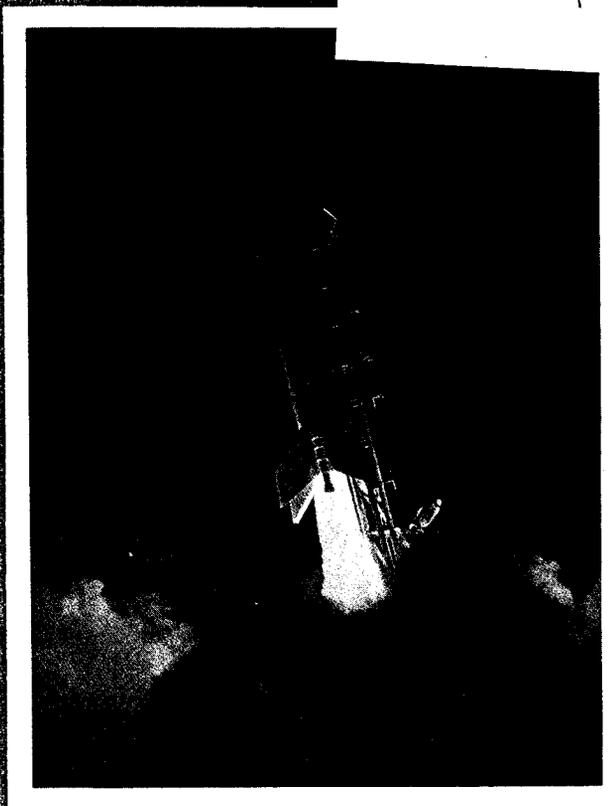
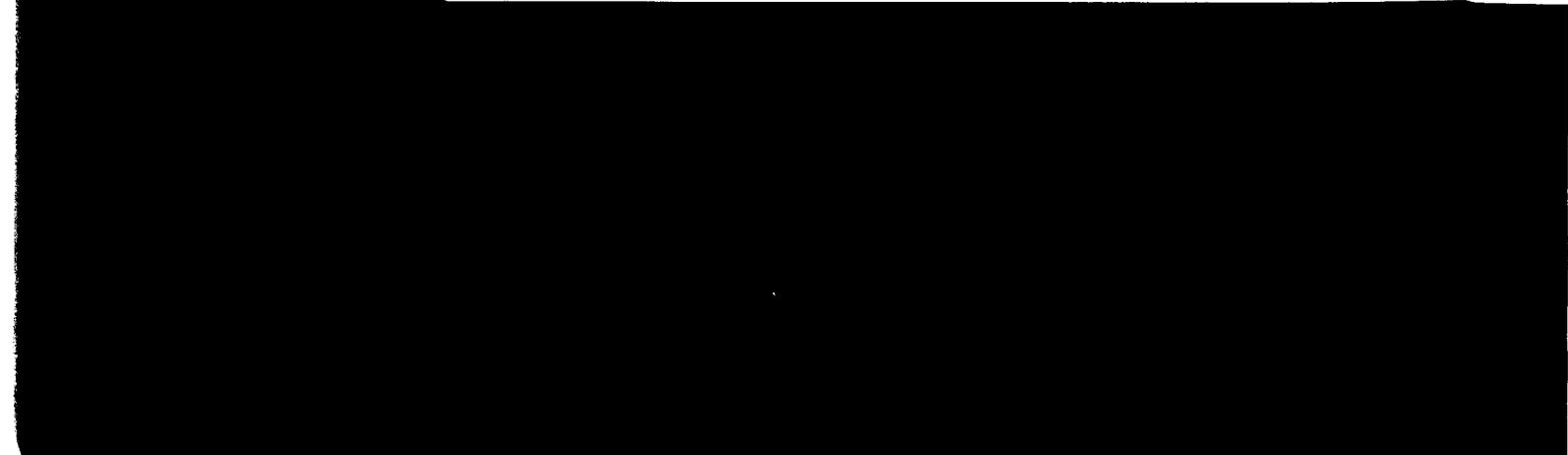
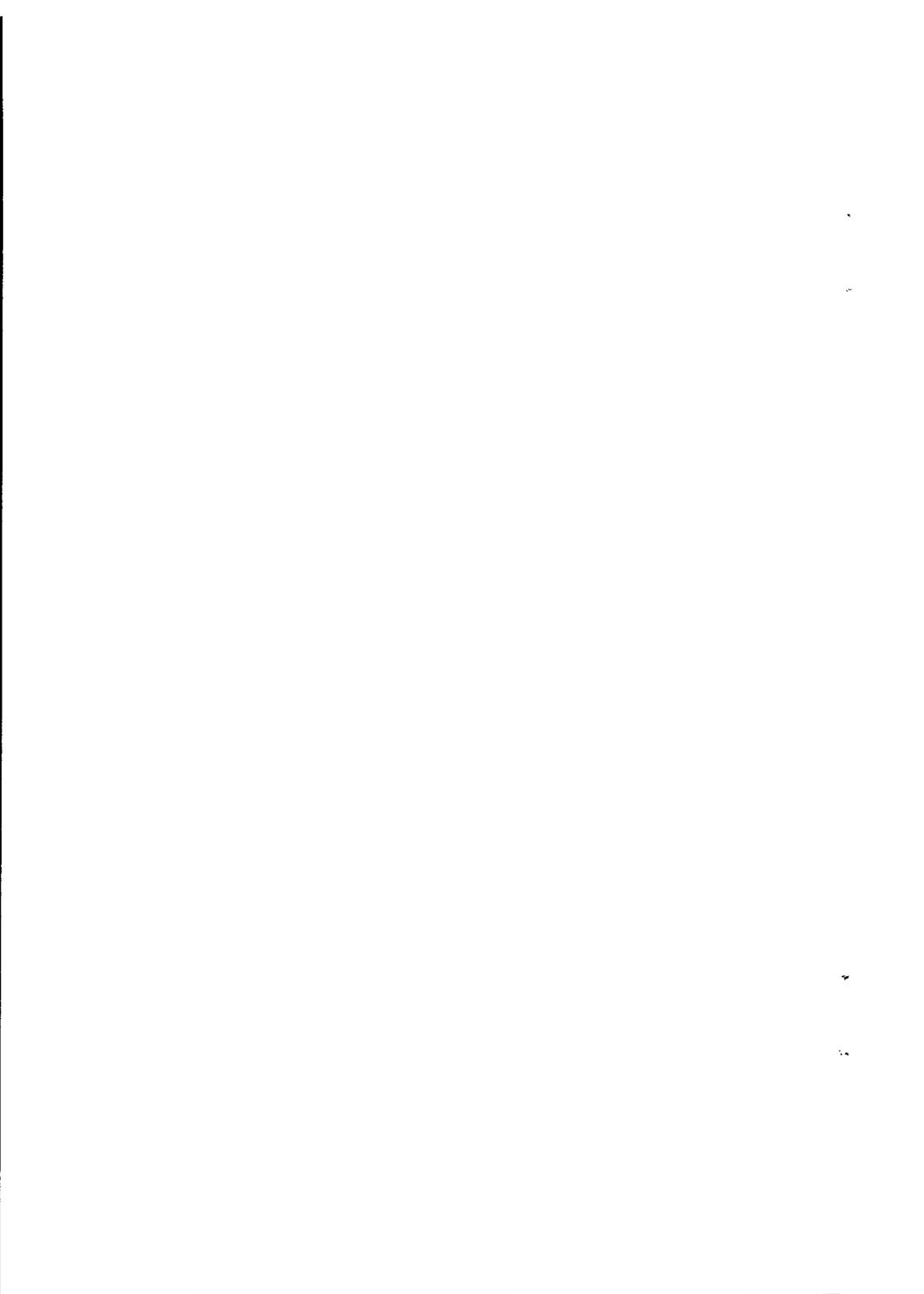
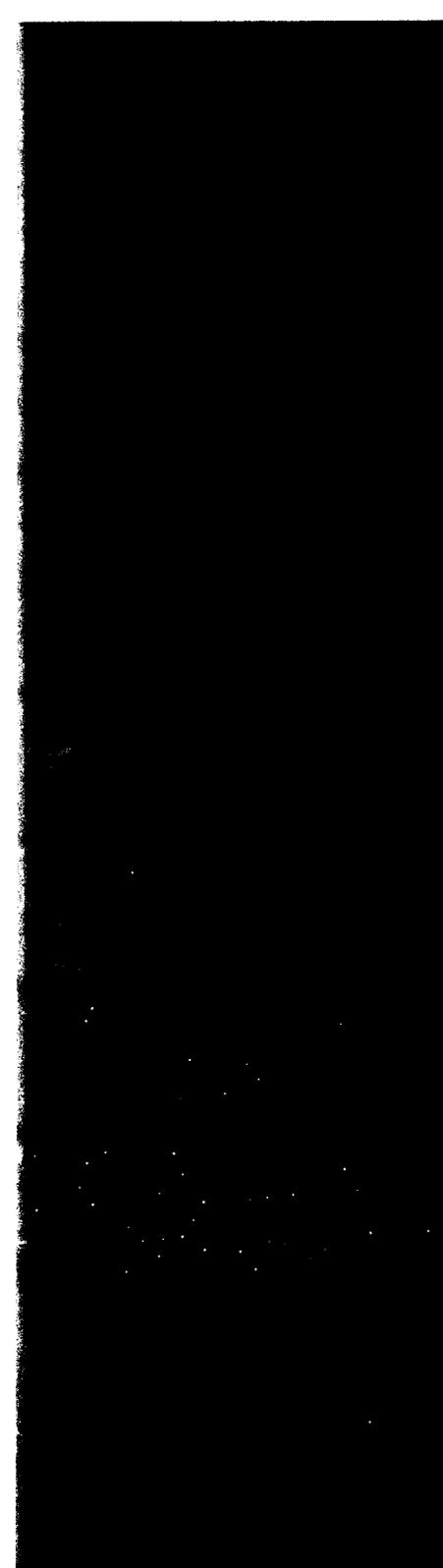


