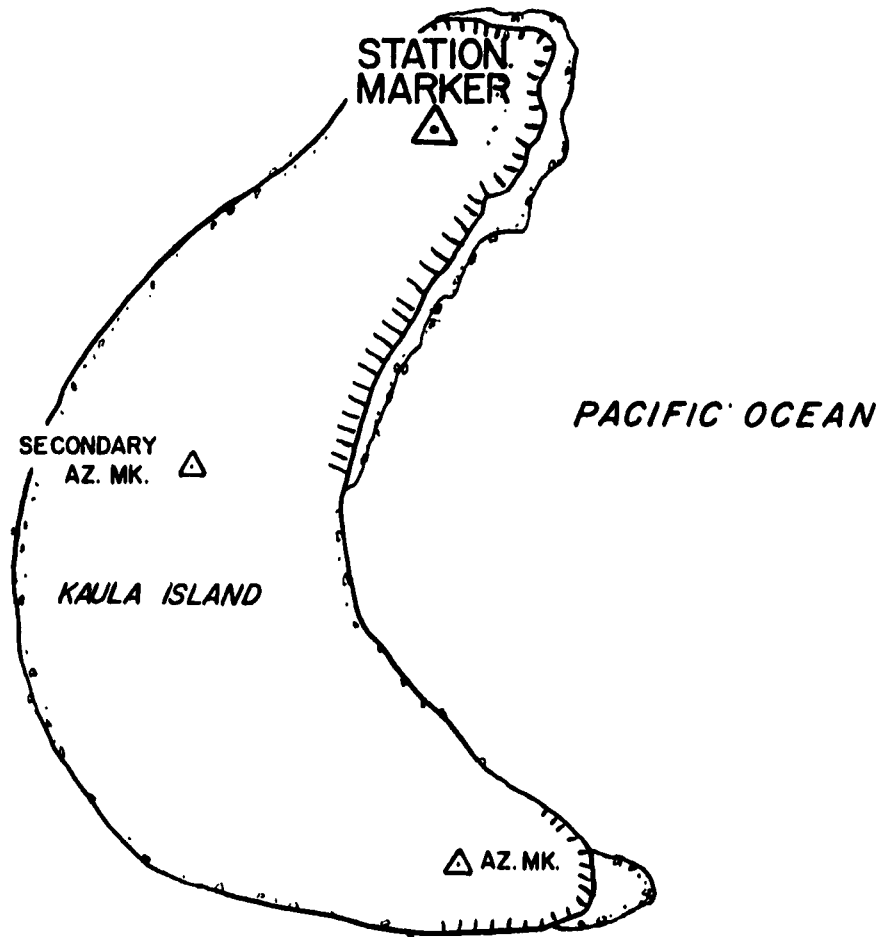


KAULA (10)

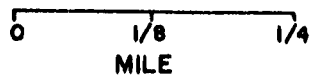
excess of 20 knots will create extreme turbulence around the top of the island thus making helicopter operations dangerous.

Remarks: Kaula Island is a bombing range and the area should not be entered without proper permission from Commander, Hawaiian Sea Frontier. A NOTAD should be requested to prevent bombing while ship is in area. Prior to landing personnel, the island working areas must be cleared by EOD personnel.

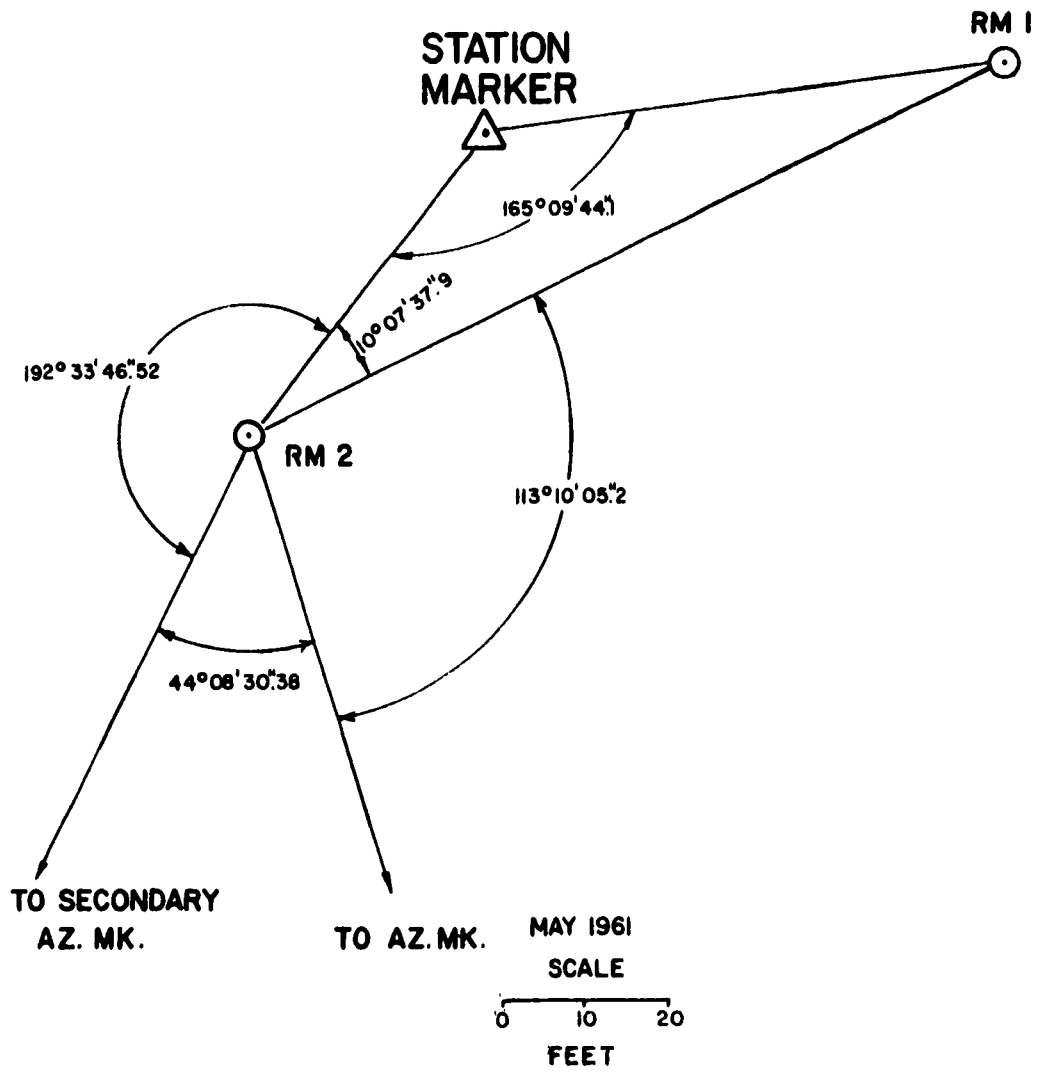
# AREA SKETCH KAULA (IO)

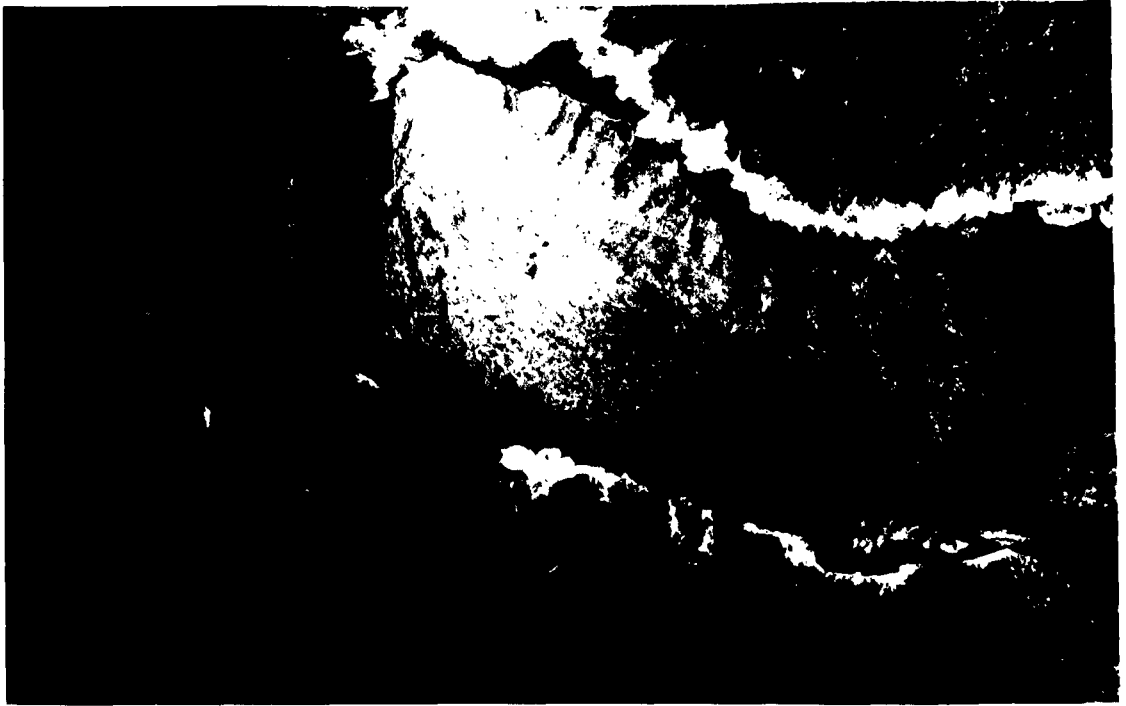
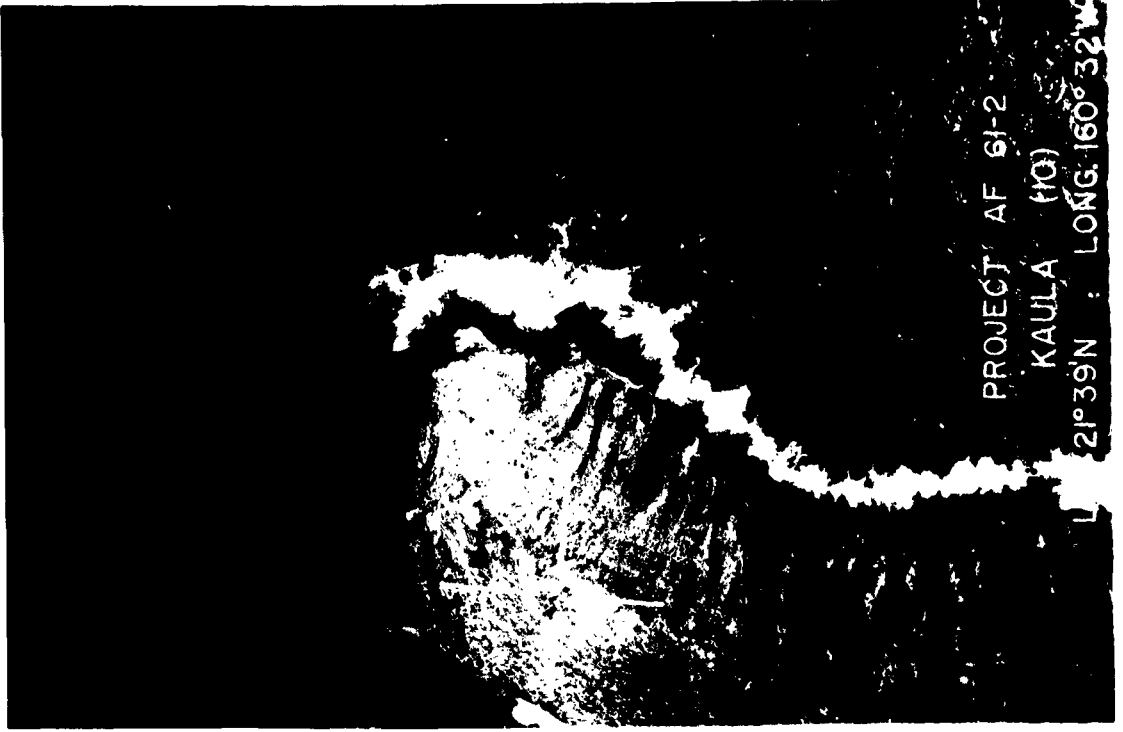


MAY 1961  
SCALE



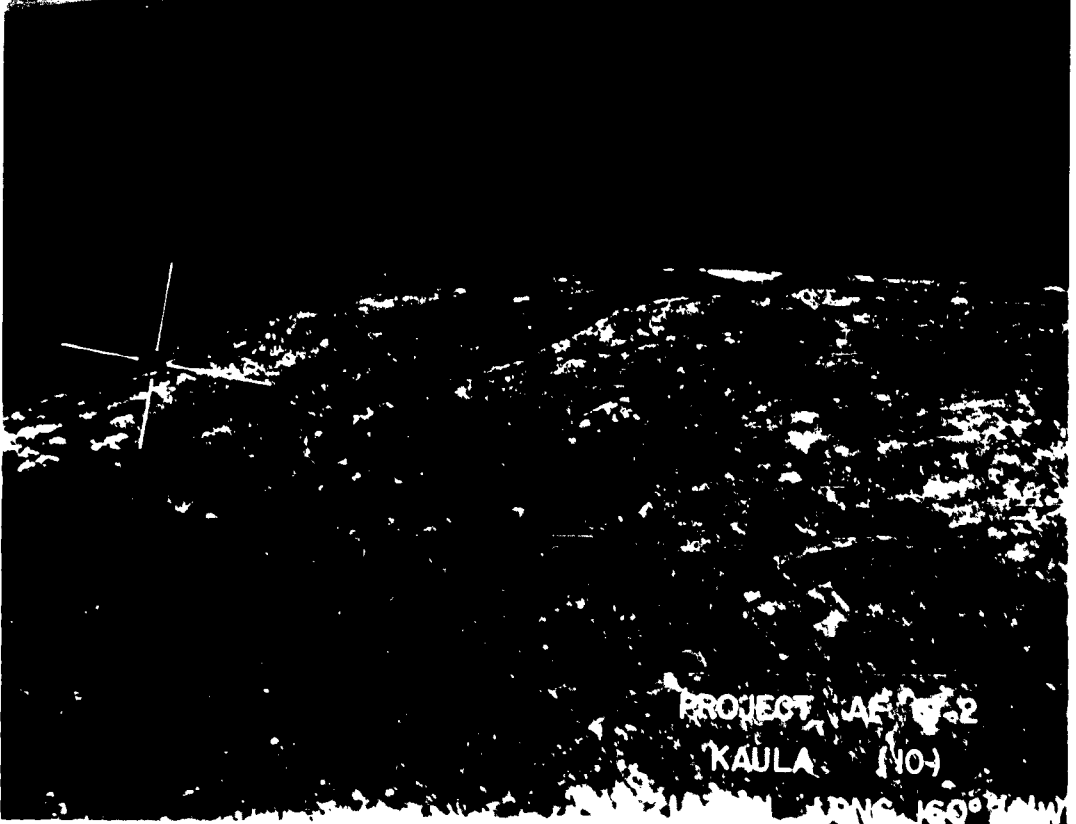
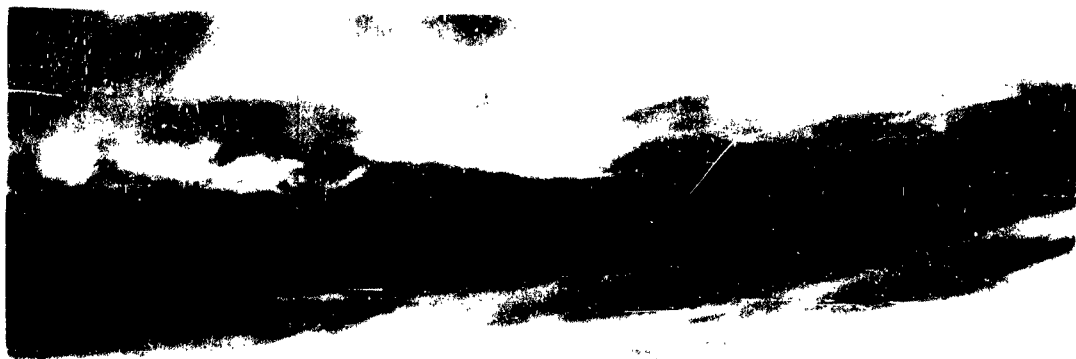
# STATION SKETCH KAULA (10)

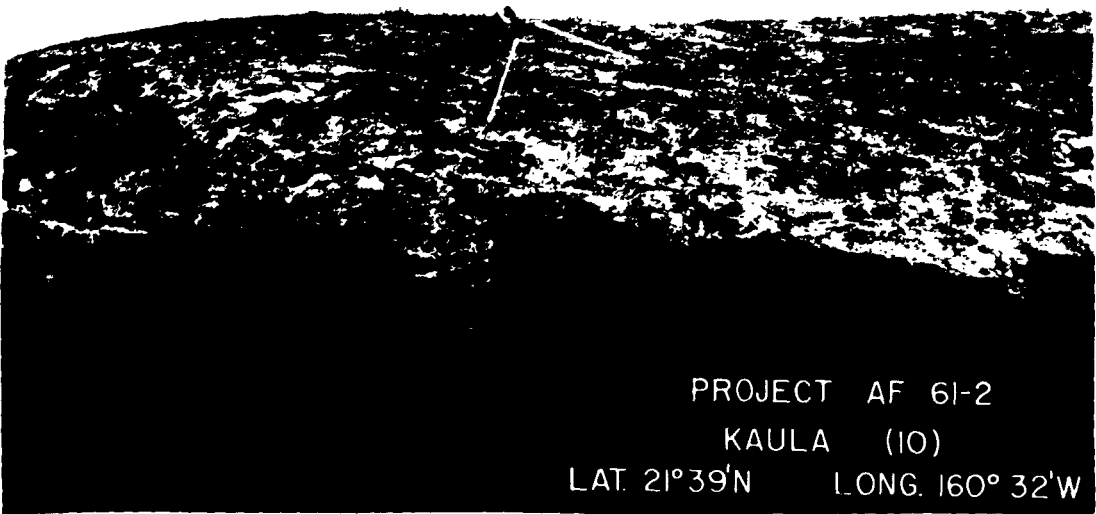


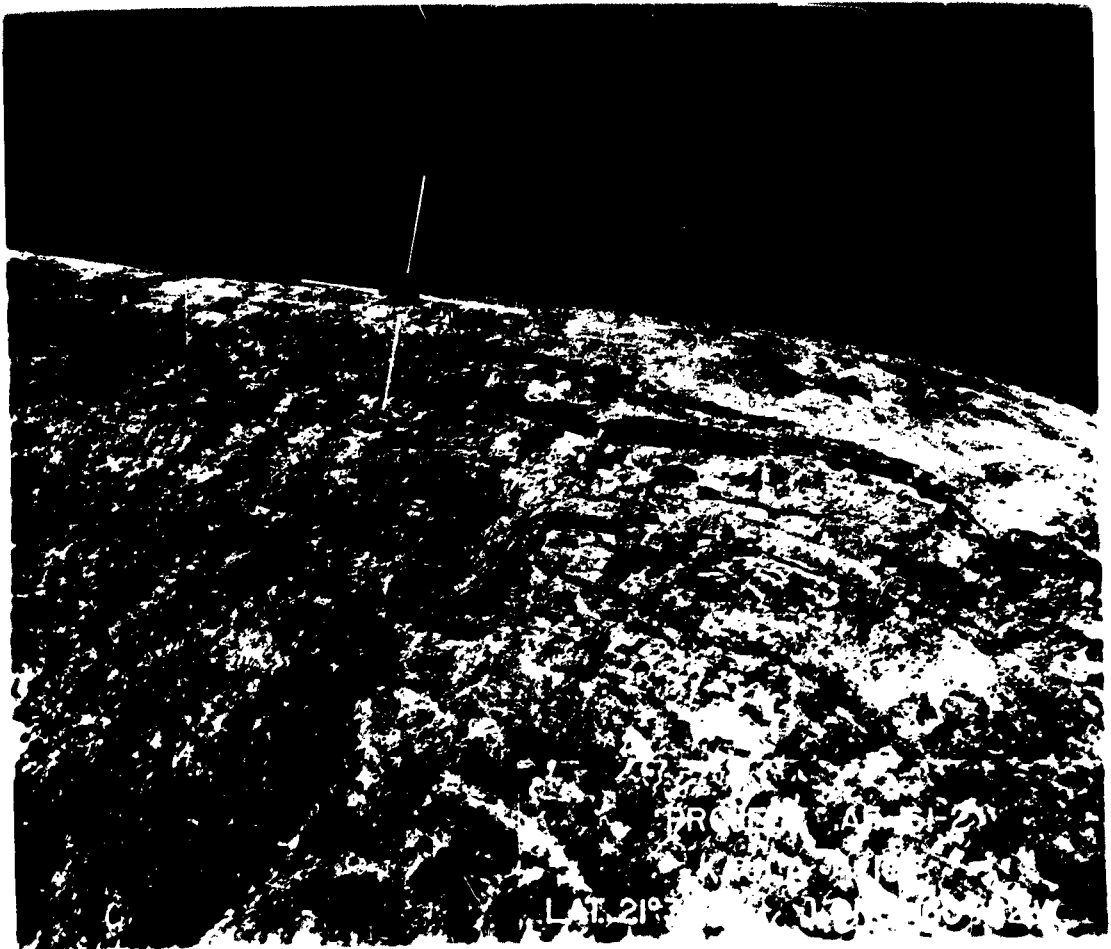




PROJECT AF 61-2  
KAULA (10)  
LAT. 21°39'N LONG. 160° 32'W







HIRAN STATION DESCRIPTION

Name and Number: PUOLO (11)

Location: Port Allen, Kauai Island  
State of Hawaii

Date Established: 1910 (USC&GS)

Date Recovered: 1961

Approximate Geographic Coordinates: Latitude: 21° 54' N  
Longitude: 159° 30' W

Station Elevation: 10 Feet (Differential leveling from estimated mean tide)

Description: The station is USC&GS triangulation station "PUOLO" located on the southern coast of the island of Kauai. It is approximately 1/2 mile south of the Port Allen Airport and about 80 feet southwest of the Port Allen (U.S. Coast Guard) Light Tower. The station is situated on the coastline in an open and easily accessible area. The station is marked by a concrete slab about 4 feet square, surmounted by a concrete truncated pyramid about 1 foot square and 1 1/2 feet high, into which a metal navigation flag is normally inserted. The concrete slab is inscribed "PUOLO 4-29-59".

References: RM #2 and RM #3 are cross cuts chiseled in outcropping rock, level with the ground. RM #1 was not recovered.

<u>OBJECT</u>	<u>DISTANCE (FEET)</u>	<u>AZIMUTH FROM SOUTH (GEODETIC)</u>
RM #2	25.1	291° 50'
RM #3	26.2	108° 50'

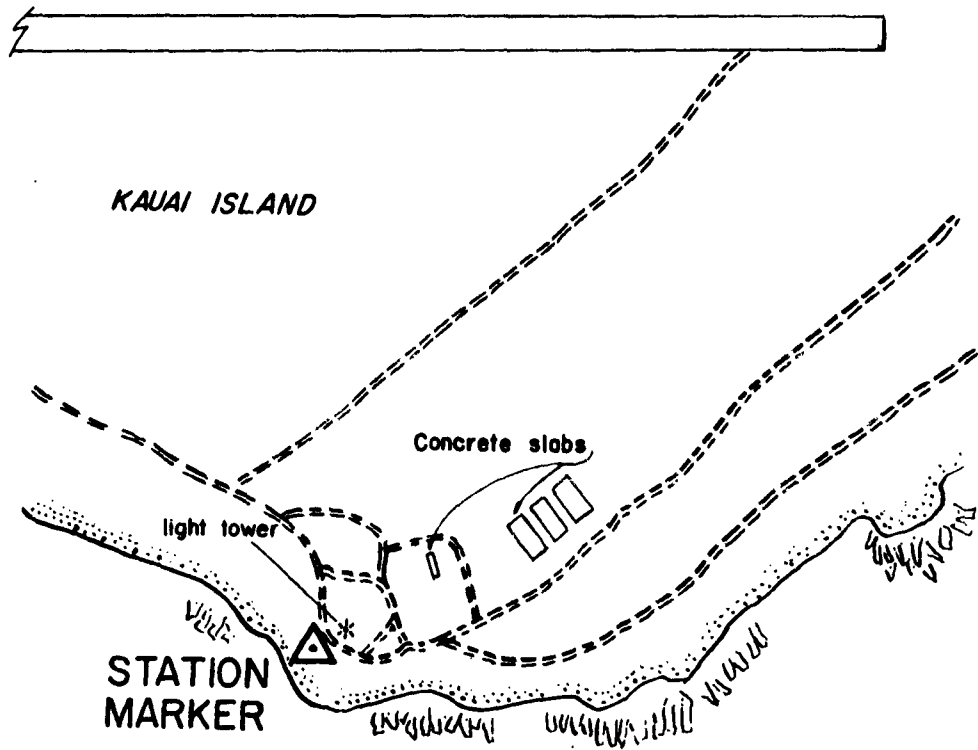
NOTE: A USC&GS Reference Mark embedded in a concrete monument lies approximately 90 feet northwest of the station. This mark was occupied for astro observations.

Route Description: Starting from the Elele Shopping Center and Post Office, proceed west on State Highway 50 for 1 mile, turn left at junction 543 and proceed 0.2 miles to a dirt access road leading to the Port Allen Airport. Continue on the dirt road past an abandoned operations building and hangar and across the runway for 1.1 miles to the Port Allen (U.S. Coast Guard) Light Tower. The station is located about 80 feet to the right of the access road.

# AREA SKETCH PUOLO (II)



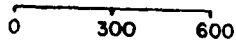
Port Allen Airport



PACIFIC OCEAN

JUN. 1961

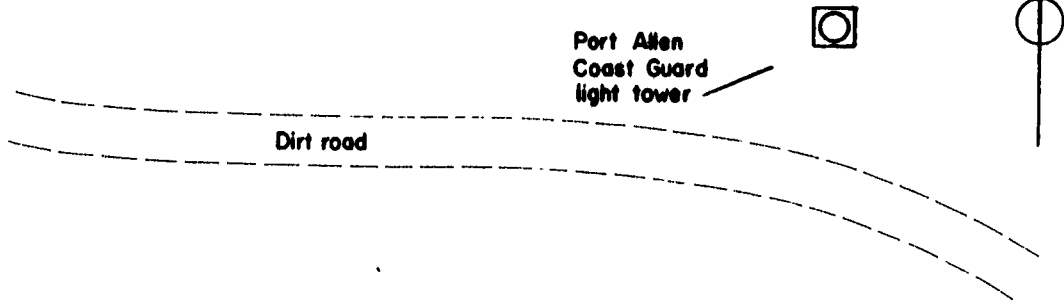
SCALE



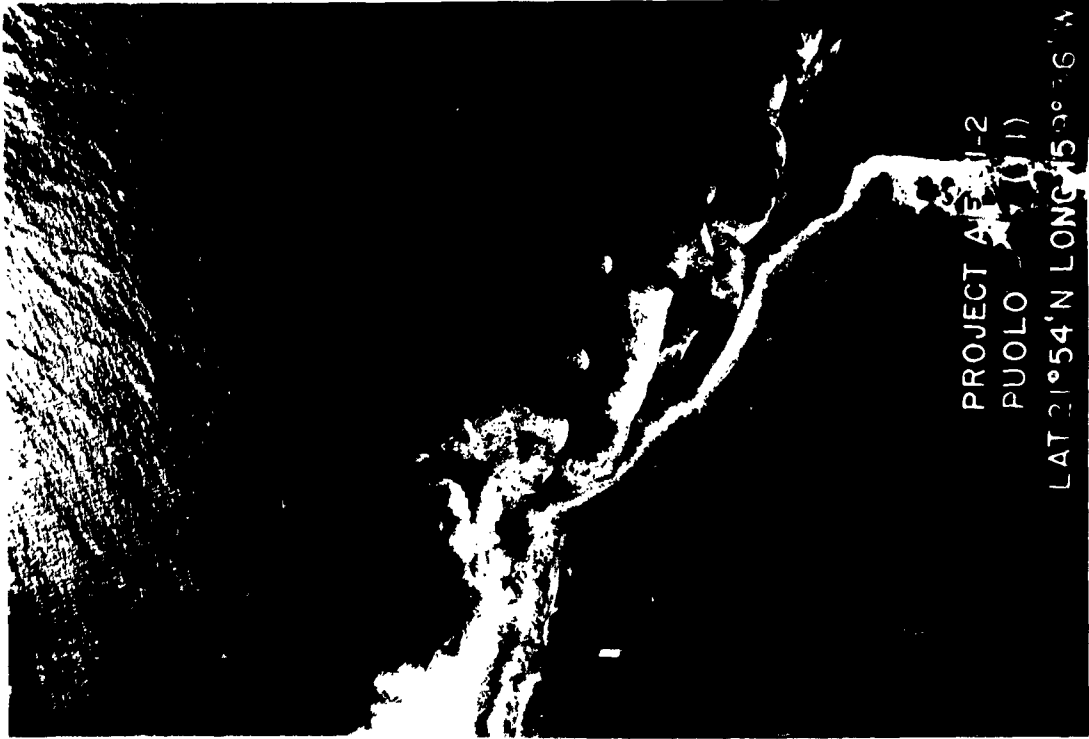
FEET

# STATION SKETCH

## PUOLO (II)



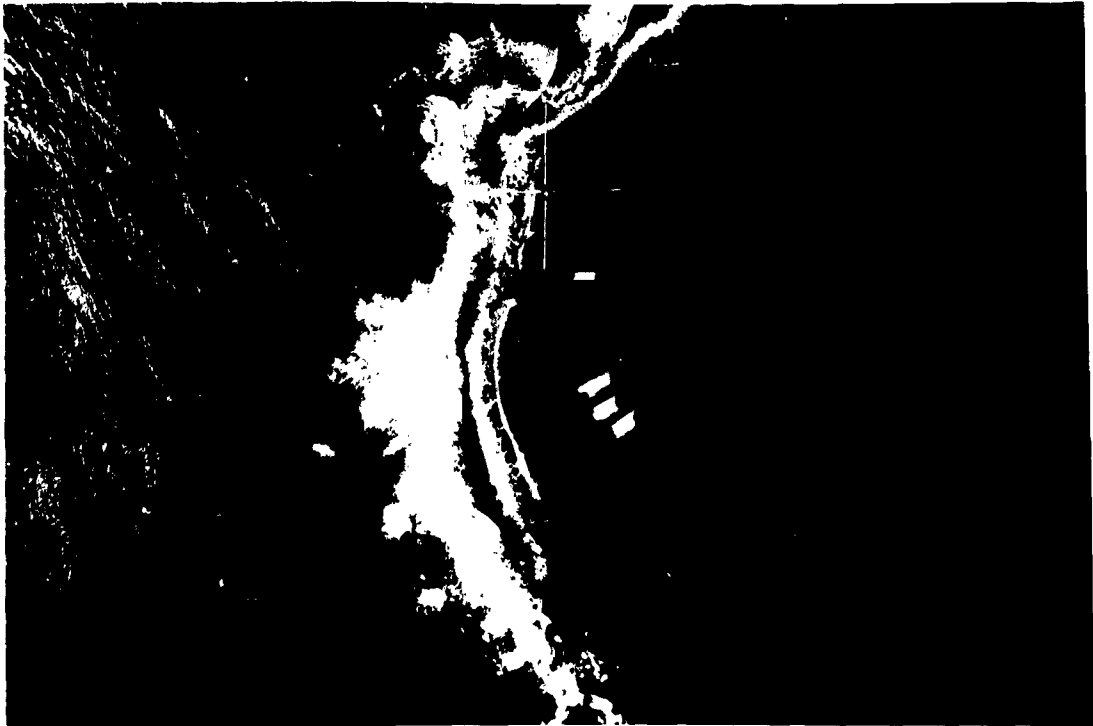
JUN. 1961  
SCALE  
0 15 30  
FEET



PROJECT AREA 11-2

PUOLO (1)

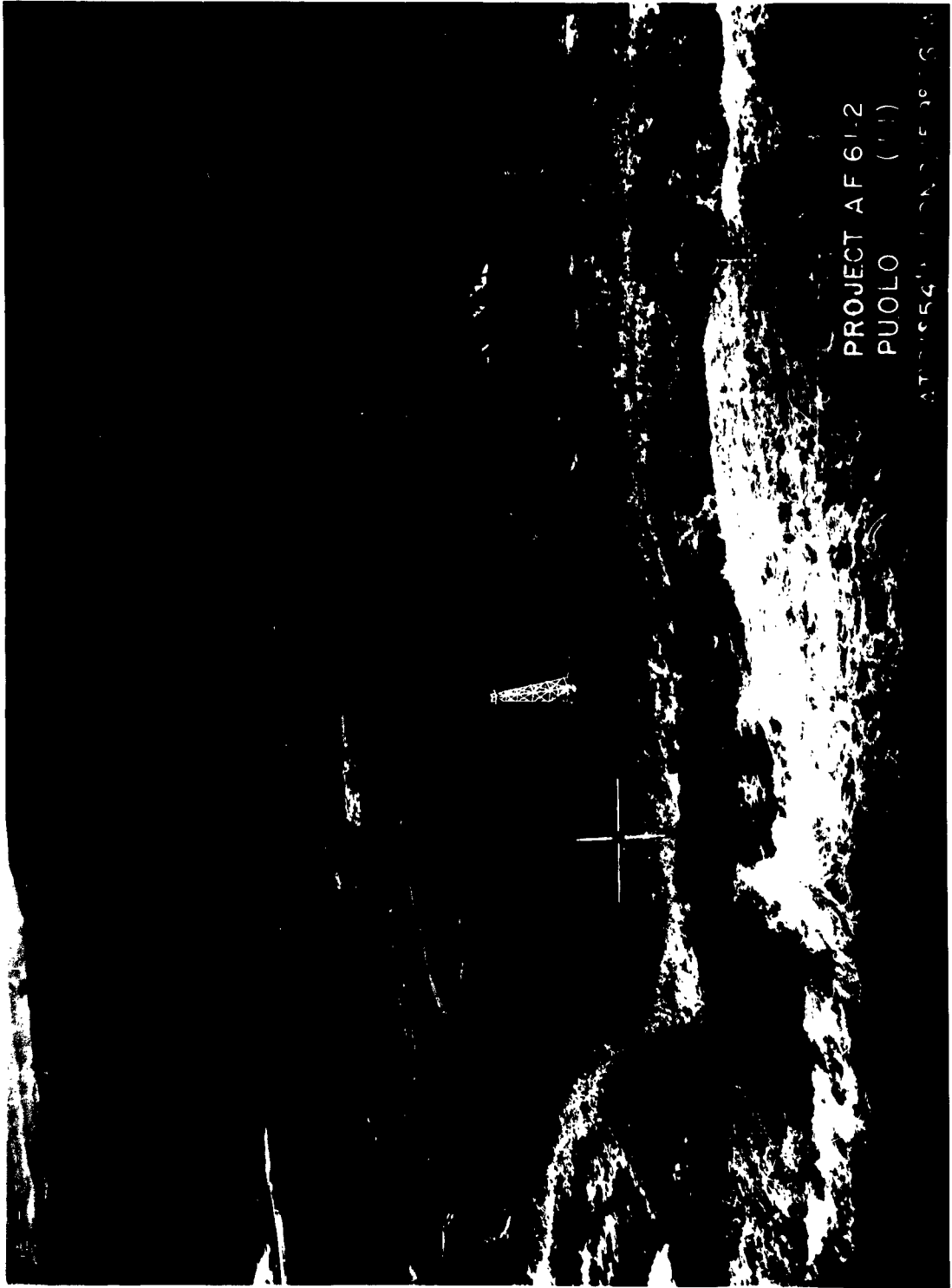
LAT 21°54'N LONG 159°16'W





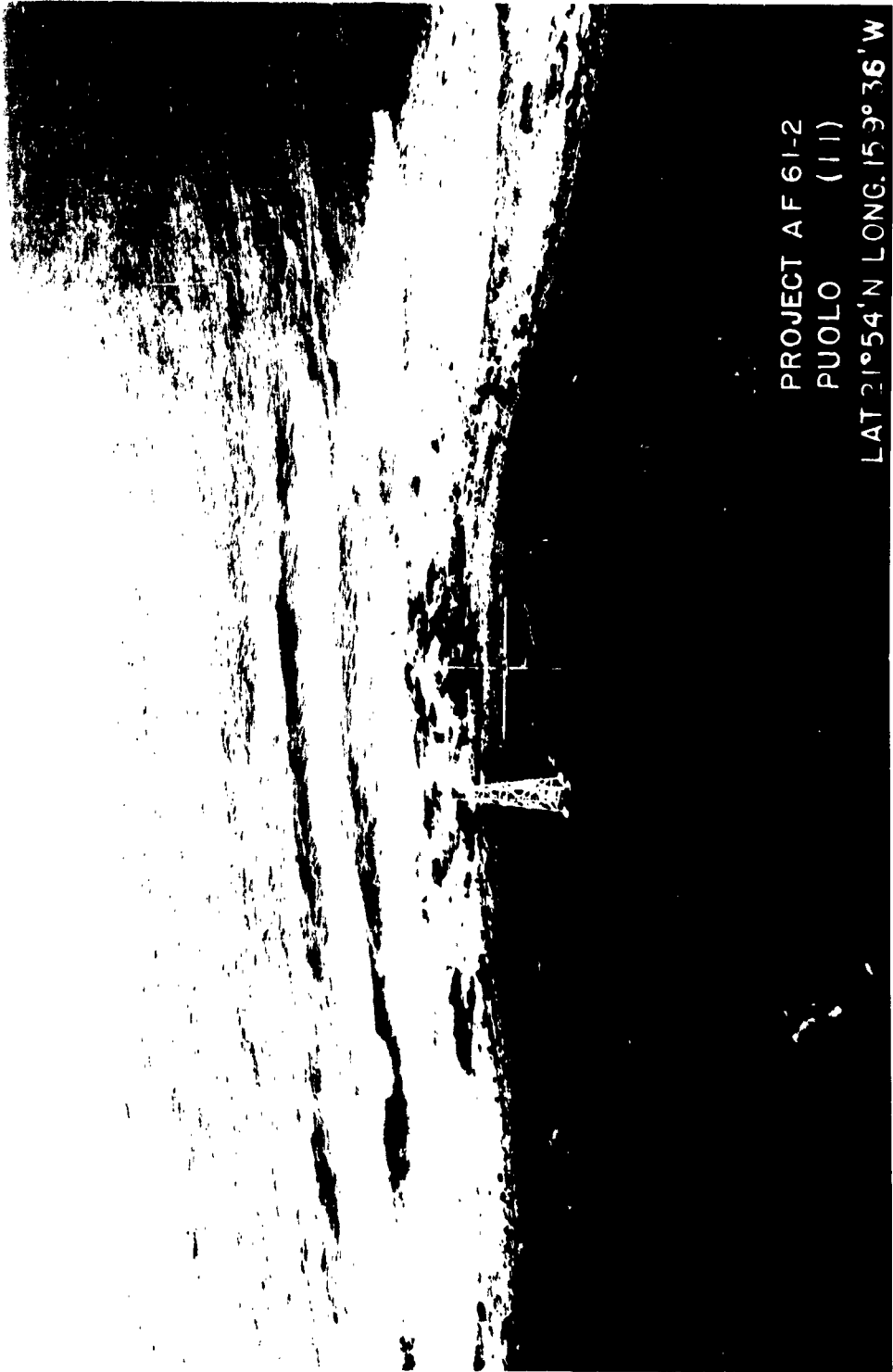
PROJECT AF 61-2  
PUOLO (11)

LAT 35° 52' N LONG. 119° 36' W



PROJECT AF 61-2  
PUOLO (11)

AT 115541 10N 15E 30-63



PROJECT AF 61-2  
PUOLO (11)