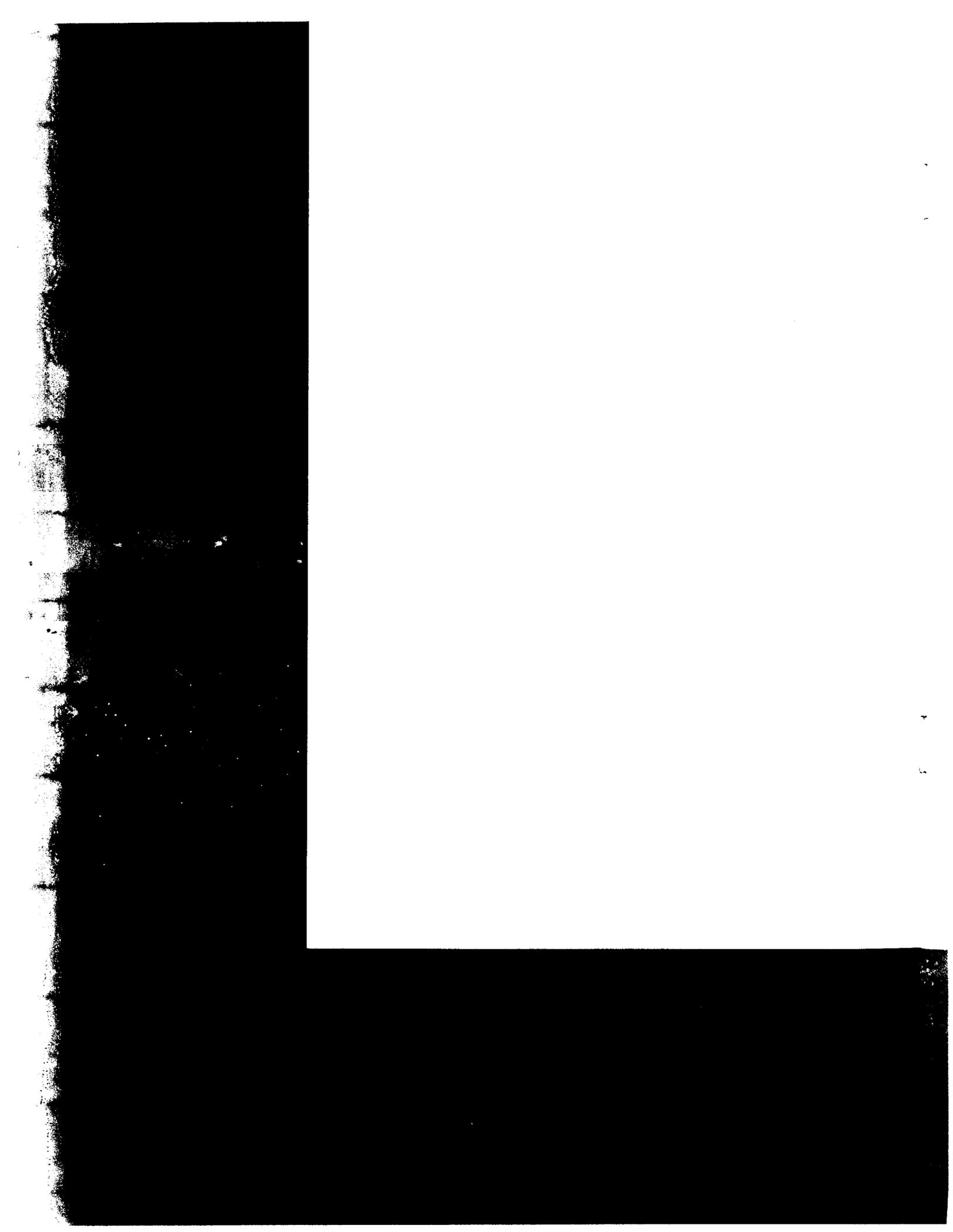
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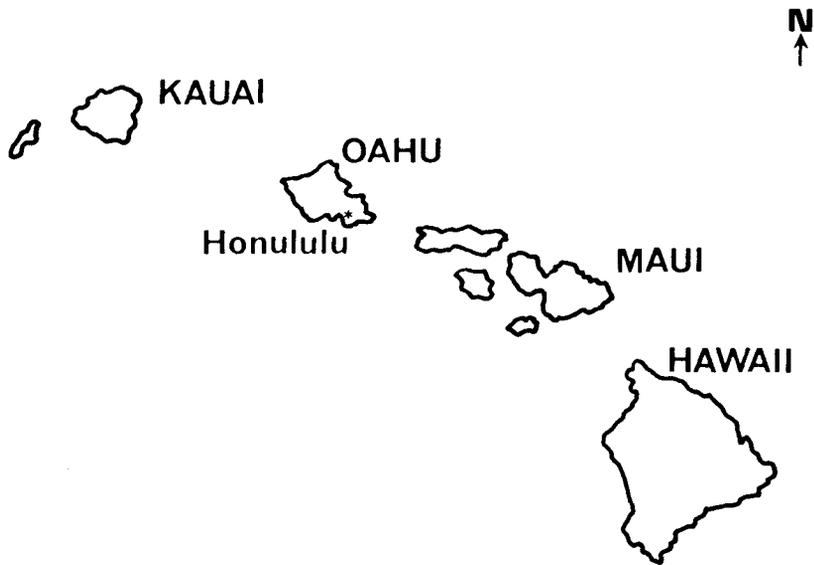


KAUAI TEST FACILITY

APRIL 1971







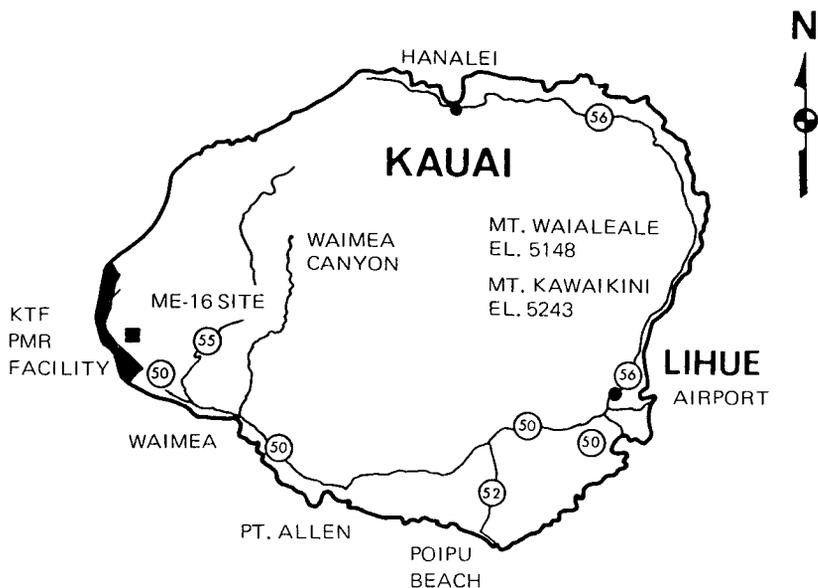
AEC KAUAI TEST FACILITY

INTRODUCTION

This manual has been prepared to familiarize potential users with the facilities, policies, and procedures available at the Atomic Energy Commission Kauai Test Facility (KTF) in support of programs of primary interest to agencies outside of AEC. The procedures described herein apply to all organizations that wish to submit formal proposals for conducting non-AEC experiments at KTF.