LAT 21° 54' N LONG. 159° 36' W

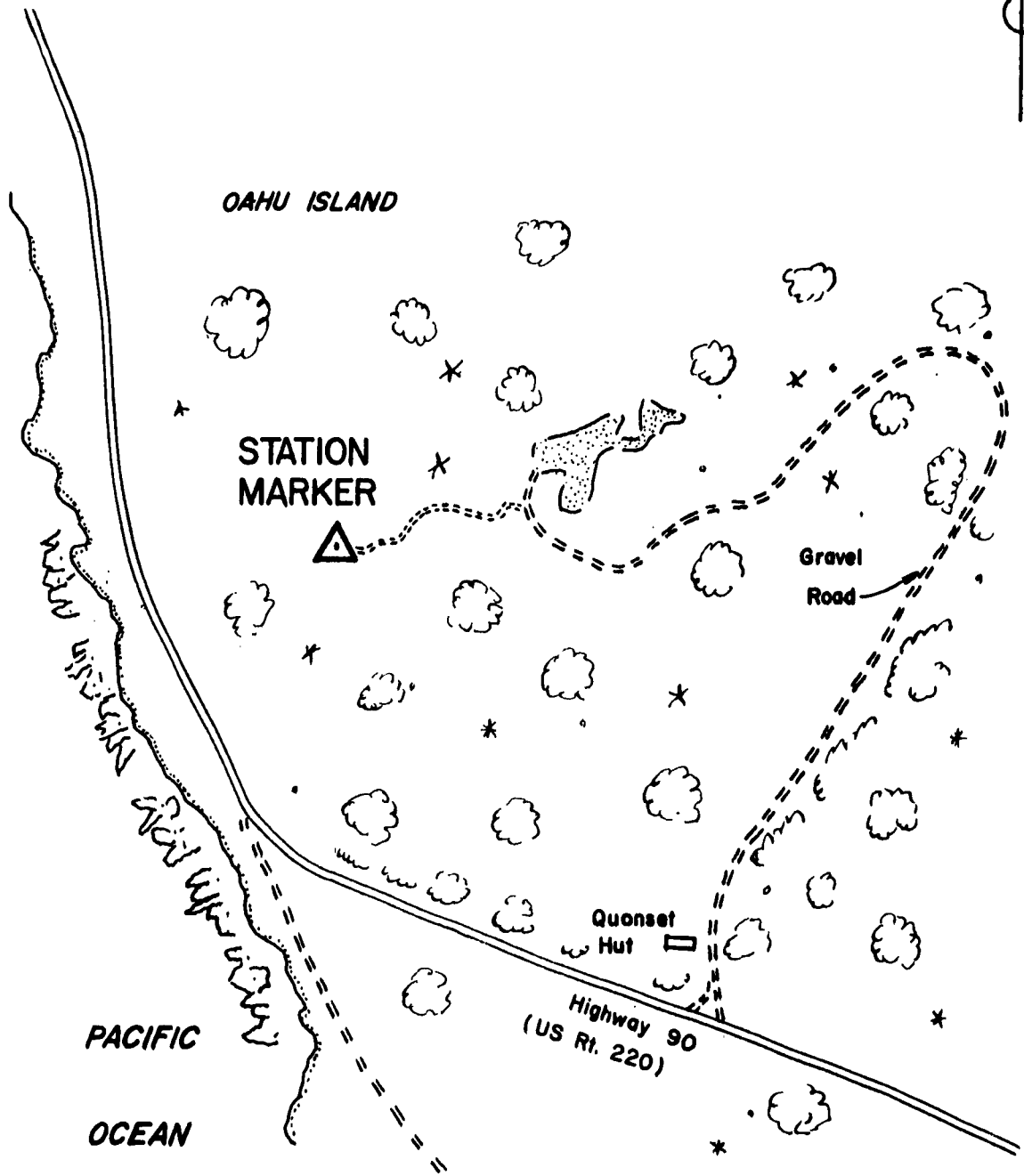


PROJECT AF 61-2  
SITE POULO (11)

LAT 21° 54' N LONG. 159° 36' W



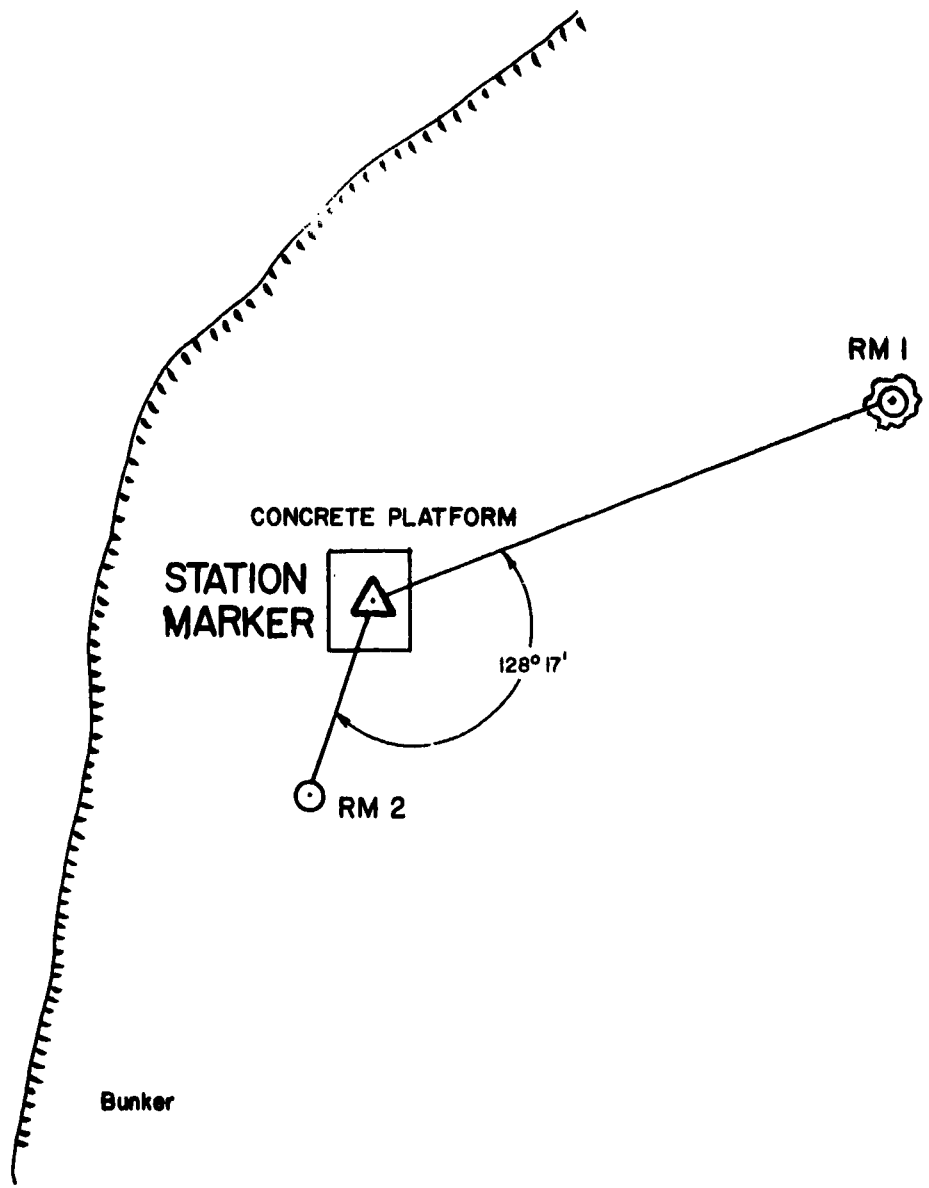
# AREA SKETCH KAHE (12)



OCT. 1961  
SCALE



# STATION SKETCH KAHE (12)

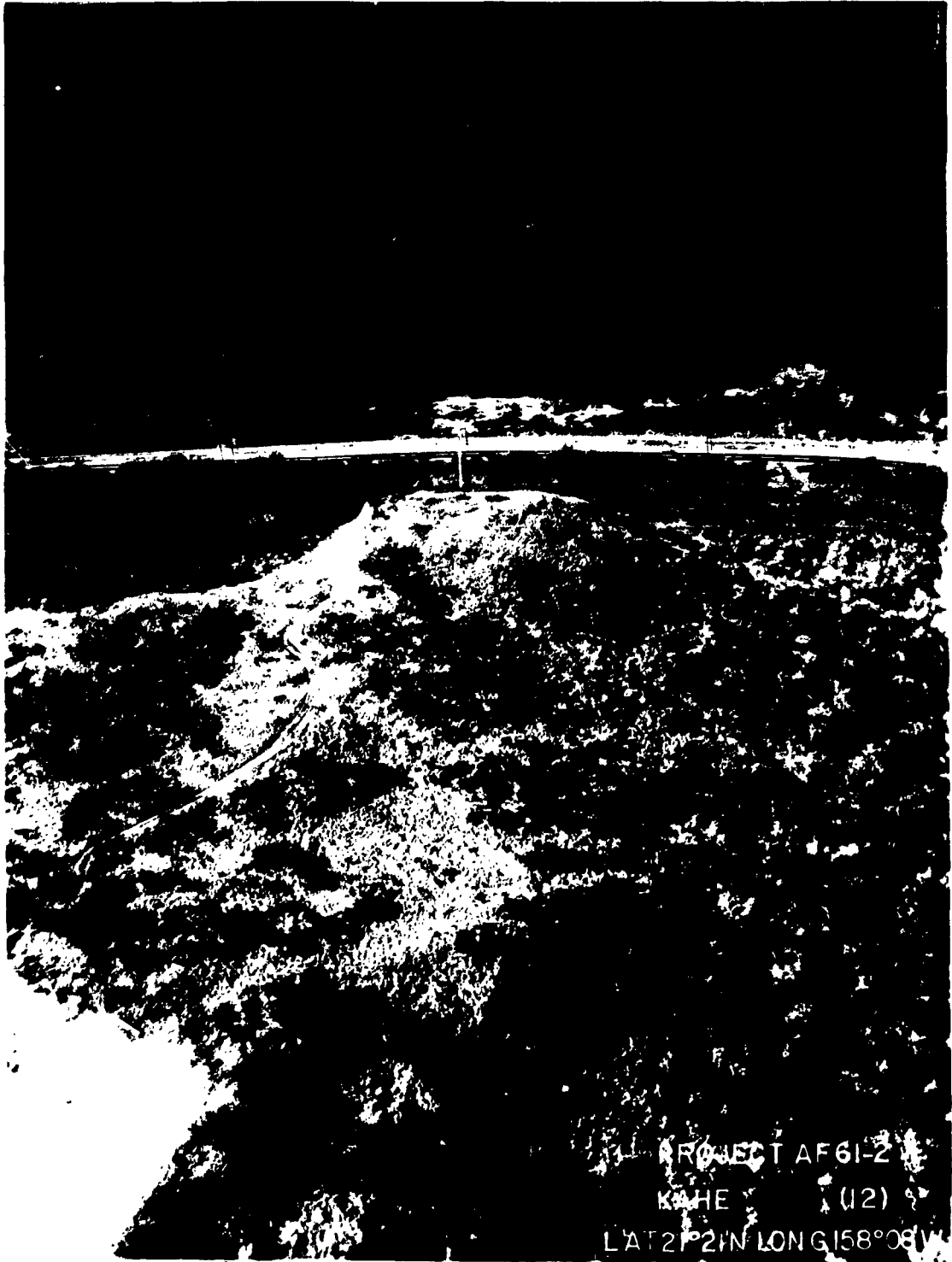


OCT. 1961  
SCALE  
0 10 20  
FEET





PROJECT AF61-2  
KAHE (12)  
LAT. 21°21'N LONG. 158°08'W



PROJECT AF61-2  
KAHE (12)  
LAT 21° 21' N LONG 158° 08' W



PROJECT AF 61-2

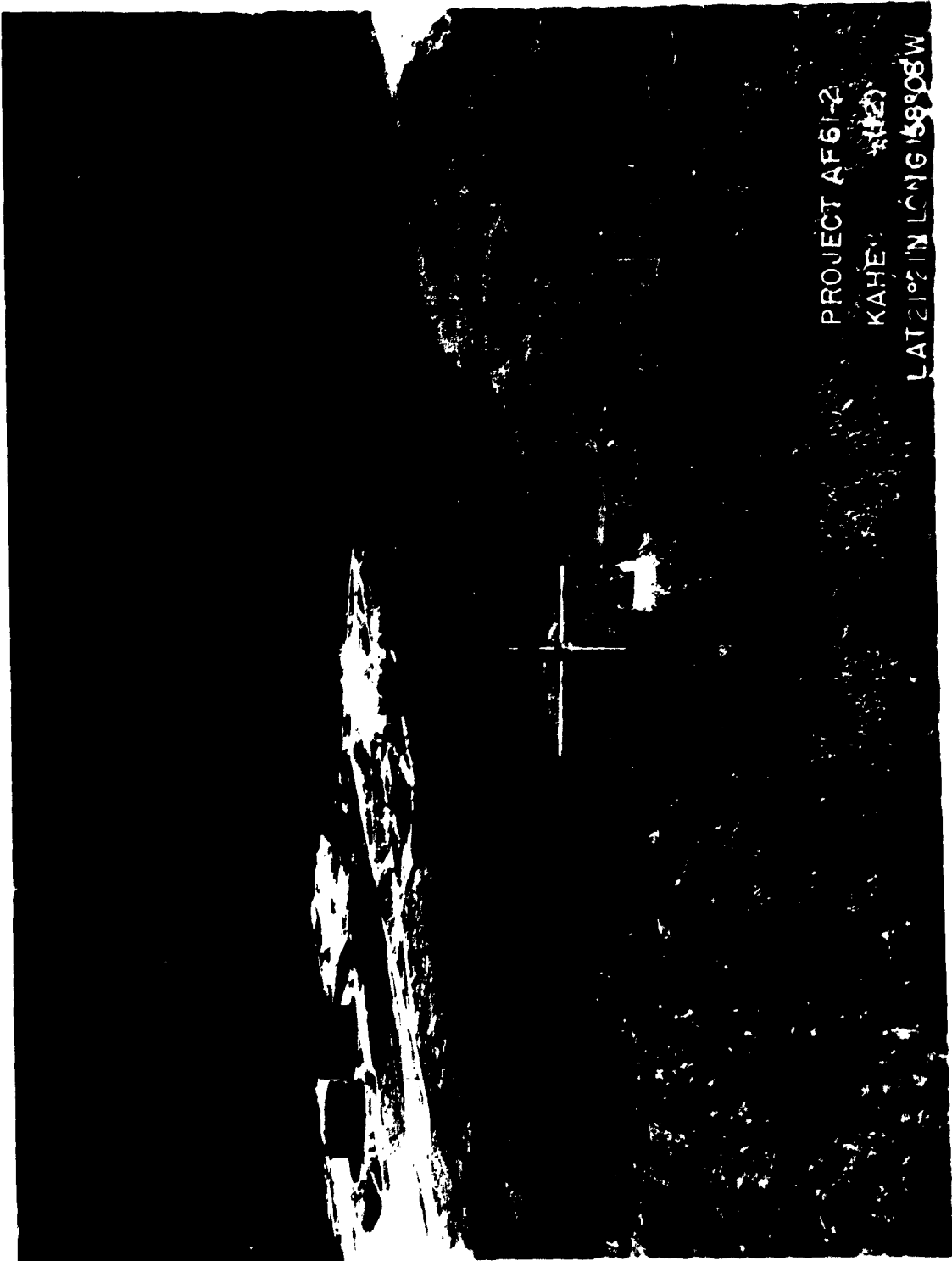
KAHE (12)

LAT 21°21'N LONG 158°08'W

PROJECT AF61-2

KAHE (12)

LAT 21° 12' N LONG 159° 08' W



### HIRAN STATION DESCRIPTION

Name and Number: KOLEKOLE (13)

Location: Maui Island  
State of Hawaii

Date Established: 1876 (HGS)

Date Recovered: 1961

Approximate Geographic Coordinates: Latitude: 20° 43' N  
Longitude: 156° 16' W

Station Elevation: 10,012 feet (Trig List)

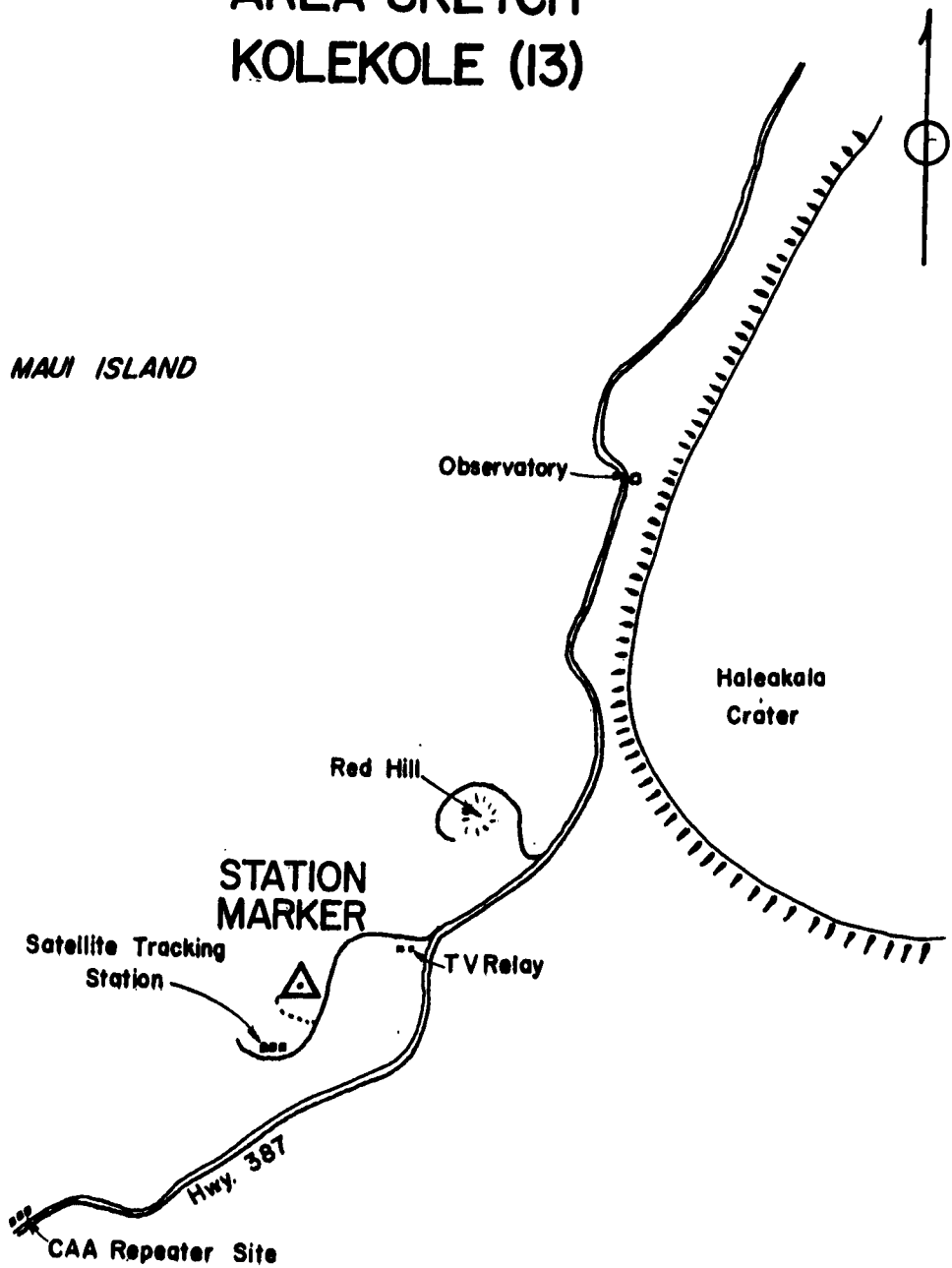
Description: The station is located on the central part of Maui, in Honouliuli District, on a high point, southwest of the highest point of Haleakala Crater. It is on the high point of a lava outcrop about 25 feet southeast of a concrete building. The station is marked by a standard USC&GS disk set into rock and is stamped "KOLEKOLE 1950".

References: RM 1 is a standard USC&GS reference marker disk set into a rock outcrop about 8 feet from the crater rim and stamped "KOLEKOLE NO 1". RM #2 is a standard USC&GS reference marker disk set in the same rock outcrop as the station marker and is stamped "KOLEKOLE NO 2". RM #3 is a standard USC&GS reference marker disk set into a boulder 30 inches in diameter that projects 18 inches above the ground and it is stamped "KOLEKOLE NO 3".

<u>OBJECT</u>	<u>DISTANCE (FEET)</u>	<u>AZIMUTH FROM SOUTH (GEODETIC)</u>
RM 1	353.64	17° 19' 24"2
RM 2	47.06	236° 13' 59"2
RM 3	164.71	203° 02' 28"2

Route Description: The island of Maui can be reached by surface ship or aircraft. From the airport of Kahului, Maui, proceed east southeast on Route 37, Pukalani Road, about 8.5 miles to the intersection of Route 377, Haleakala Road. Proceed left on this route east southeast and then south about 5.3 miles to the intersection of Route 378. Proceed left, east southeast along this route about 22.0 miles to the summit of Haleakala Crater. The station is located on the second highest point that has a dirt road leading to a concrete building set alone. The station is situated on the VHF Homer Station Site, which is adjacent to the Haleakala Satellite Tracking Site.