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PURPOSE

The AEC Kauai Test Facility was installed and is maintained as a part of the Government program involved with readiness to resume nuclear testing and with the acquisition of scientific data using sounding rockets. The Facility, located on the Pacific Missile Range Barking Sands installation* on the west side of Kauai, consists of resources for assembling, firing, and tracking instrumented rockets, as well as for data recording and playback.

KTF is operated for the Atomic Energy Commission by Sandia Corporation, a nonprofit subsidiary of Western Electric, Inc. Rocket-borne experiments are flown primarily for the AEC weapons laboratories (Los Alamos Scientific Laboratory, Lawrence Radiation Laboratory, and Sandia Laboratories), however, to gain maximum utilization of the facilities on Kauai, the resources there may be made available to other agencies on a noninterference with the AEC programs basis. Procedures for obtaining the necessary approvals are outlined in Section V.

 * The PMR facilities are outlined in *The Barking Sands Tactical Underwater Range Handbook*, which is available from PMR-Point Mugu. It is classified C-DI.

VICINITY
MAP

PACIFIC
OCEAN

BARKING
SANDS

KAUAI
TEST
FACILITY



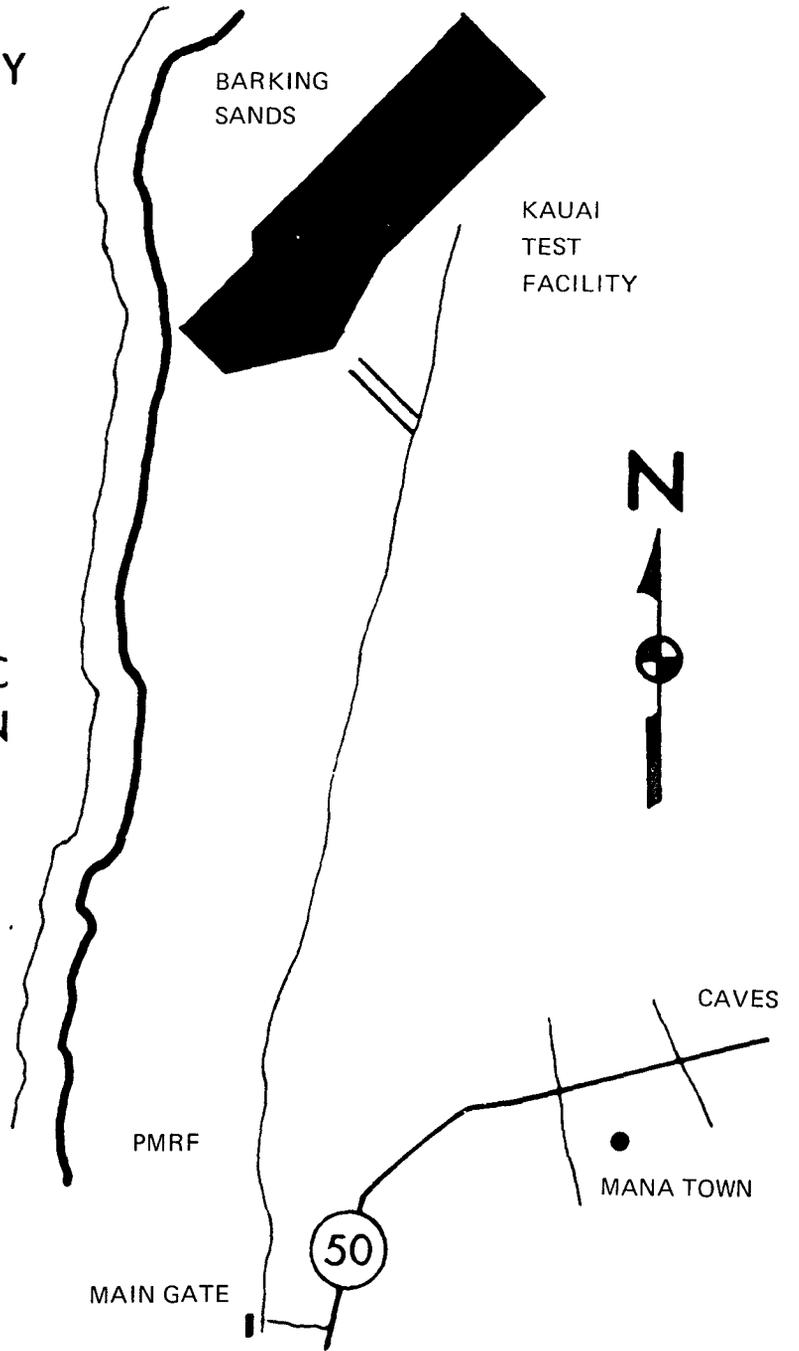
PMRF

CAVES

MANA TOWN

MAIN GATE

50



ROCKET SYSTEMS

The types of rocket systems which can be made available to a Facility user are listed below:

AEC ROCKET SYSTEMS NOMINAL PERFORMANCE

Rocket	Payload Weight (lbs)	Apogee (1000's ft)	Range to Impact (1000's ft)	Time to Impact (No Parachute) (sec)	QE (deg)	Re-Entry Velocity (fps)	Re-Entry Angle (deg. below horizontal)
JD	9.5	220	100	240	84		
*SST-9	125	255	76	267	84		
K-J	15	266	177	293	84		
CD	17	280	200	280	80		
TD-6.5	126	300	150	292	84		
N-C	58	474	391	367	82		
*SSS-13	200	478	256	400	84		
N-A	70	530	110	390	86		
*N-T-12	200	590	208	417	86		
*Te-S-17	450	804	395	482	85		
*N-T-9	125	1030	550	515	84		
*Te-T-9	175	1370	455	670	86		
*Te-S-13	200	1390	620	630	85		
*S-T-9	175	1800	700	736	86		
XM-33							
1 Stage							
STR II	1400	670	500	445	84		
STR V	3300	355	430	325	82		
2 Stage							
STR IV	580	1700	2250	810	80		
3 Stage							
MTV I	117	554	793	270	73	16,900	35
MTV II	116	640	1860	352	77	21,300	35

A=Apache
C=Cajun
CD=Cajun Dart
J=Judi
JD=Judi Dart
K=Kisha
MTV=Materials Test Vehicle
See XM-33

N=Nike
S= Sandhawk
SSS= Single-Stage Sandhawk
SST=Single-Stage Tomahawk
STR=Strypl. See XM-33
T=Tomahawk
TD=Tomahawk Dart
Te= Advanced Terrier

XM-33= All of the XM-33 systems have an XM-33 and two TE-29's as the first stage. The STR IV system has a TEM-442 second stage. The MTV I has a TEM-442 second stage and a BE-3 third stage; the MTV II uses an ALCOR 1B second stage and a BE-3 third stage. The second and third stages of the MTV I and MTV II systems are fired downward.

The arabic number following the type or types of motor, e.g. N-T-9 indicates the nominal diameter of the payload.

*The payload can be fitted with a recovery system.

The geography of Kauai and the other Hawaiian Islands requires that limits be set on nominal firing azimuths and QE's (elevation angles). The present limits are tabulated below. These, of course, may be changed if a real need arises and if it can be shown that there is little chance of an impact on land.

**PRESENT LIMITS ON
NOMINAL FIRING**

System	Azimuth (deg)	QE (deg)
JD	297-345	84
SST-9	285-360	80-84
K-J	295-360	84
CD	320-345	80
TD-6.5	330-360	84
N-C	215-223 and 330-360	82 82
SSS-13	205-360	84
N-A	215-223 and 345-360	82 86
N-T-12	316-360	76-86
Te-S-17	280*-360*	85*
N-T-9	285-360	78-86
Te-T-9	280-360	80-86
Te-S-13	270-360	70-86
S-T-9	329-360	84-86.5
XM-33		
STR V	280*-360*	82*
STR II	205-220 and 330-010	83-84.5 83-84.5
STR IV	280*-360*	80*
MTV I	345	73
MTV II	345*	77*

*Estimated. Range safety approval not yet issued.

SCHEDULES

Rocket flights at KTF are usually scheduled six to nine months in advance of their planned execution. Specific firing dates are selected about two months in advance.

To minimize costs, the rocket firings are grouped into test series. Normally, one or two series are conducted each year.

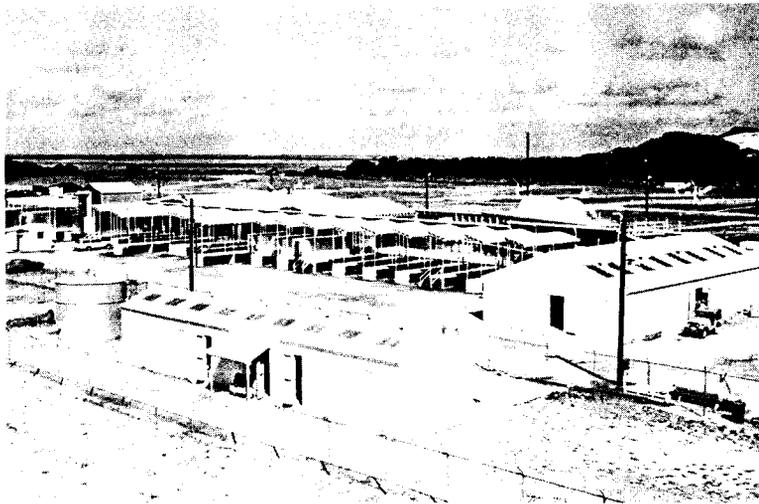
During nonoperational periods, K T F is manned by two Sandia Laboratories employees and five Holmes and Narver craftsmen. At the beginning of an operational period, a group of Sandia engineers and technicians is sent from Albuquerque to assemble and fire the rockets and operate the range instrumentation. An operational period generally lasts two to four weeks.

PHYSICAL FACILITIES AND OPERATIONAL SERVICES

The AEC physical facilities and normal operational services at K T F are listed below:

SUPPORT COMPLEX

A covered trailer dock and several trailers are located behind a revetment so that the trailers can be safely manned during a firing. Trailers serve for such varied uses as offices, laboratories, payload checkouts, command and control centers, computer activities, and radar operations.