# AREA SKETCH KOLEKOLE (13)



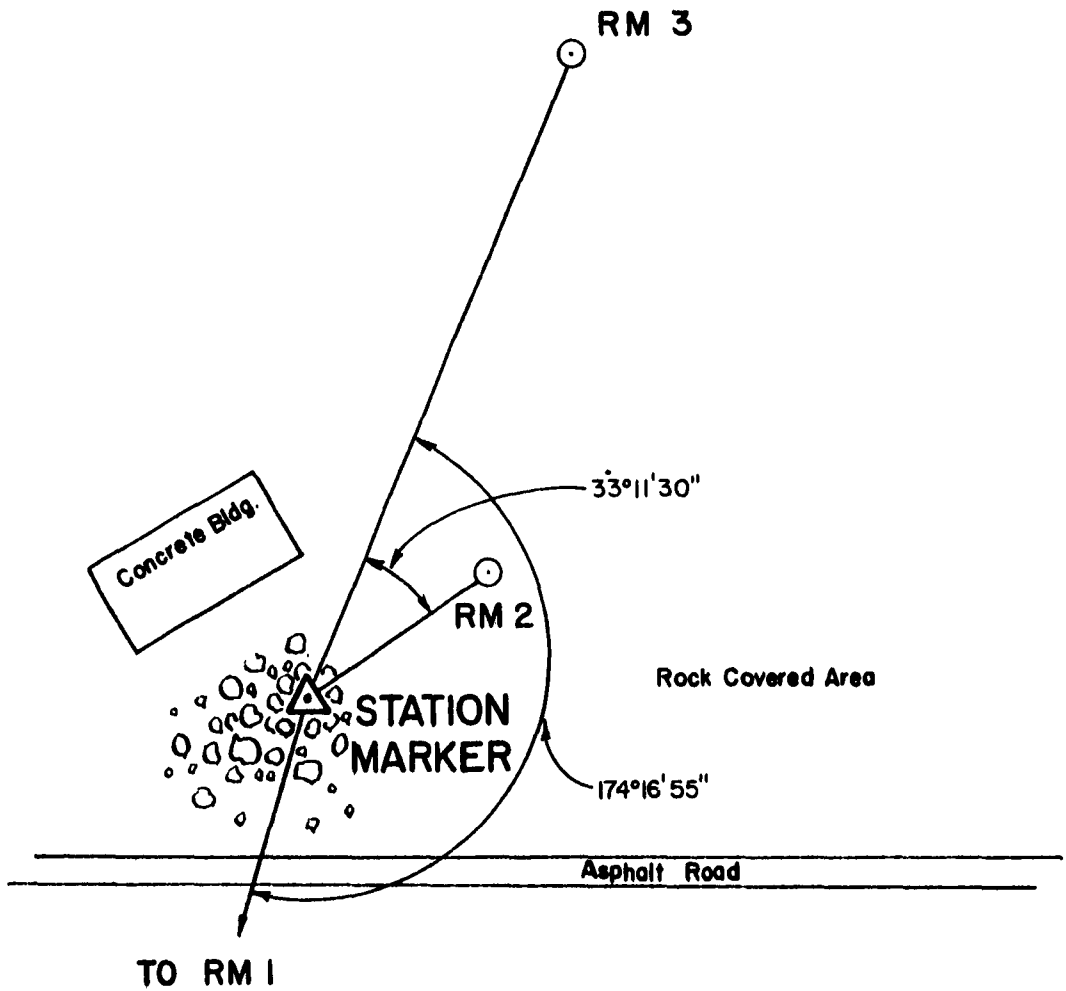
MAY 1961

SCALE

0 1/4 1/2

MILE

# STATION SKETCH KOLEKOLE (13)



MAY 1961  
SCALE





PROJECT AF 61-2  
KOLEKOLE (13)  
LAT 20°43'N LONG 156°16'W



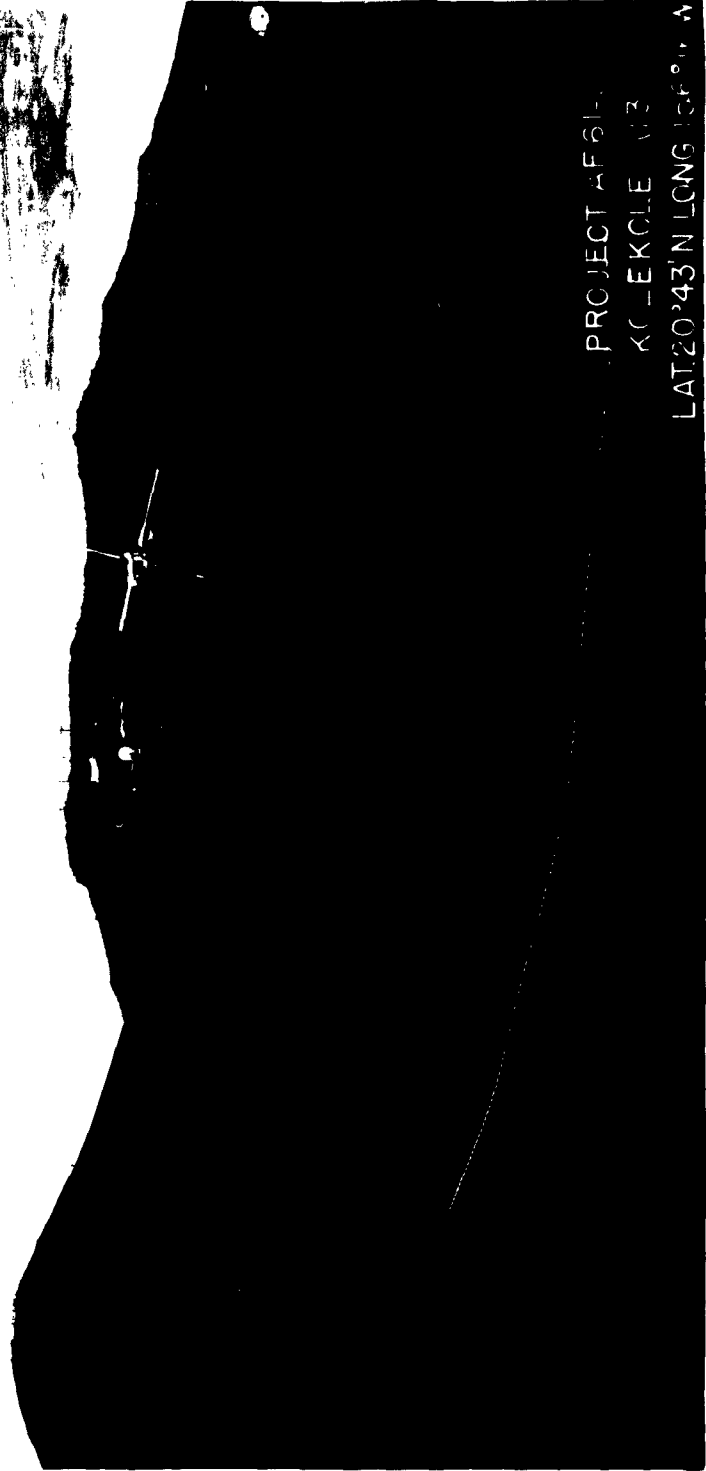
PROJECT AF 61-  
KOLEKOLE (13)

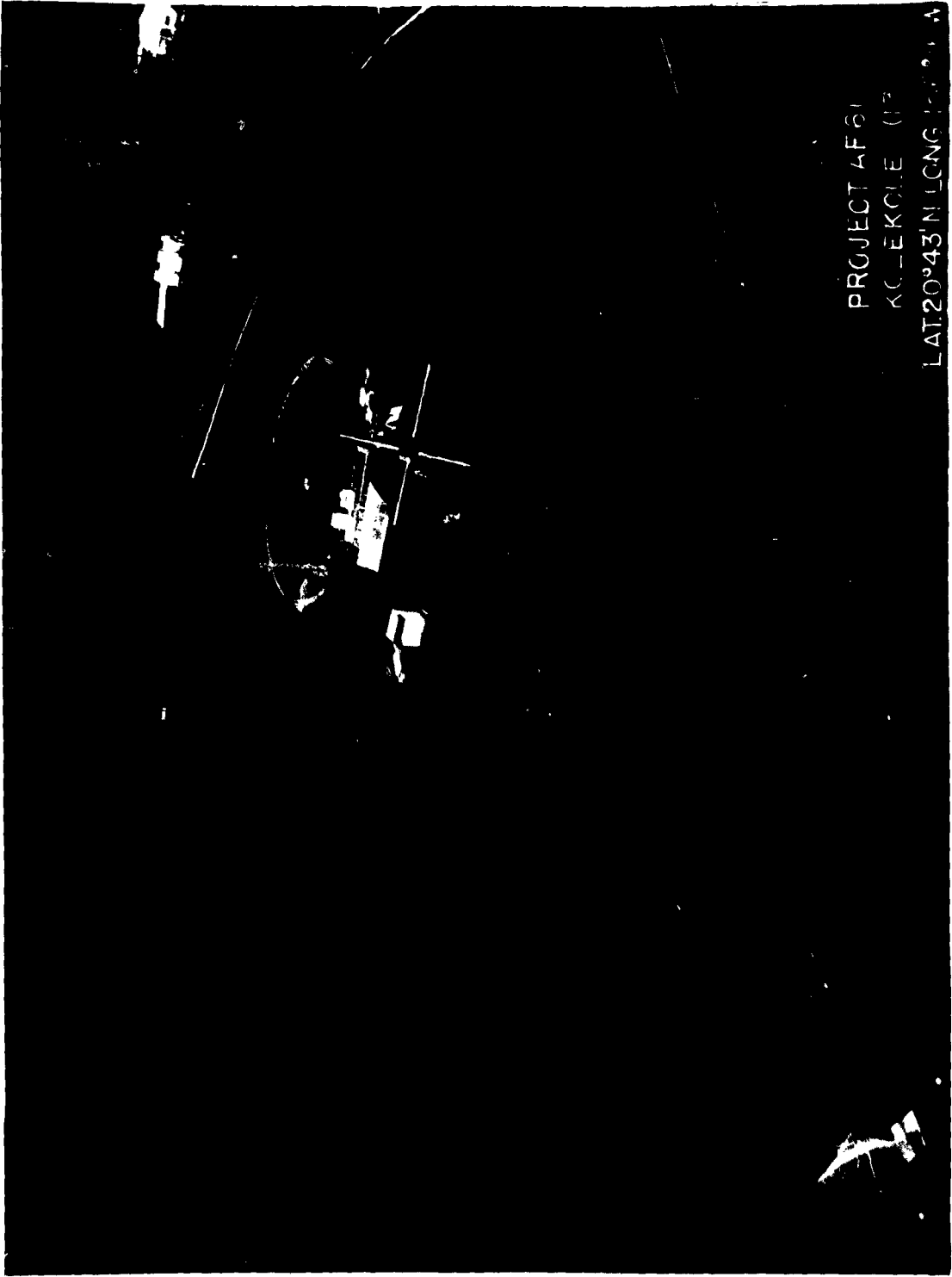
LAT: 20°43'N LONG: 156°14'W

PROJECT AF 61-2  
KOLEKOLE (13)  
LAT: 20°43'N LONG: 156°16'W

PROJECT AF61-  
KC-EKOLE 03

LAT. 20° 43' N LONG. 156° 00' W





PROJECT AF81  
KC-EKOLE (P)

LAT:20°43'N LONG:150°00'W

### HIRAN STATION DESCRIPTION

Name and Number: KEALAHEWA 2 (14)                      Location: Island of Hawaii,  
State of Hawaii

Date Established: 1948 (USC&GS)

Date Recovered: 1961

Approximate Geographic Coordinates: Latitude: 20° 16' N  
Longitude: 155° 52' W

Station Elevation: 53.8 Feet (Trig List)

Description: The station is located on the northern end of the island of Hawaii near Upolu Point. It is about 1/4 mile north west of the Upolu Airport terminal building. The station is about 125 feet south of the sea cliffs on the eastern edge of a gentle slope about 400 feet east of the Kuhala Sugar Company pump house. The station mark is a standard USC&GS disk set in outcropping rock stamped "KEALAHEWA 2 1948".

References: RM #1 is a standard USC&GS reference disk set in a rock about 3 feet square which projects about 1 foot above the ground. RM #2 is a standard USC&GS reference disk set in an elongated rock projecting about 2 1/2 feet above the ground.

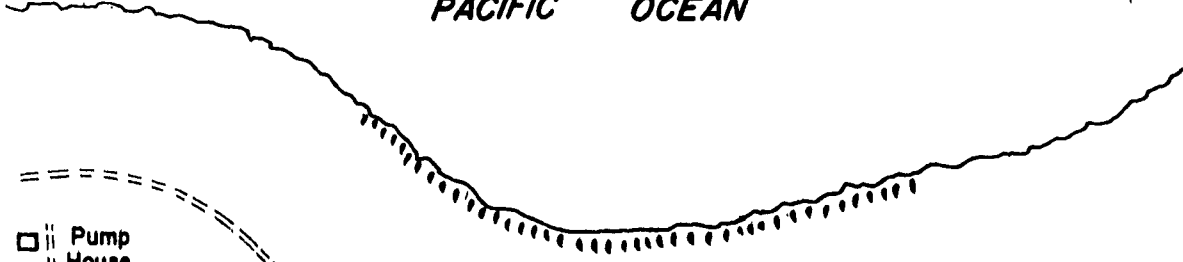
<u>OBJECT</u>	<u>DISTANCE (FEET)</u>	<u>AZIMUTH FROM SOUTH (GEODETIC)</u>
RM 1	16.08	230° 13'
RM 2	16.61	294° 51'

Route Description: The station can be reached by proceeding west from the town of Howi along the main highway. After traveling about 0.7 of a mile along the highway, there is a paved road which leads to the Upolu Airport. Follow the road for about 2.5 miles and turn left at the dirt road paralleling the airport fence and runway. Proceed on the dirt road to the access road about 150 feet before reaching the Kehala Sugar Company pump house. Turn onto the access road and go 300 feet to the top of the rise. The station is in outcropping rock to the left, north, of the access road, between the road and the ocean.

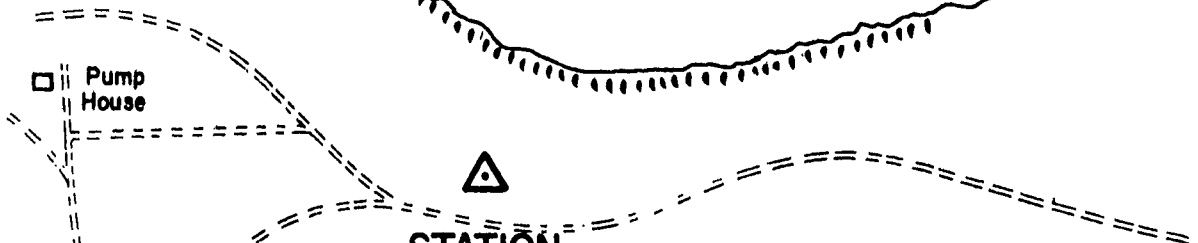
# AREA SKETCH KEALAHÉWA 2 (14)



PACIFIC OCEAN



□ Pump House



STATION  
MARKER

ISLAND OF HAWAII



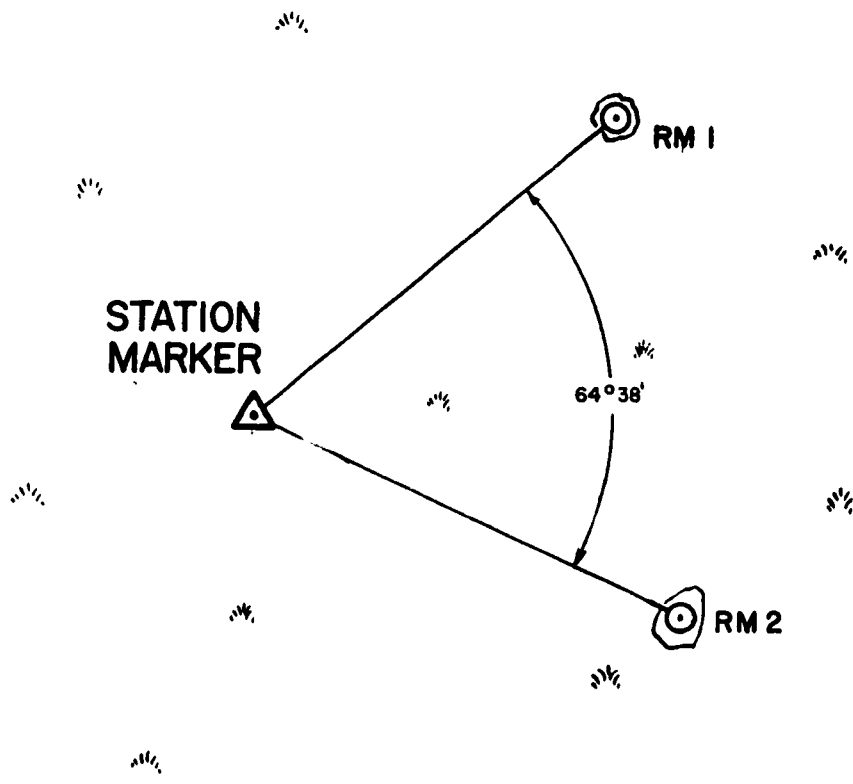
Upolu  
Runway



OCT. 1961  
SCALE

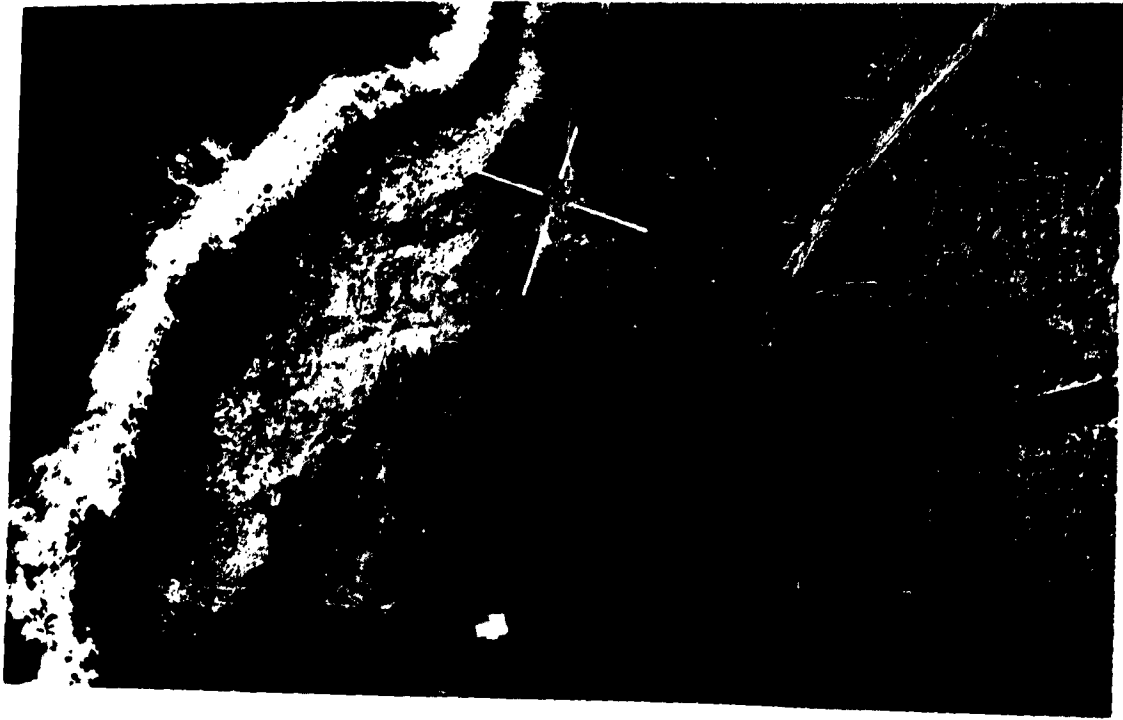


# STATION SKETCH KEALAEWA 2 (14)

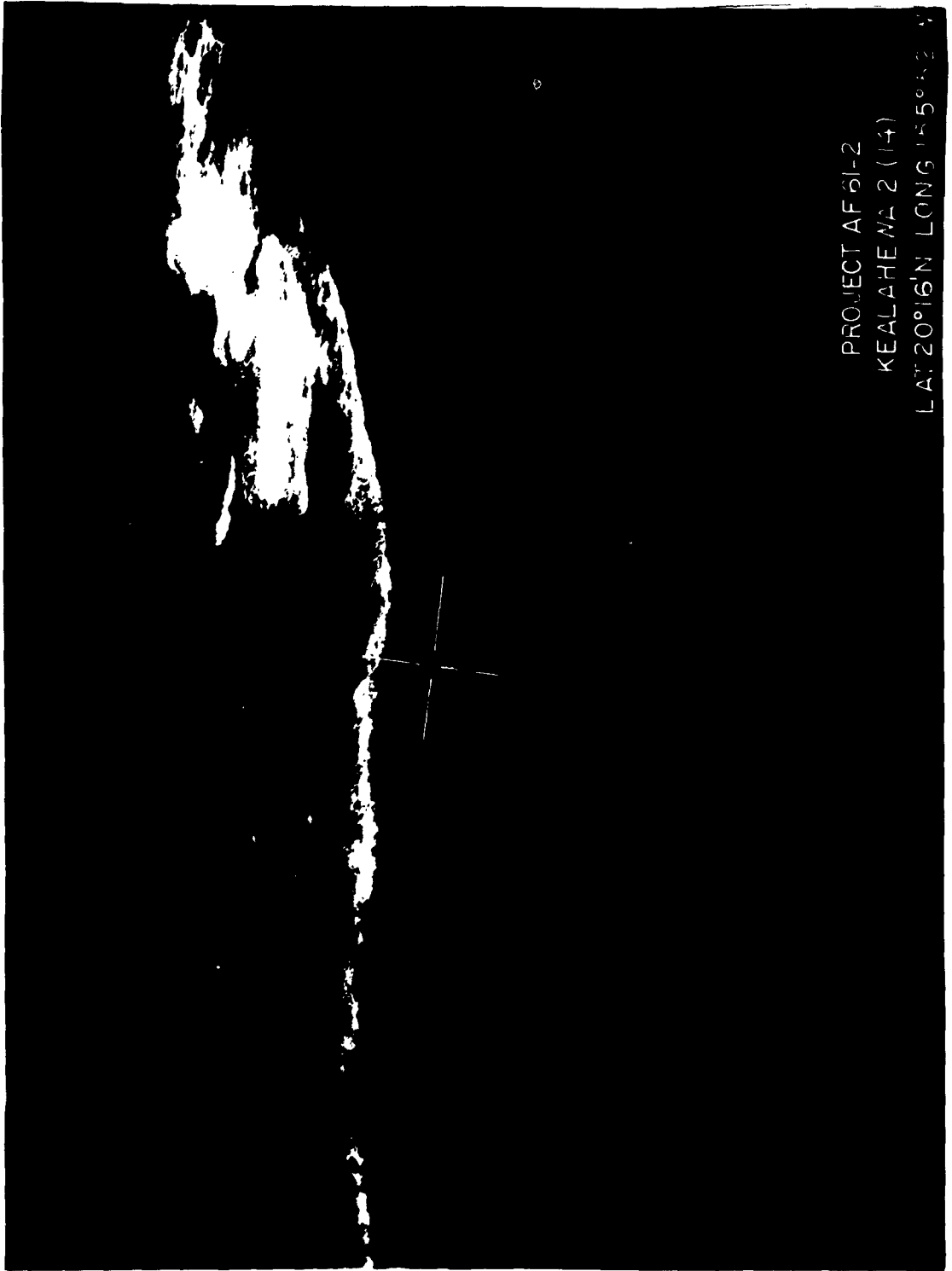


OCT 1961  
SCALE





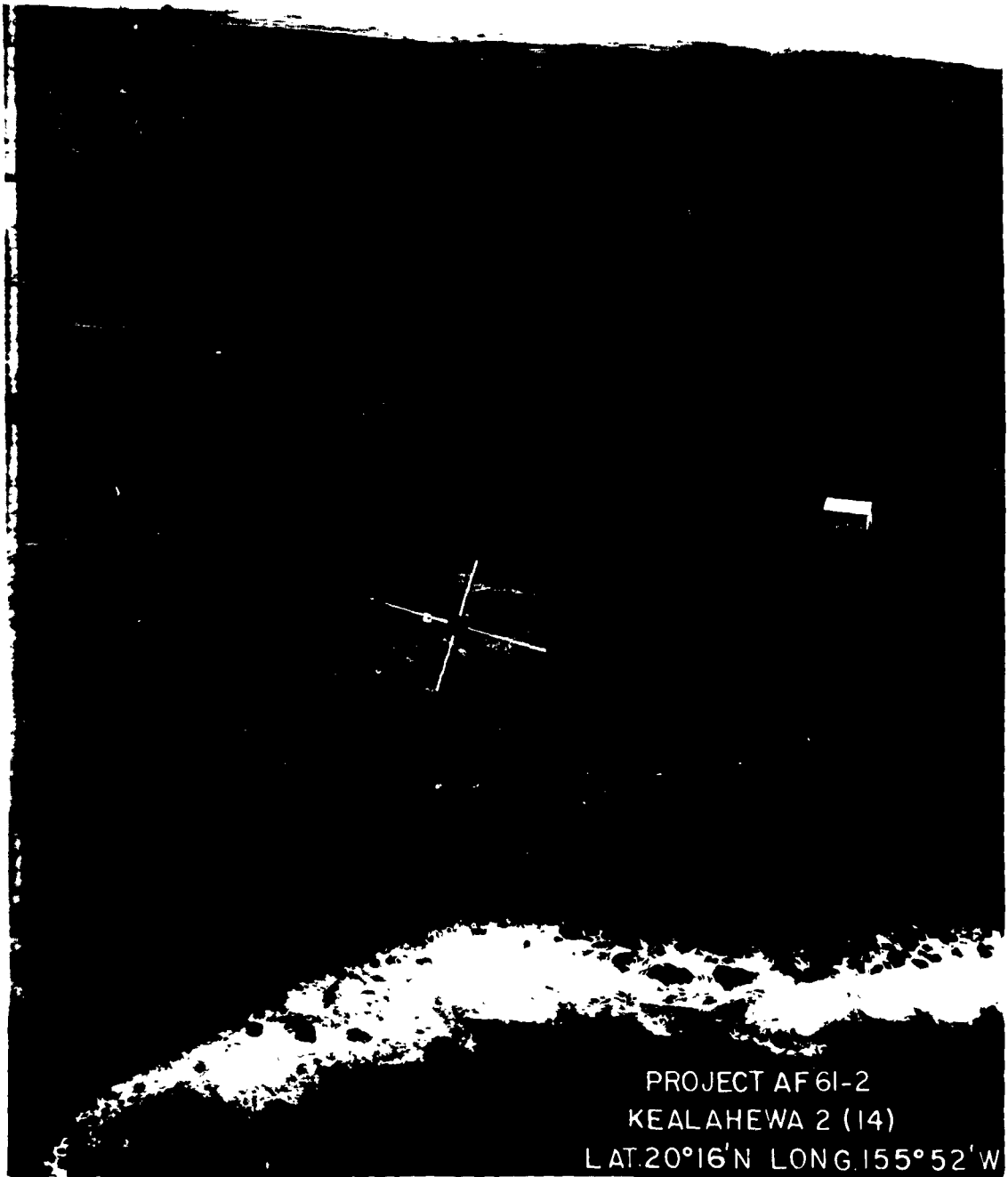
PROJECT AF 61-2  
KEALAHWA 2 (14)  
LAT 20° 16'N LONG 155° 52'W



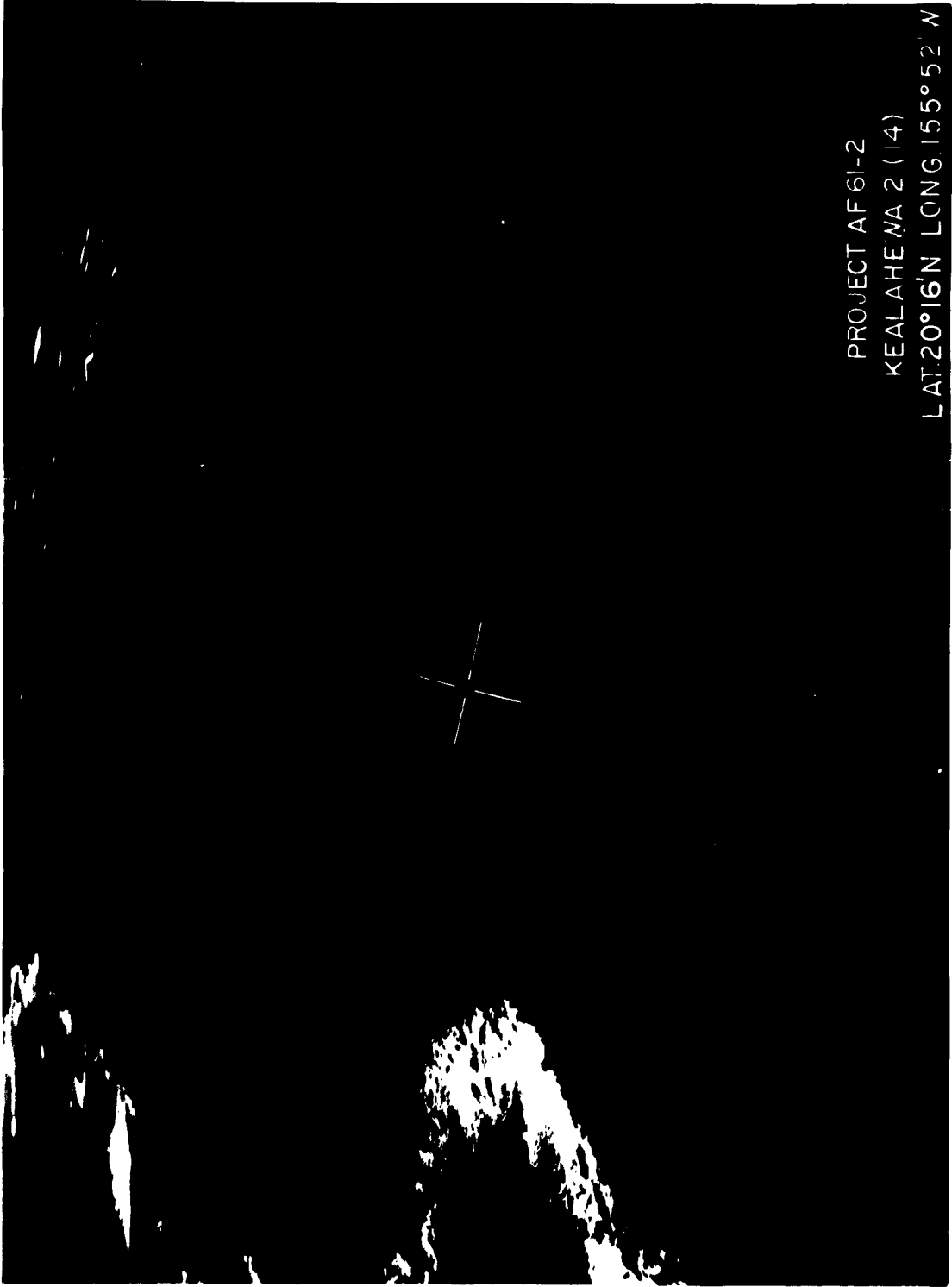
PROJECT AF 61-2

KEALAHEWA 2 (14)

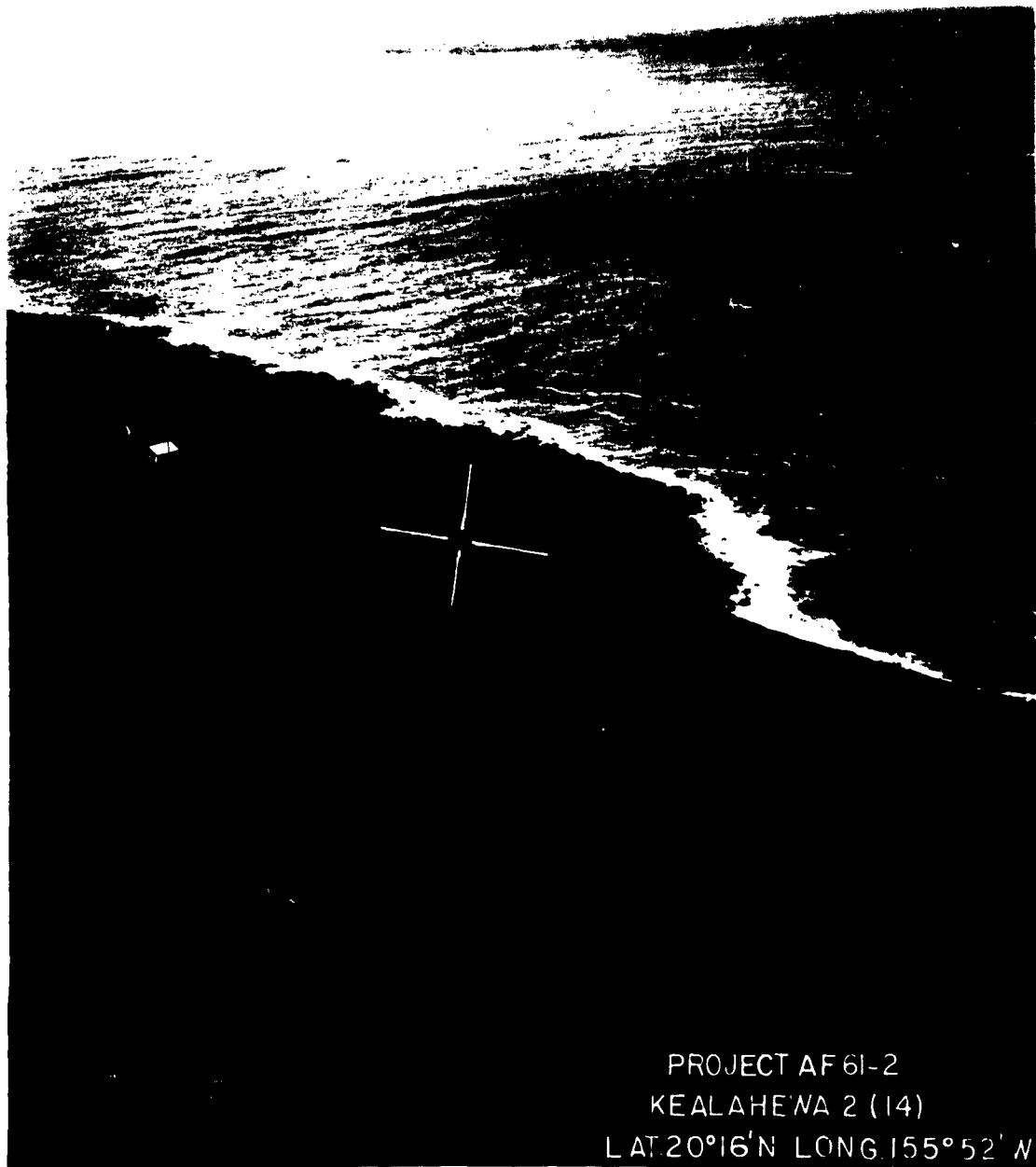
LAT 20°16'N LONG 155°42'W



PROJECT AF 61-2  
KEALAEWA 2 (14)  
LAT. 20° 16' N LONG. 155° 52' W



PROJECT AF 61-2  
KEALAEWA 2 (14)  
LAT 20°16'N LONG 155°52' W



PROJECT AF 61-2  
KEALAEWA 2 (14)  
LAT. 20°16' N LONG. 155°52' W

Name and Number: KAPUKAWAA (15)

Location: Island of Hawaii,  
State of Hawaii

Date Established: 1884 (Hawaiian Government Survey)

Date Recovered: 1961

Approximate Geographic Coordinates: Latitude: 19° 11' N  
Longitude: 155° 55' W

Station Elevation: 44 Feet (Trig List)

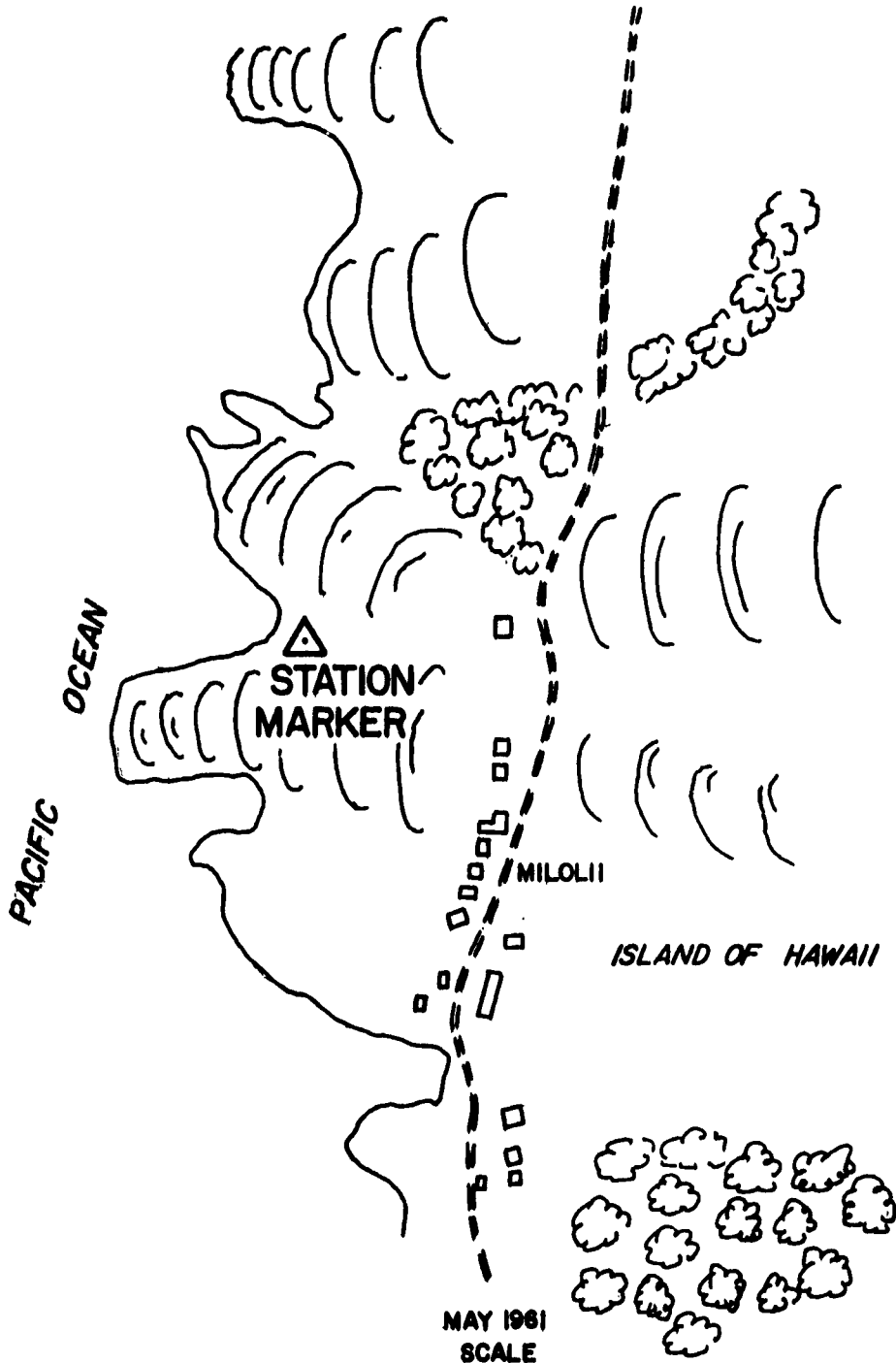
Description: The station is located at the southwest side of the island of Hawaii, on the north side of the village of Milolii, approximately 50 yards southwest of the 1926 lava flow, 150 yards west of road and 30 feet east of the sea cliff. It is approximately 300 yards northwest of the school. The station is marked by a punch hole in the center of a 1 1/2" iron bar protruding about 2 feet above the center of a triangular concrete slab which measures 6 feet on each side. The concrete slab projects about 1 foot above the lava and the 1 1/2" bar mentioned above has a metal target approximately 6 feet long fitted over it.

References: Reference Markers #1 and #2 are standard disks set in drill holes in rock and stamped "KAPUKAWAA #1, 1948" and "KAPUKAWAA #2, 1948", respectively. Reference marker #1 is set in a large boulder, approximately 8 feet in diameter, which protrudes 6 feet above the ground and is 1 foot lower than the station marker. Reference Marker #2 is set in a large boulder, flush with the ground and 6 feet lower than the station marker.