TRAILER PARK AREA

PAYLOAD PREPARATION

Facilities available for payload preparation include work space, work benches, telemetry checkout stations, a small machine shop, and a dynamic balancing machine.

ROCKET ASSEMBLY BUILDINGS

Rocket motors and igniters, as well as other explosive devices, are assembled and checked in buildings constructed for this purpose. The final mating of the payload with the remainder of the rocket system is performed in an assembly building or on a launcher.

LAUNCHERS

Eleven launchers (eight of the High-Altitude Diagnostic (HAD) type and three of the Universal type) are installed on Kauai. The rocket systems listed in Section II except for the Strypi and MTV systems can be fired from either HAD launchers or Universal launchers; however, the HAD launchers have a 4,000-pound rocket system weight limitation and the Universal launchers have a 15,000-pound rocket system weight limitation. The Strypi and MTV systems must be fired from the Universal launchers. Both types of launchers are remotely controllable and can be set to the proper azimuth and QE from the control trailer.

LAUNCHER SETTINGS

Prior to a rocket firing, wind balloons are tracked by two X-band radars. The tracking data are put into a CDC-8090 computer, which calculates the wind corrections to the nominal launcher settings and predicts the booster impact location.

COMMAND AND CONTROL

A double trailer is used as the Command and Control Center. The Test Director and Test Conductor are stationed here during the final countdown and launch. The activities performed or controlled in the Center include setting the launcher, controlling the payload, controlling the telemetry, originating a voice countdown, firing the booster, sending commands to the payload, and receiving and recording the telemetry data.