<u>OBJECT</u>	<u>DISTANCE (FEET)</u>	<u>AZIMUTH FROM SOUTH (GEODETIC)</u>
RM #1	46.31	263° 57' 35"
RM #2	48.79	25° 32' 28"

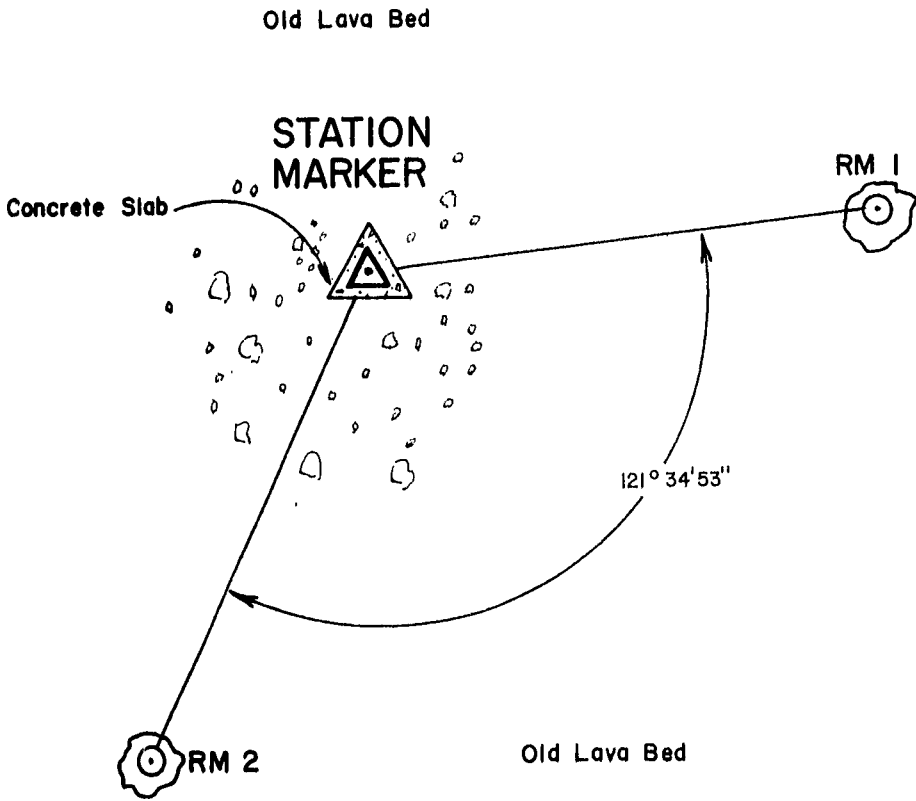
Route Description: From the main highway intersection at Kona Airport, Kailua, Hawaii, proceed southeast on Route 182 approximately 8 miles to Route 11. Continue south approximately 26 additional miles to a dirt road on the right (west). Proceed approximately 5 miles on the dirt road, down the slope and across the lava flow to the north side of the village of Milolii. The station is located 150 yards off the right (west) side of the road between the first and second houses in the village. At the time of reconnaissance the dirt road was not well marked but it is approximately 3 miles past the 1919 lava flow and between the 92nd and 93rd Hilo mile marker post.

# AREA SKETCH KAPUKAWAA (15)



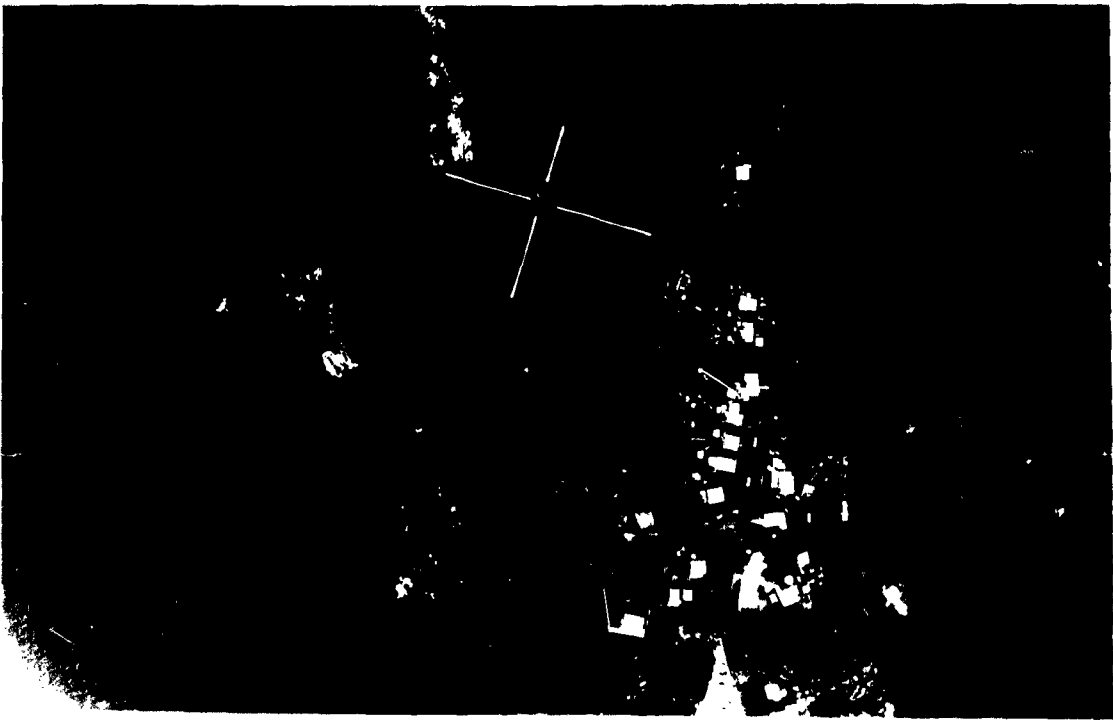
0 1/8 1/4  
MILE

# STATION SKETCH KAPUKAWAA (15)



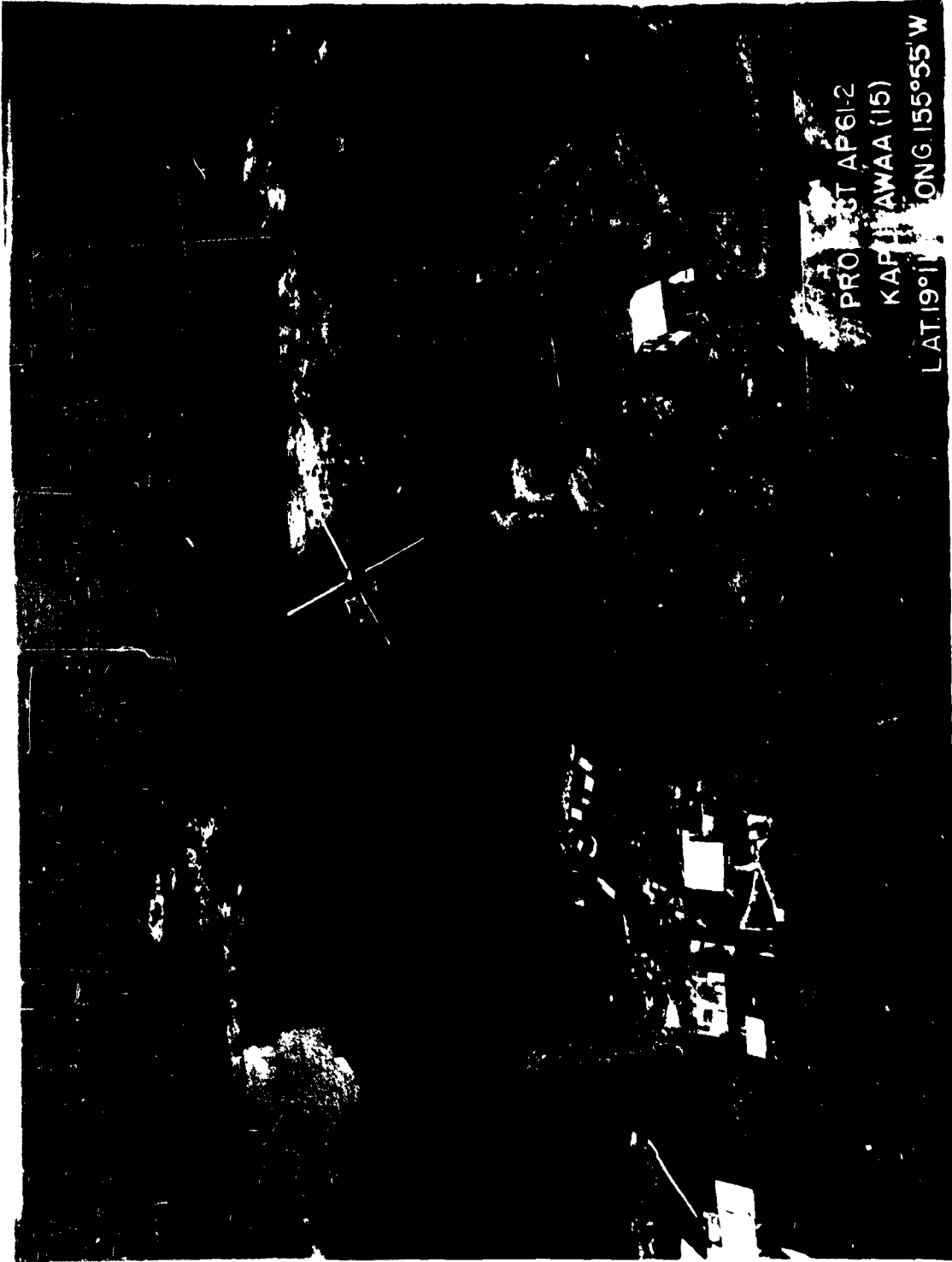
MAY 1961  
SCALE







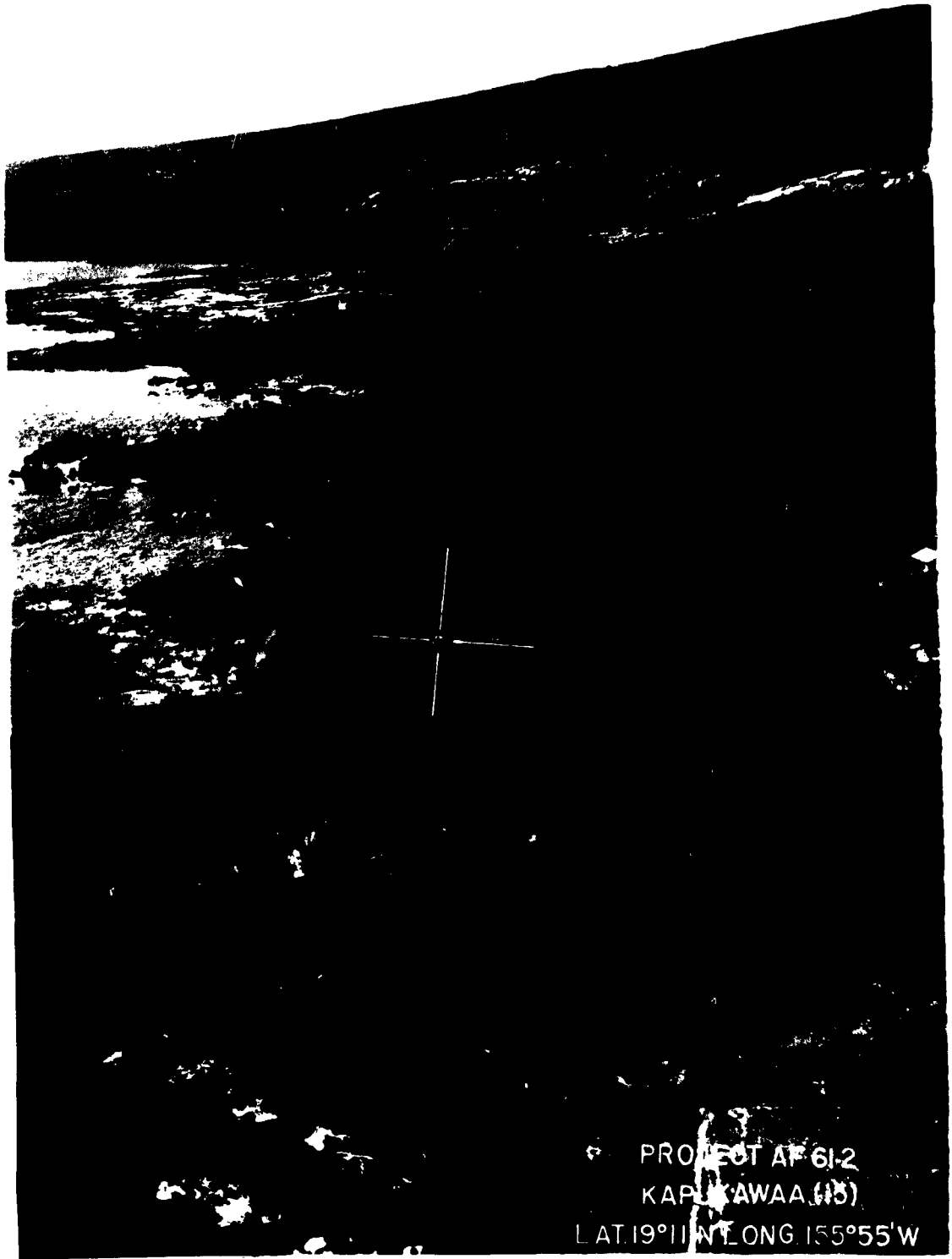
PROJECT AF 61-2  
KAPUWAA (15)  
LAT 19°11' N LONG 155°55' W



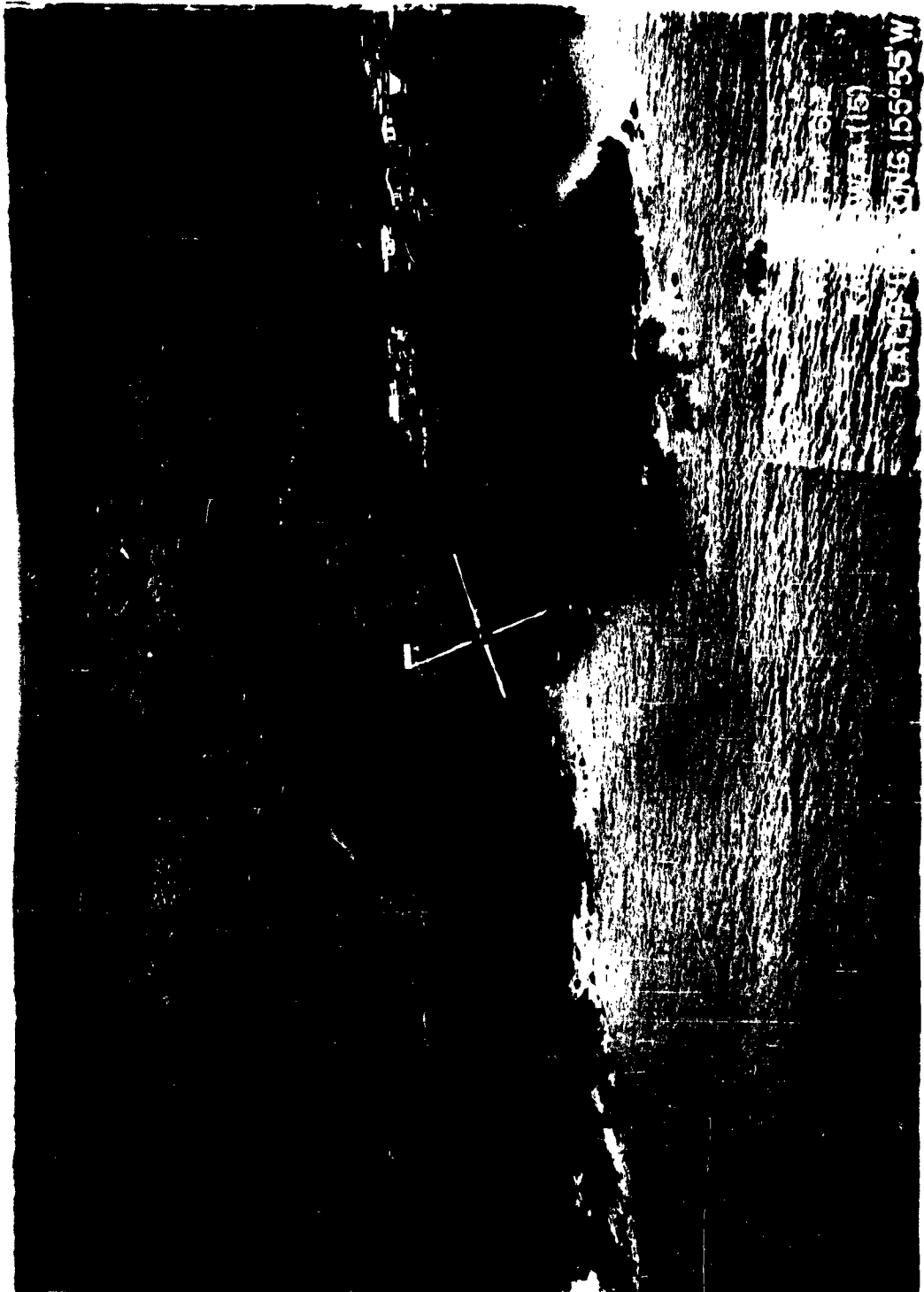
PROJECT AP61-2

KAPITAWAA (15)

LAT. 19° 11' N LONG. 155° 55' W



PROJECT AF 61-2  
KAPUKAWAA (18)  
LAT. 19°11'N LONG. 155°55'W



155° 55' W  
115  
612

### HIRAN STATION DESCRIPTION

Name and Number: JOHNSTON ISLAND (16)      Location: Sand Island  
Johnston Island

Date Established: 1961

Approximate Geographic Coordinates: Latitude: 16° 45' N  
Longitude: 169° 31' W

Station Elevation: 6 Feet (Approximate reference to mean tide level)

Description: The station is located on Sand Island, west of the causeway near the Coast Guard Station. It is in line with the southwest side of the east wing of the most easterly of the Coast Guard Quarters buildings, and 32.6 feet from the southeast corner of the wing. The station is a standard USC&GS triangulation disk set in concrete in a 4 inch terra cotta pipe, and is flush with the ground. The disk is stamped "JOHNSTON ISLAND 1961".

Reference: RM #1 is a standard USC&GS reference disk set in concrete in a 4 inch pipe, flush with the ground, and is stamped "JOHNSTON ISLAND NO 1 1961". The reference mark lies 70.3 feet southeast of the southeast corner of the east wing of the Coast Guard Quarters building and 89.3 feet southeast of the southwest corner of the above mentioned wing. The azimuth mark is located on Johnston Island at its southeast corner on a small peninsula. The azimuth mark is on the highest point of this peninsula. It is a standard USC&GS azimuth disk set in a concrete monument which projects about 3 inches above the ground, and is stamped "JOHNSTON ISLAND 1961". A station "JUDY" was also included in the astronomic azimuth determinations. This station is a bronze plaque (USNHO archive No. 306024), set in the concrete block of the northernmost of a series of eight green lights which mark the eastern end of the runway on Johnston Island. "JUDY" is about 320 feet north of the azimuth mark.

#### Observation from Hiran Station:

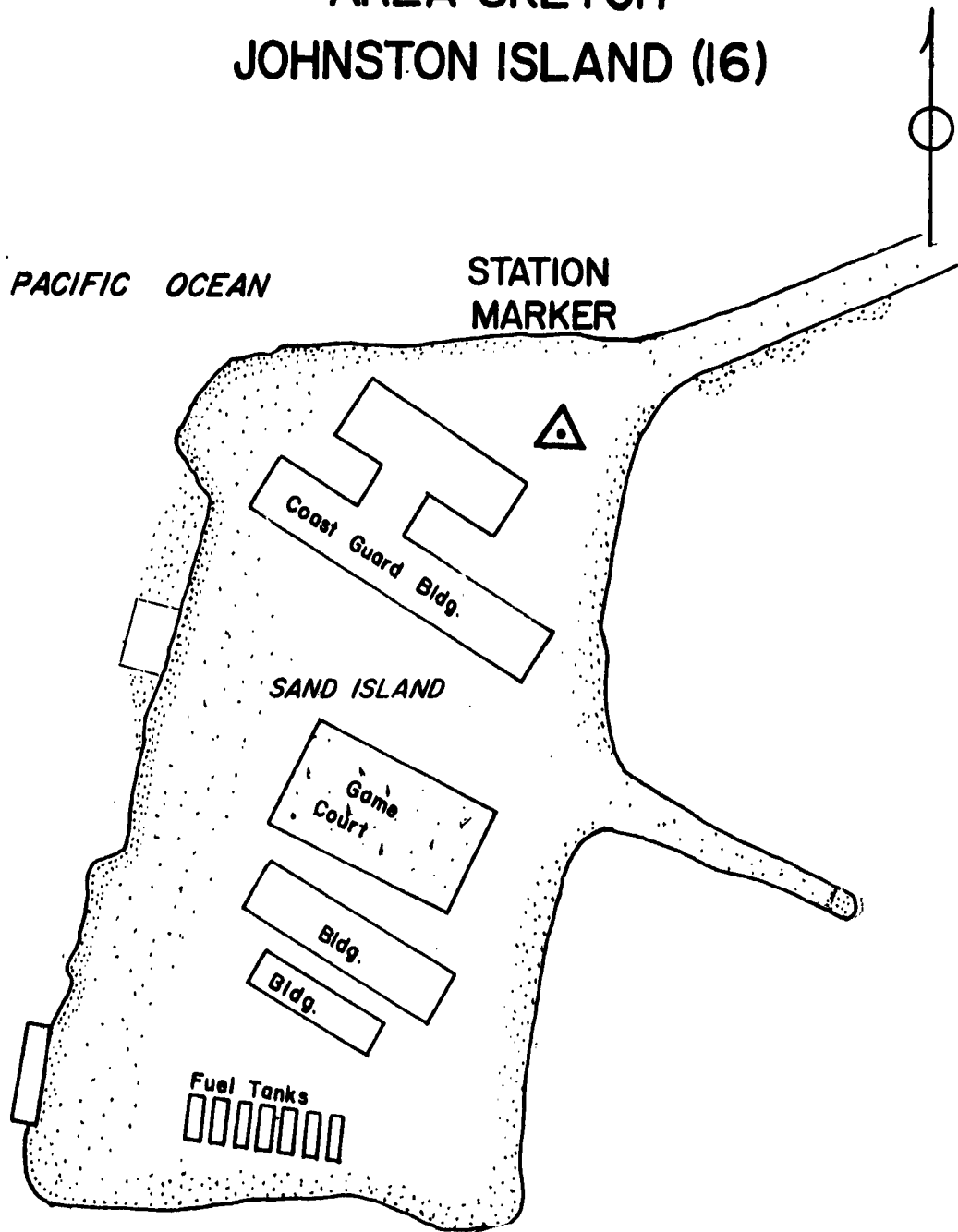
<u>OBJECT</u>	<u>DISTANCE (FEET)</u>	<u>AZIMUTH FROM SOUTH (ASTRONOMIC)</u>
RM #1	47.38	309° 21' 26"

#### Observation from RM #1

Azimuth Mark	5500	(Approx)	34° 56' 53".46
Judy	5200	(Approx)	38° 23' 50".82

Route Description: Johnston Island can be reached by surface ship or aircraft. Sand Island can be reached by small boat from Johnston Island.

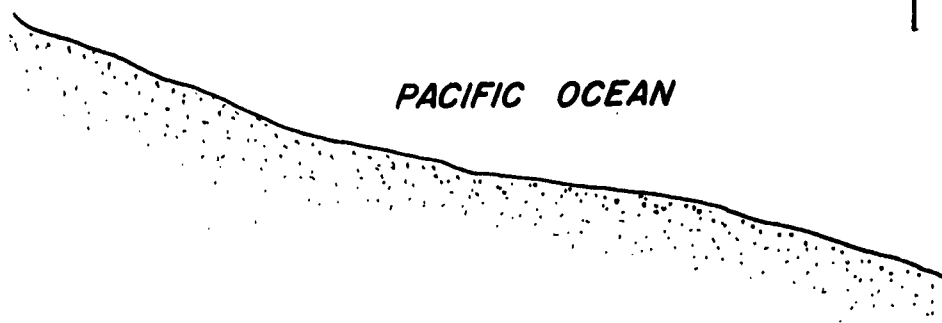
# AREA SKETCH JOHNSTON ISLAND (16)



MAY 1961  
SCALE



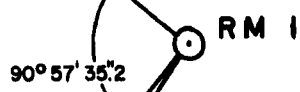
# STATION SKETCH JOHNSTON ISLAND (16)



PACIFIC OCEAN



STATION  
MARKER



$90^{\circ}57'35.2''$

To R.M. JUDY

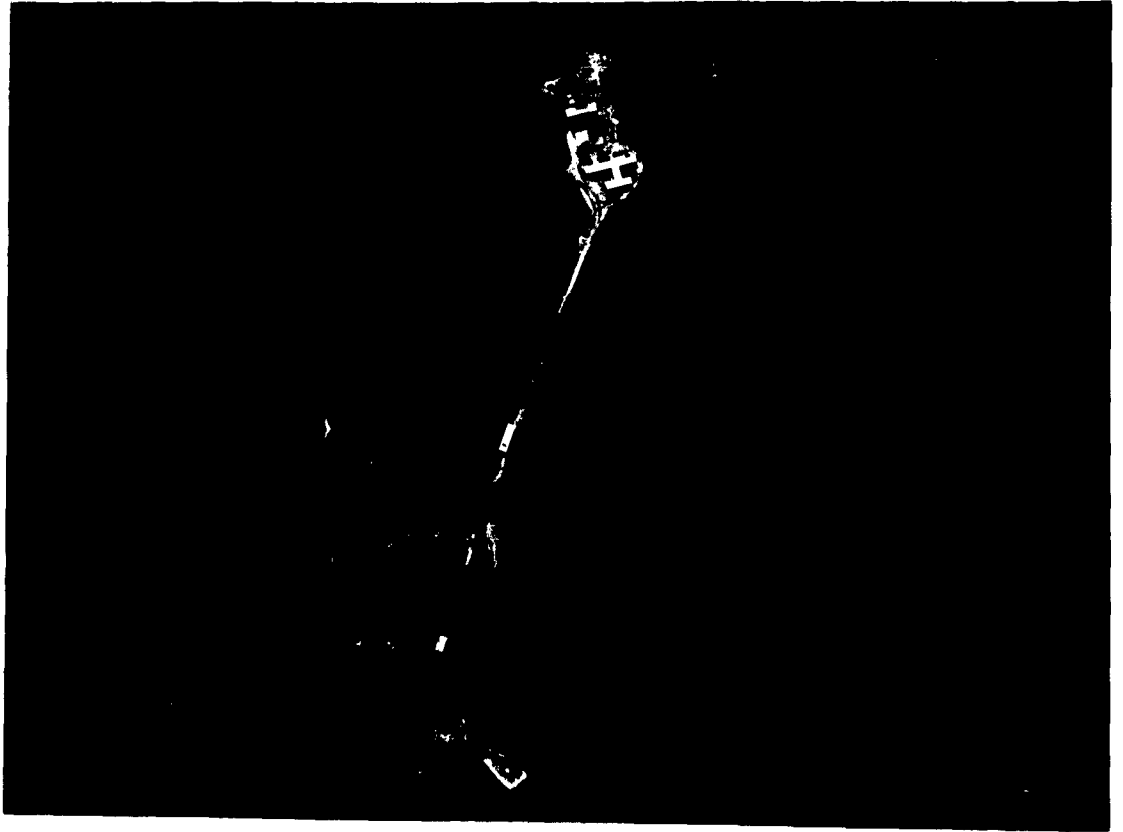
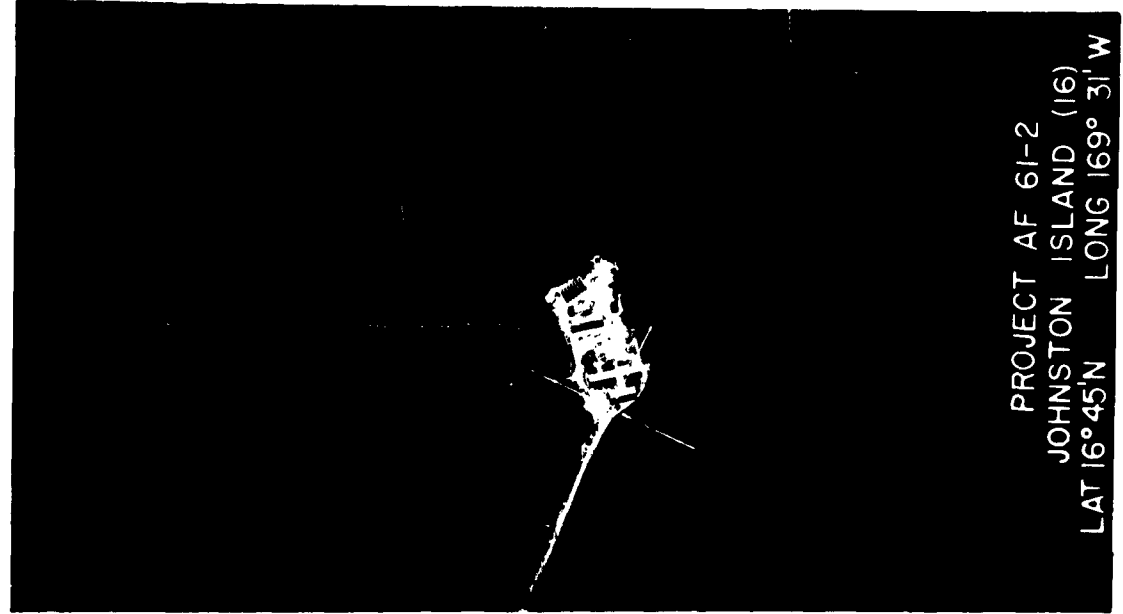
To AZ MARK

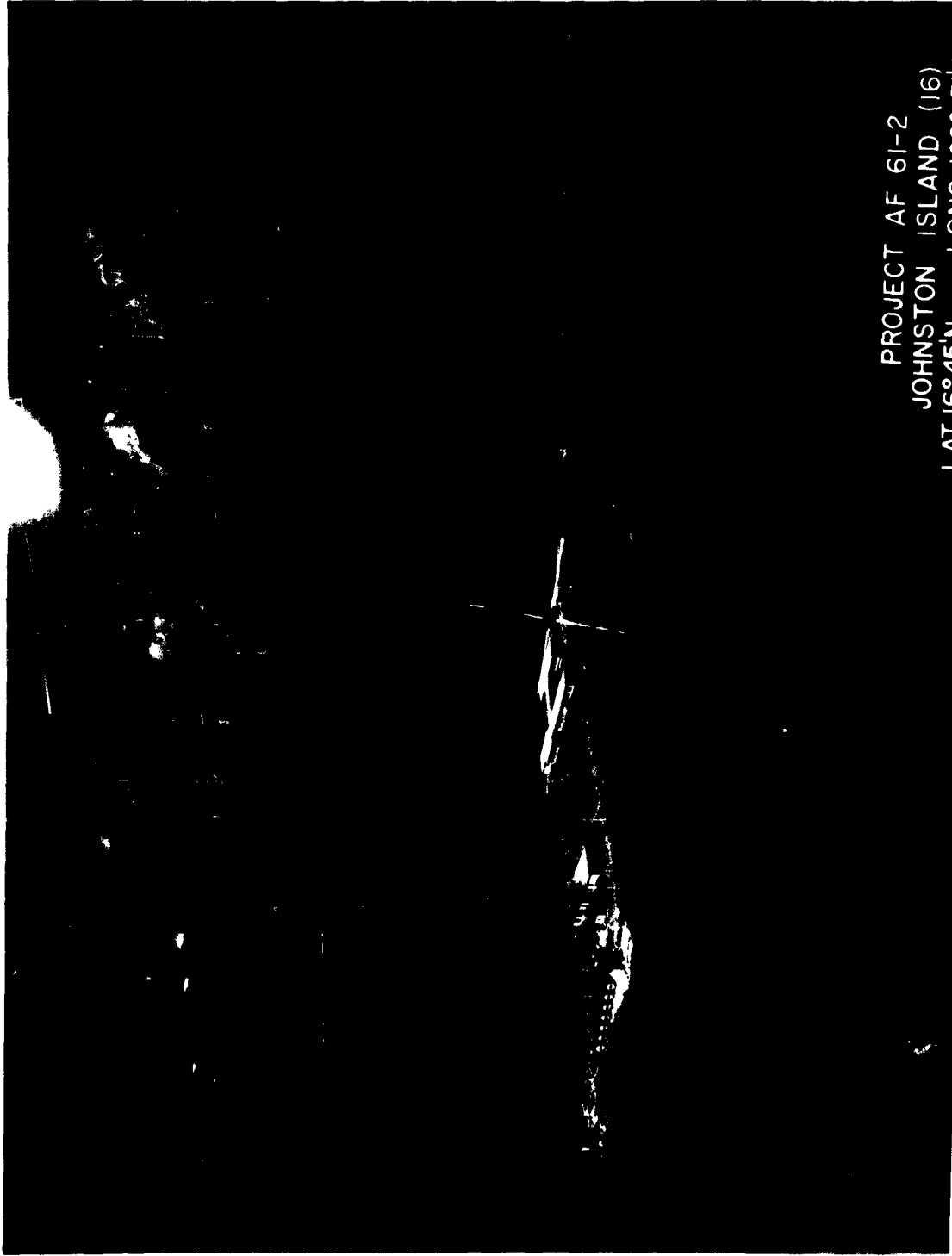
$3^{\circ}26'57.36''$

MAY 1961  
SCALE

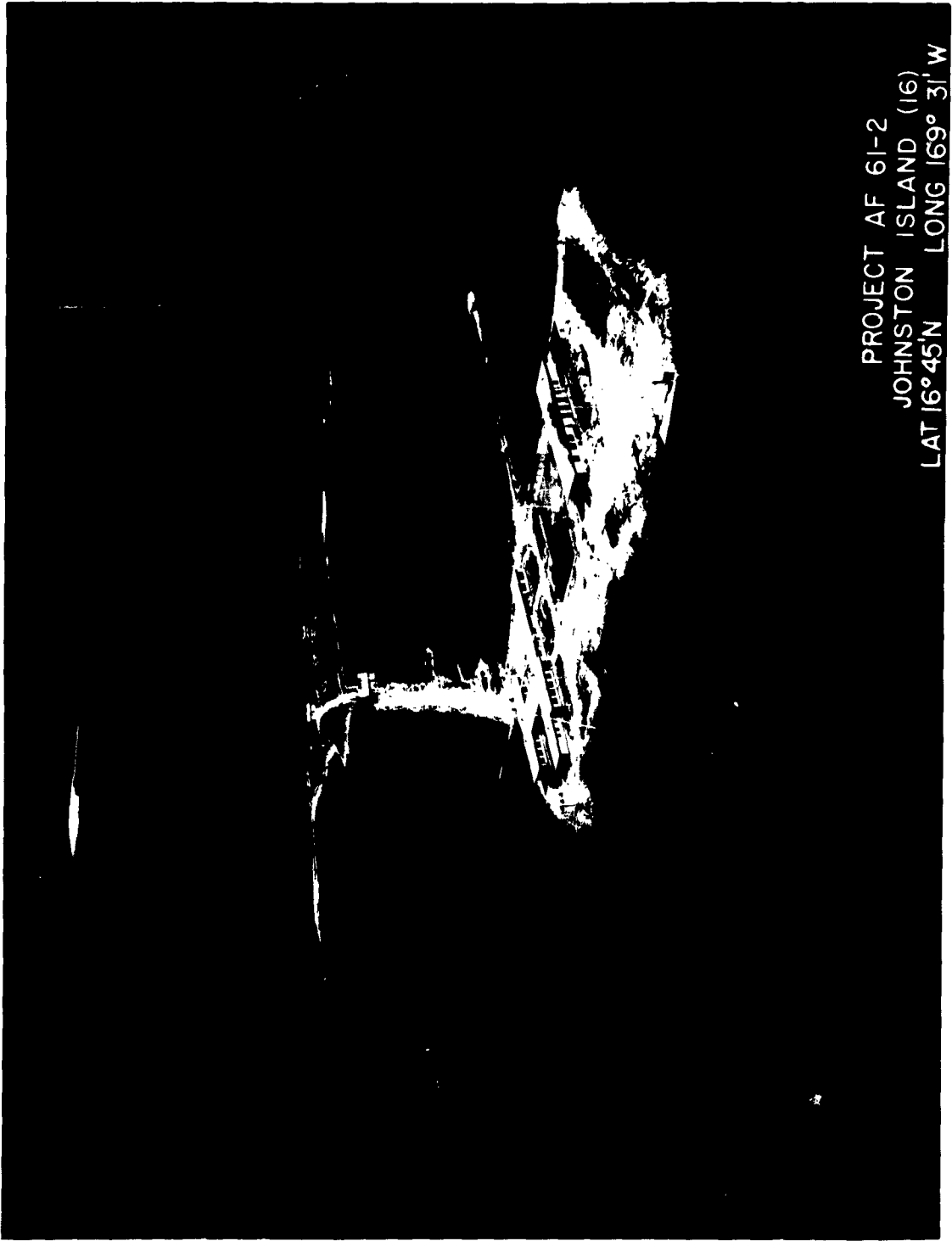


PROJECT AF 61-2  
JOHNSTON ISLAND (16)  
LAT 16° 45' N LONG 169° 31' W



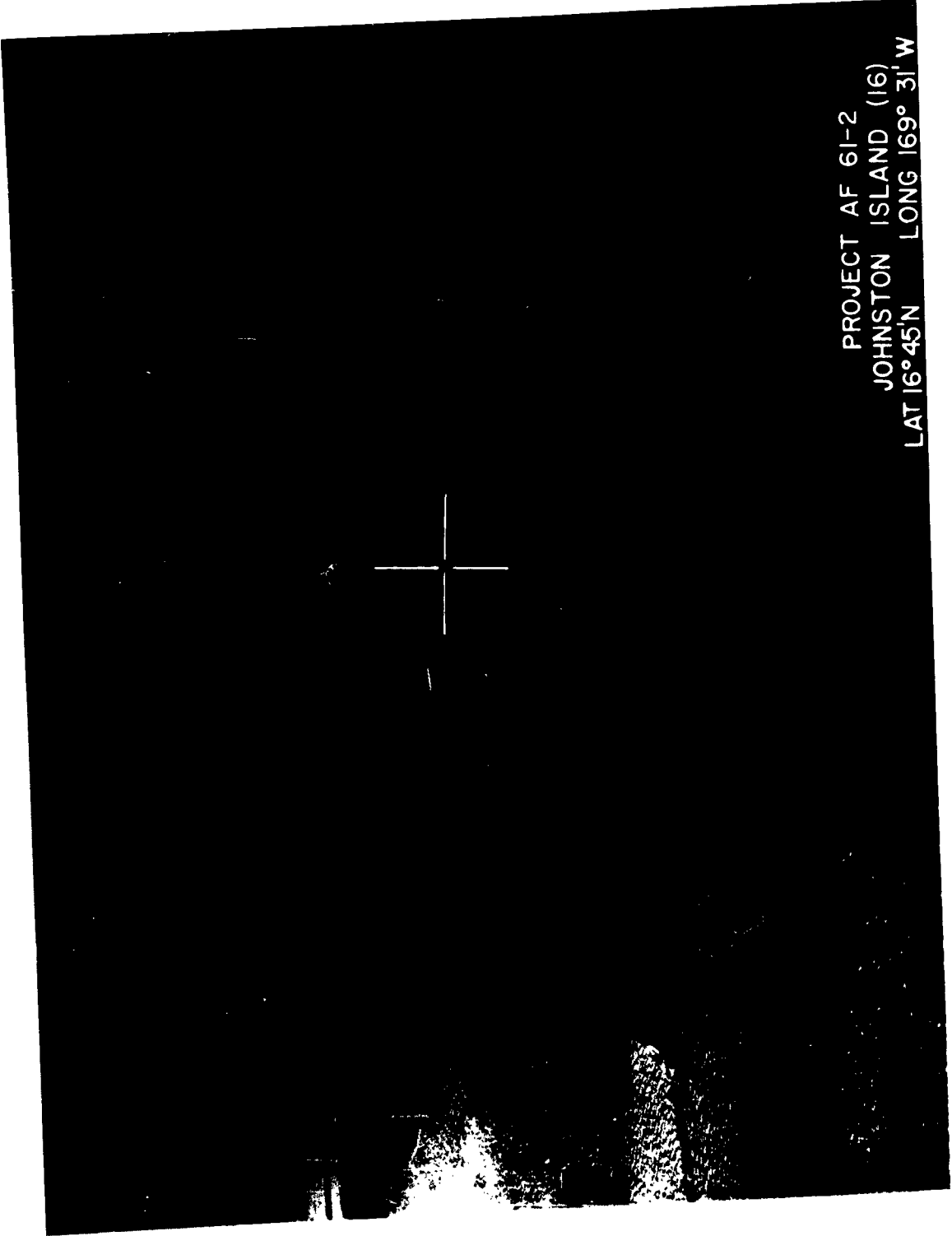


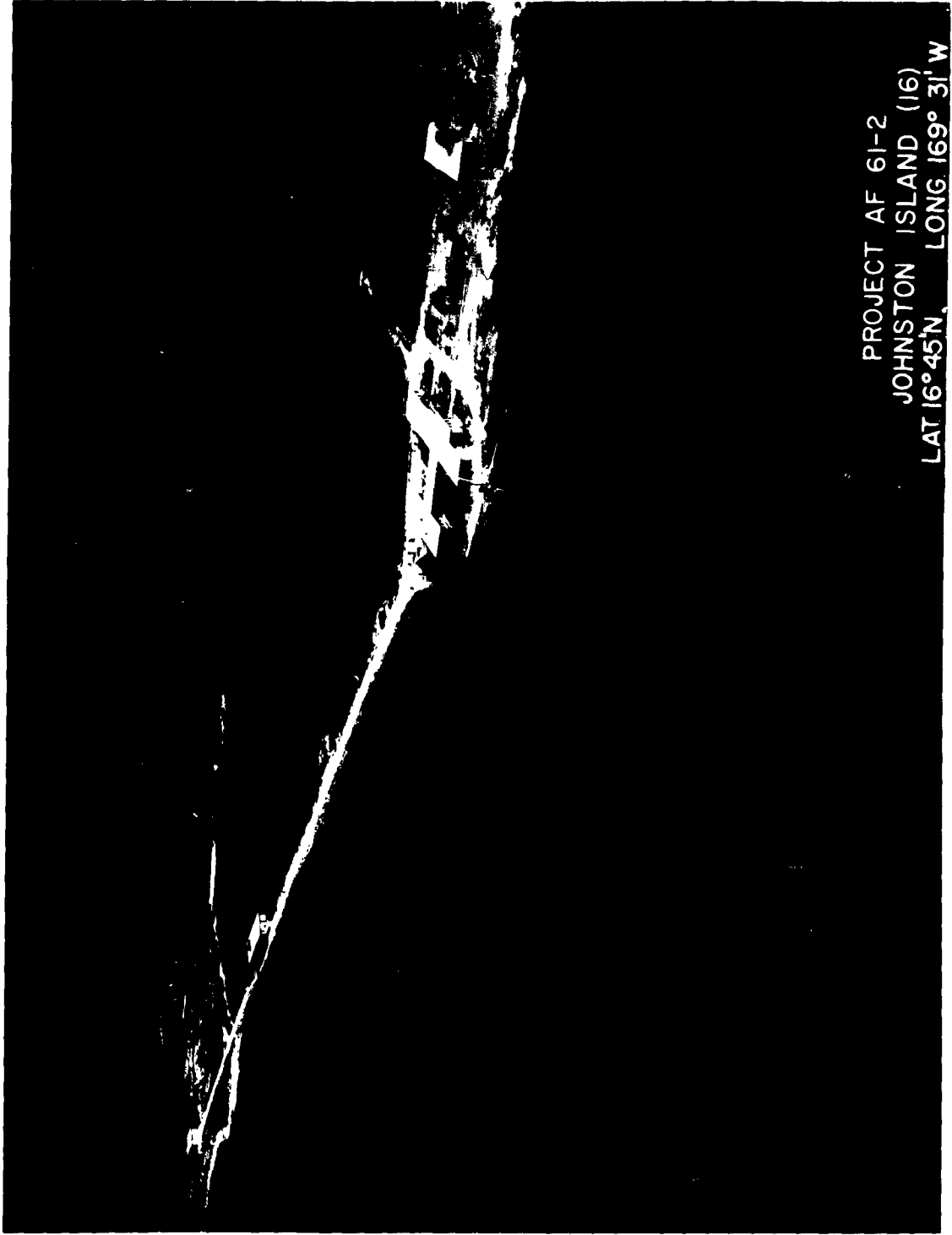
PROJECT AF 61-2  
JOHNSTON ISLAND (16)  
LAT 16° 45' N LONG 169° 31' W



PROJECT AF 61-2  
JOHNSTON ISLAND (16)  
LAT 16° 45' N LONG 169° 31' W

PROJECT AF 61-2  
JOHNSTON ISLAND (16)  
LAT 16°45'N LONG 169° 31' W





PROJECT AF 61-2  
JOHNSTON ISLAND (16)  
LAT 16° 45' N, LONG 169° 31' W

### HIRAN GROUND STATION DESCRIPTION

Name and Number: PELE (17)