NIKE-TOMAHAWK SYSTEM
ON HAD LAUNCHER

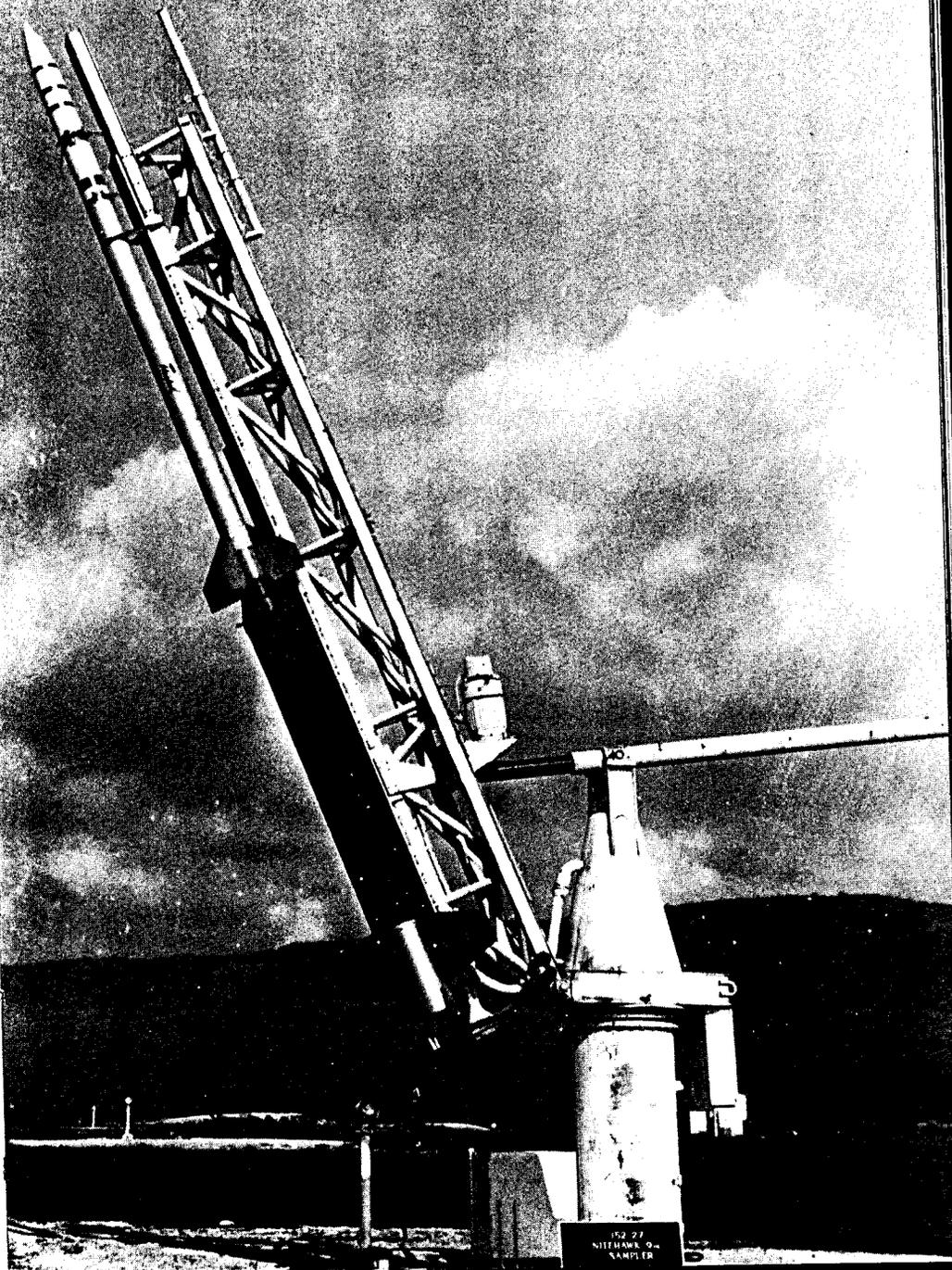


FIG 27
NITELAWK 9-
SAMPLER

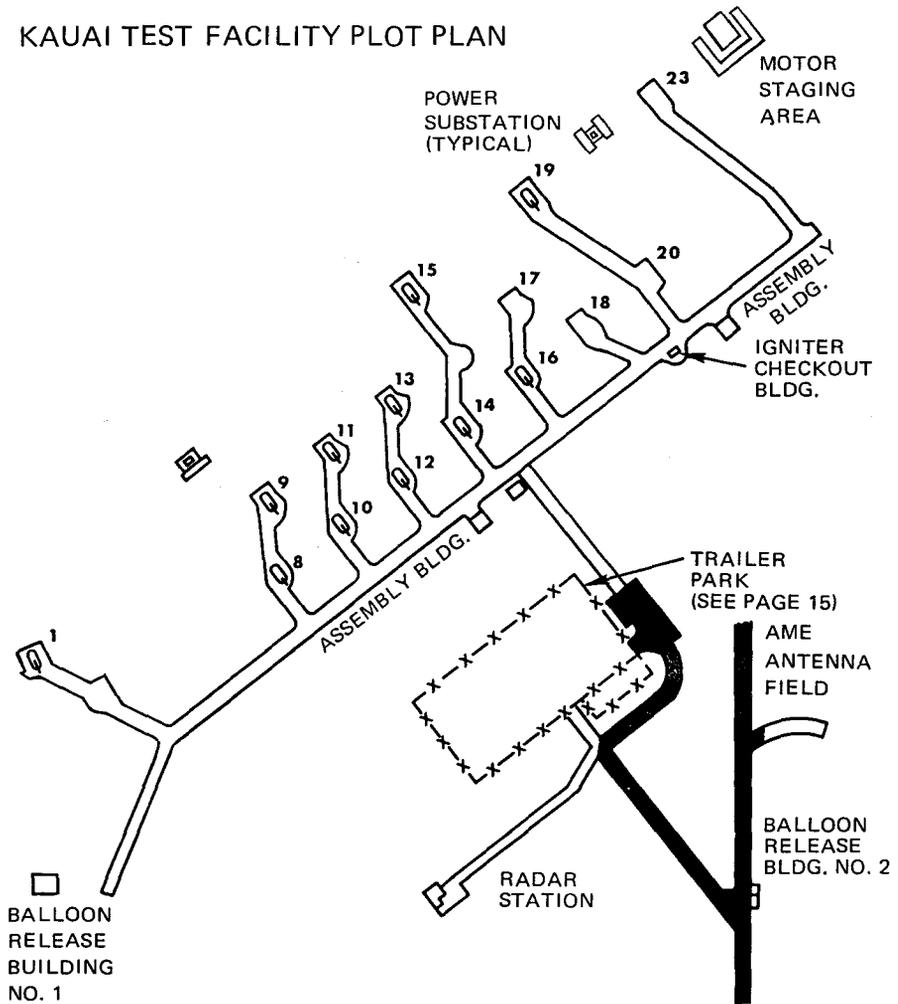
FEM

TELEMETRY RECEIVING AND RECORDING

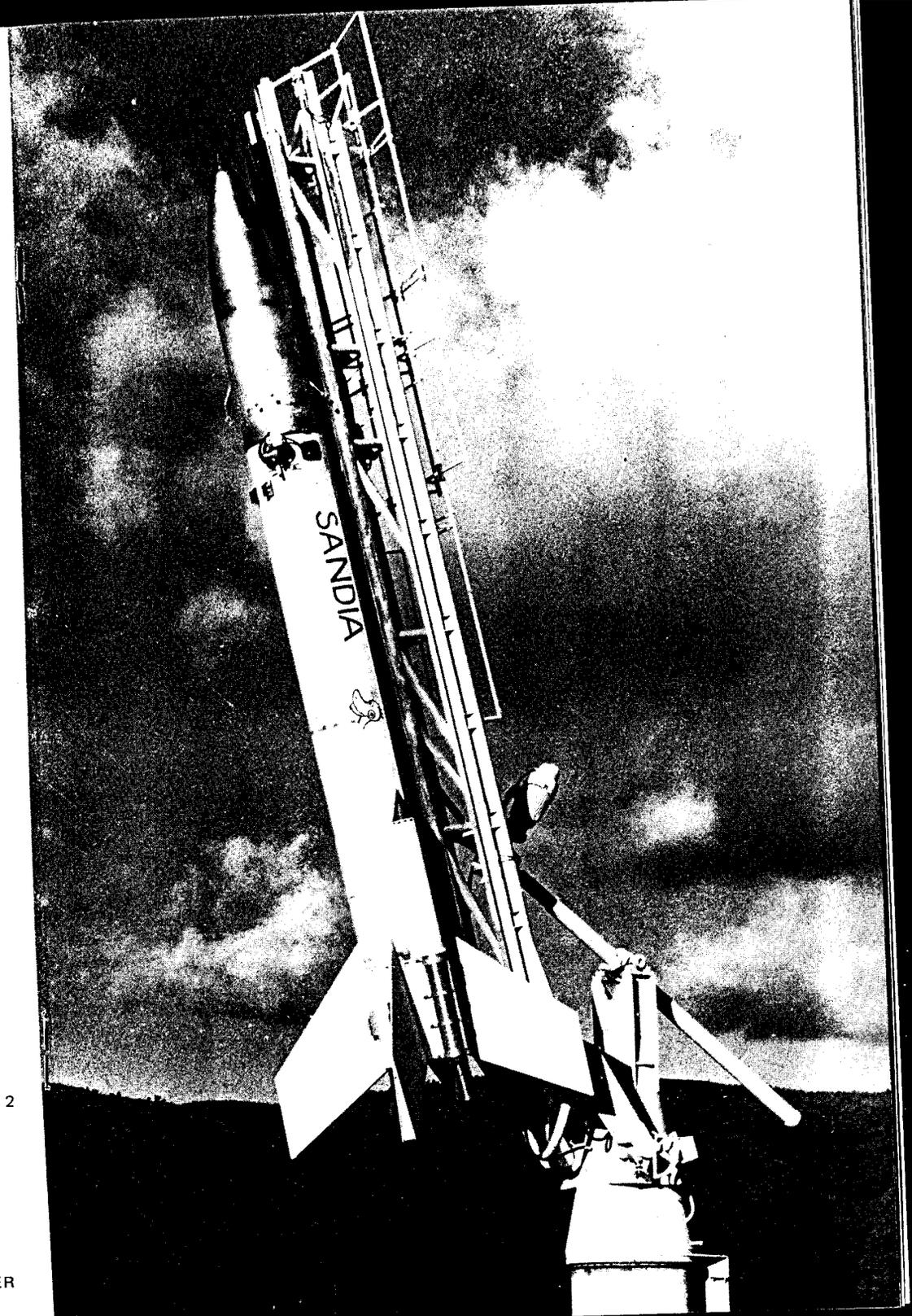
Most of the telemetry systems flown by Sandia are in the 230-260MHZ band. Modes which have been used include FM, FM/FM, PAM/FM, and PCM/FM.