Location: Kauai Island,  
State of Hawaii

Date Established: 1926 (USC&GS)

Date Recovered: 1961

Approximate Geographic Coordinates: Latitude: 22° 05' N  
Longitude: 159° 40' W

Station Elevation: 3,657 Feet (Differential leveling from USGS bench mark)

Description: The station is located in western Kauai, on the high conical peak named Puu Ka Pele, about 8 miles due north of Waimea. This is identical with station Puu Ka Pele of the Hawaiian Government Survey. The station is marked by a standard USC&GS triangulation marker disk stamped "KAPELE 1926" over which there is a concrete slab about 4 feet square surmounted by a concrete monument in the shape of a truncated pyramid, about 1 foot square at the base and 1 1/2 feet high; there is a galvanized iron pipe set vertically in this monument, directly over the marker disk, into which a metal flag can be inserted. The concrete slab is inscribed "PELE 10-14-30".

References: A United States Geological Survey Benchmark stamped "3655" is the only reference. A USC&GS reference mark described as a standard disk set in rock outcrop 13.70 meters from the station in azimuth 143° 23' was not found.

<u>OBJECT</u>	<u>DISTANCE (FEET)</u>	<u>AZIMUTH FROM SOUTH (GEODETIC)</u>
USC&GS Bench Mark	25.9	282° 36'

Route Description: The island of Kauai may be reached by boat or air. From the gate at Bonham Air Port on the island of Kauai, turn right on Route 50 and proceed eastward 6.6 miles, to the left turn on Route 55 at the town of Kehaha. Then proceed north 0.3 of a mile through town. Angle 45° left and continue on Route 55 0.6 of a mile driving towards the mountains. Turn right at the foot of the mountains and continue on Route 55 climbing up the mountain 10.7 miles to the Microwave station on the east side of the road. Walk up the driveway to the Microwave station, then take the path up the 200 foot hill to the Microwave antenna. The station PELE is 30 feet north of the Microwave antenna.

# AREA SKETCH PELE (17)

Puu Ka Pele Peak

STATION  
MARKER



KAUAI ISLAND

Waimea River

To  
Bonham  
Airport

55

50

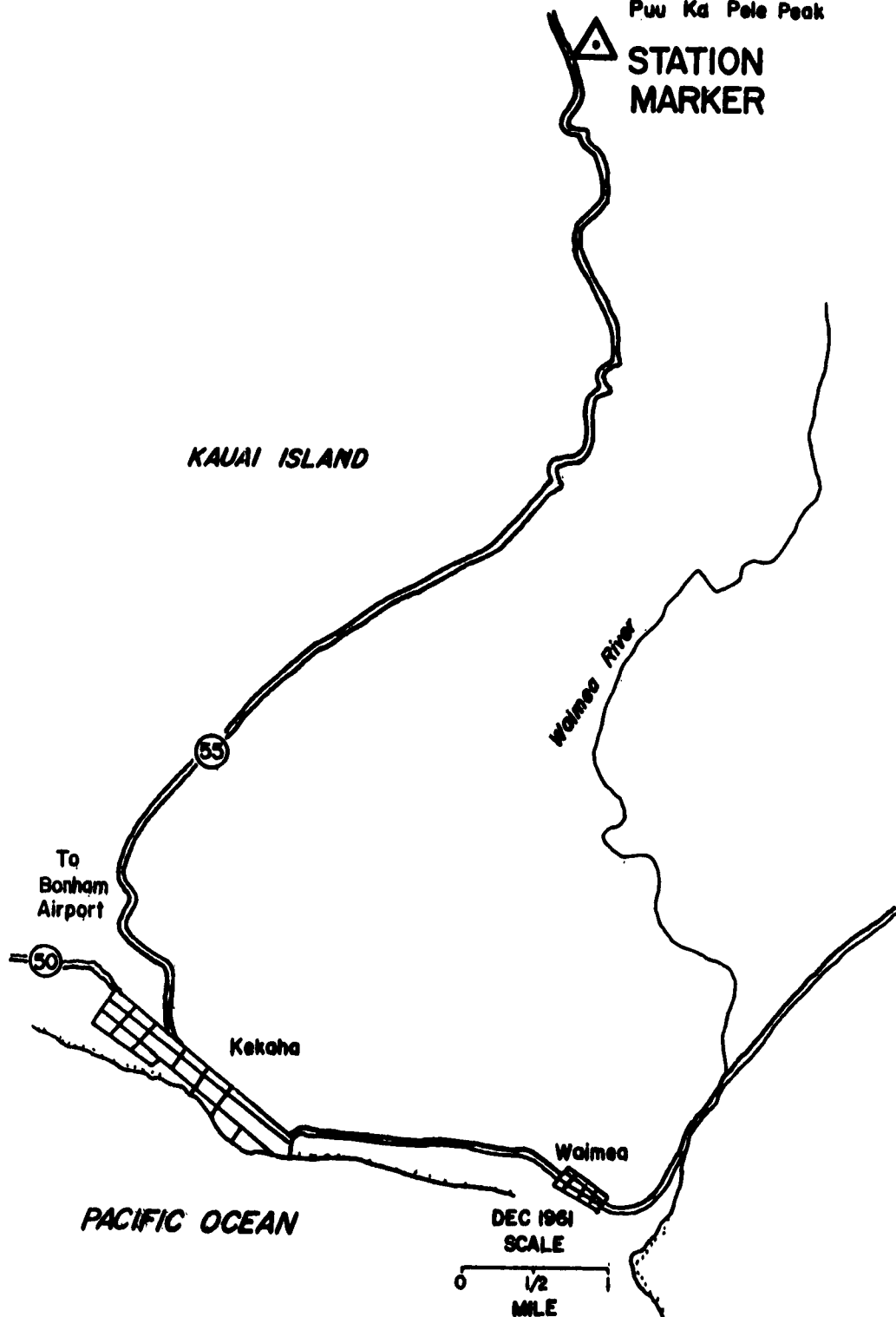
Kekaha

Waimea

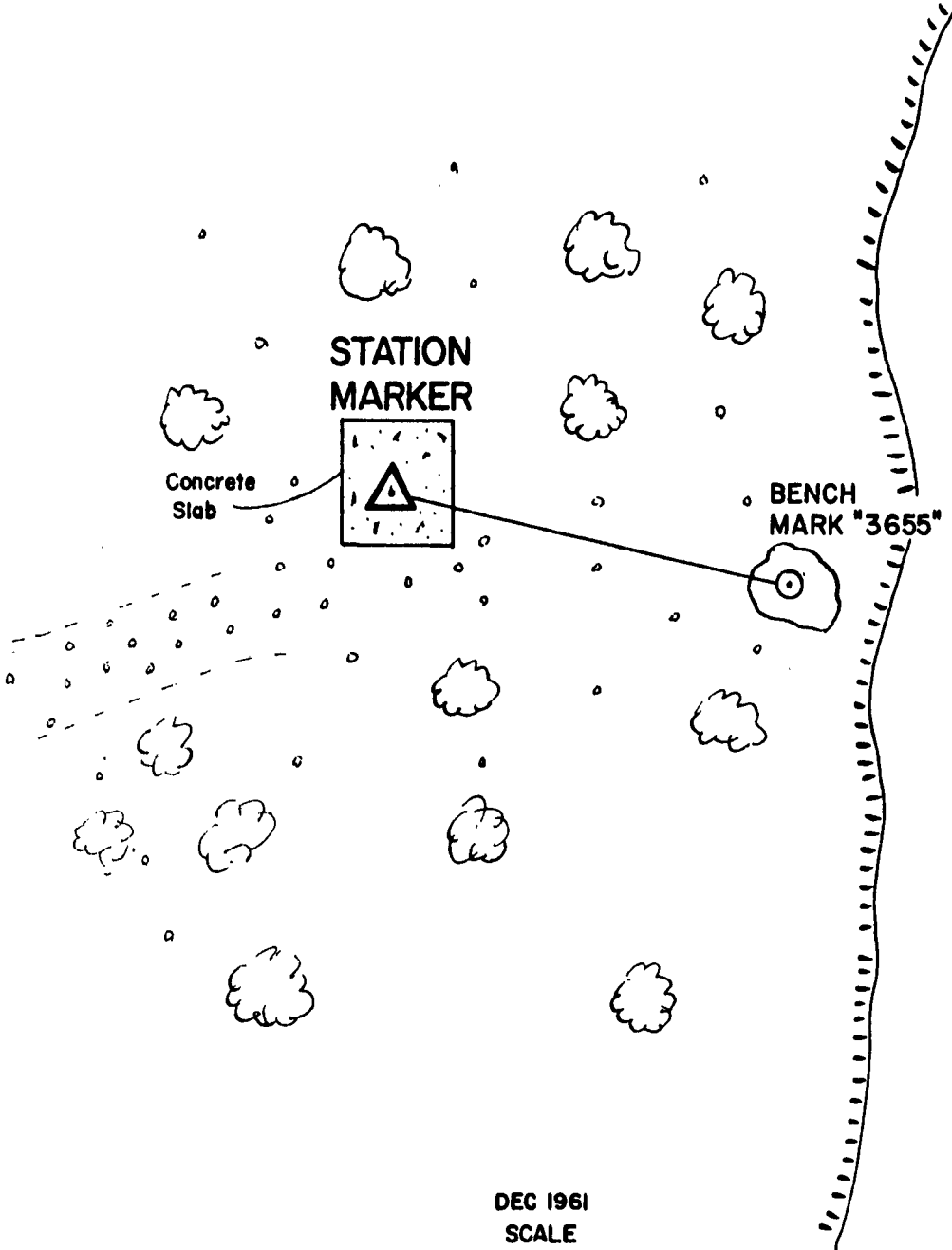
PACIFIC OCEAN

DEC 1961  
SCALE

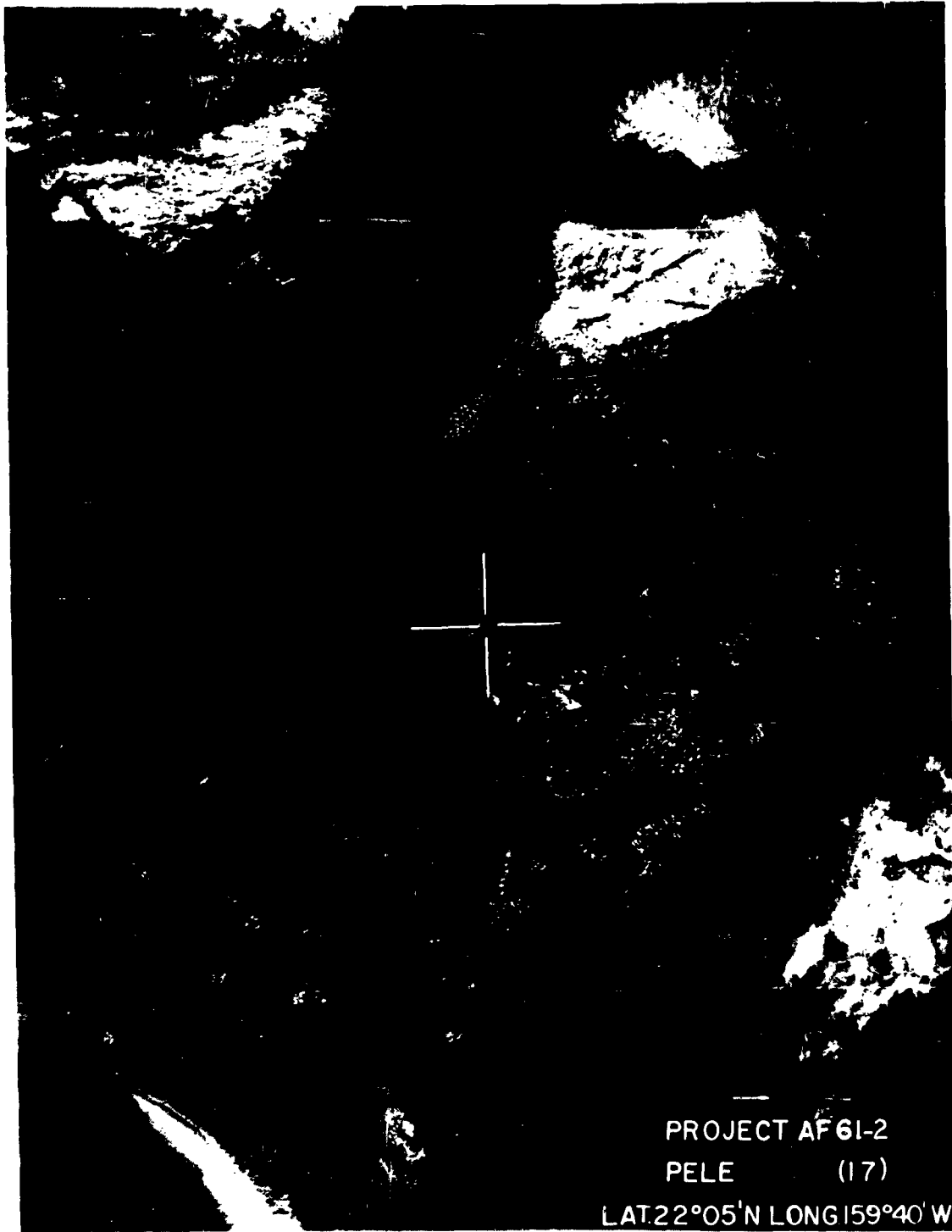
0 1/2 MILE



# STATION SKETCH PELE (17)



DEC 1961  
SCALE  
0 5 10  
FEET



PROJECT AF 61-2

PELE (17)

LAT. 22°05'N LONG 159°40'W

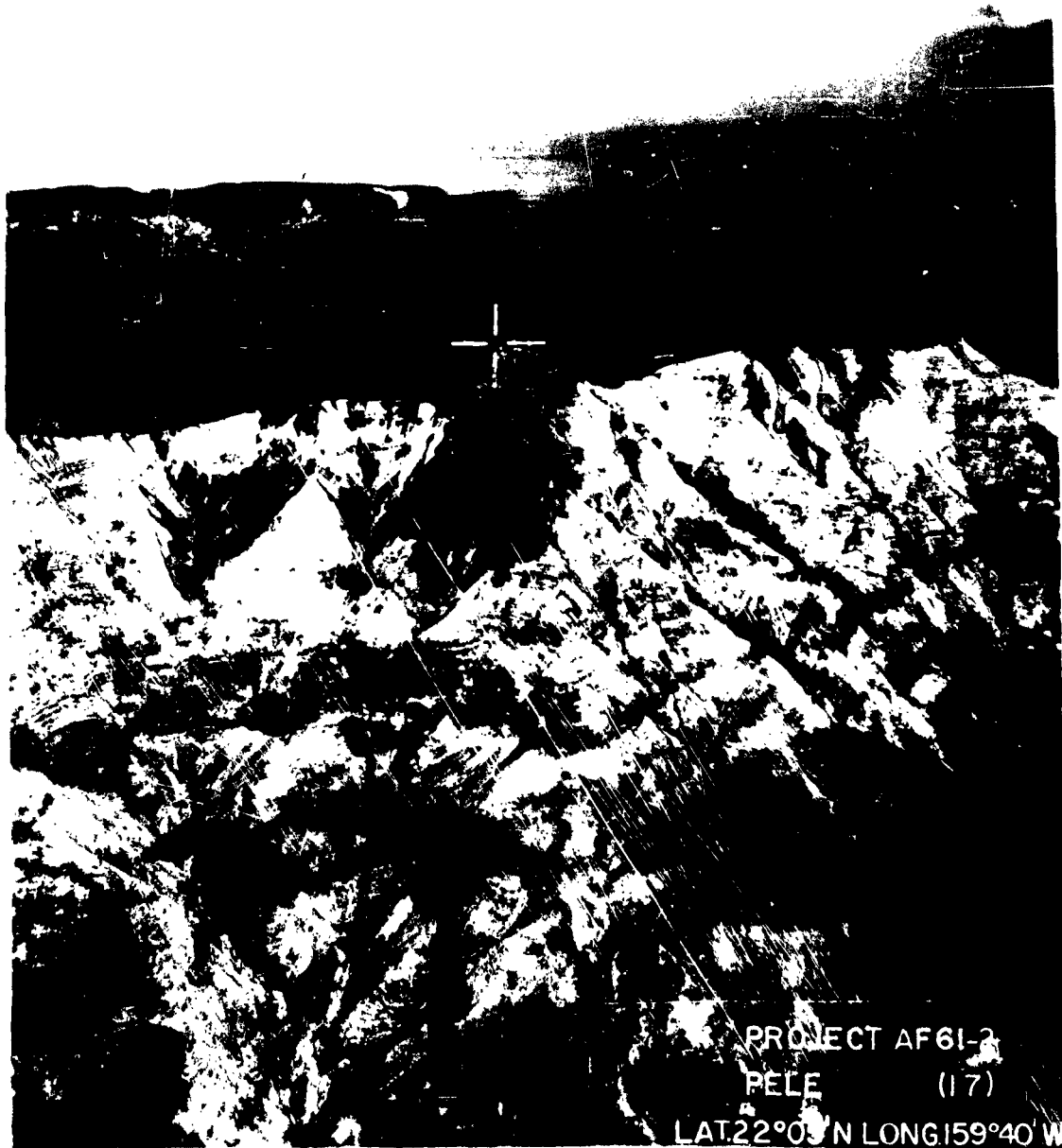


61-2  
17) AS  
10 50 40 W

PROJECT AF 61-2  
PELE (17)

LAT 22°05'N LONG 159°40'W





PROJECT AF61-2

PELE (17)

LAT 22° 03' N LONG 159° 40' W



PROJECT AF 61-2  
PELE (17)

LAT 2°05'N LONG 159°40'W