Limited S-Band receiving and recording can be provided by Sandia. NASA-Kokee can provide full support.

KAUAI TEST FACILITY PLOT PLAN



STRYPI SYSTEM ON
UNIVERSAL LAUNCHER



SANDIA



A

IN
E
O. 2

HER

CON
CON



TRACKING

Most payloads can be skin-tracked by a NASA C-band radar; however, if radar trajectory data is desirable, a radar beacon should be included in the payload to increase the probability of a good track. In addition, a Sandia AME/DME system, which requires a special DME receiver in the payload, is available.

RANGE TIMING

WWV receivers and time-code generators are used to provide standard IRIG Format B time signals.

PHOTOGRAPHY

An ME-16 tracking telescope with 35- and 70-mm movie cameras can photograph the first part of a rocket flight; normally, however, it is operated on development firings only.

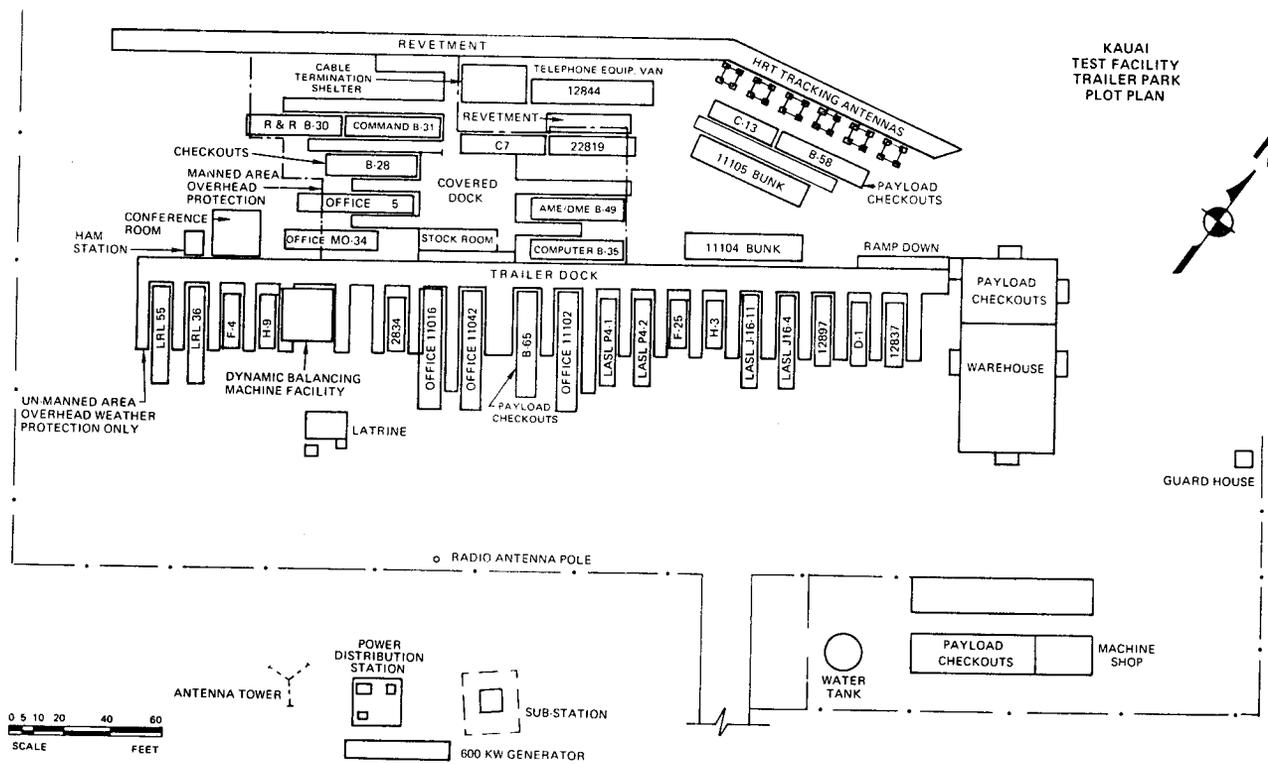
Still-photographic services or documentary-type movie services can be furnished upon request.

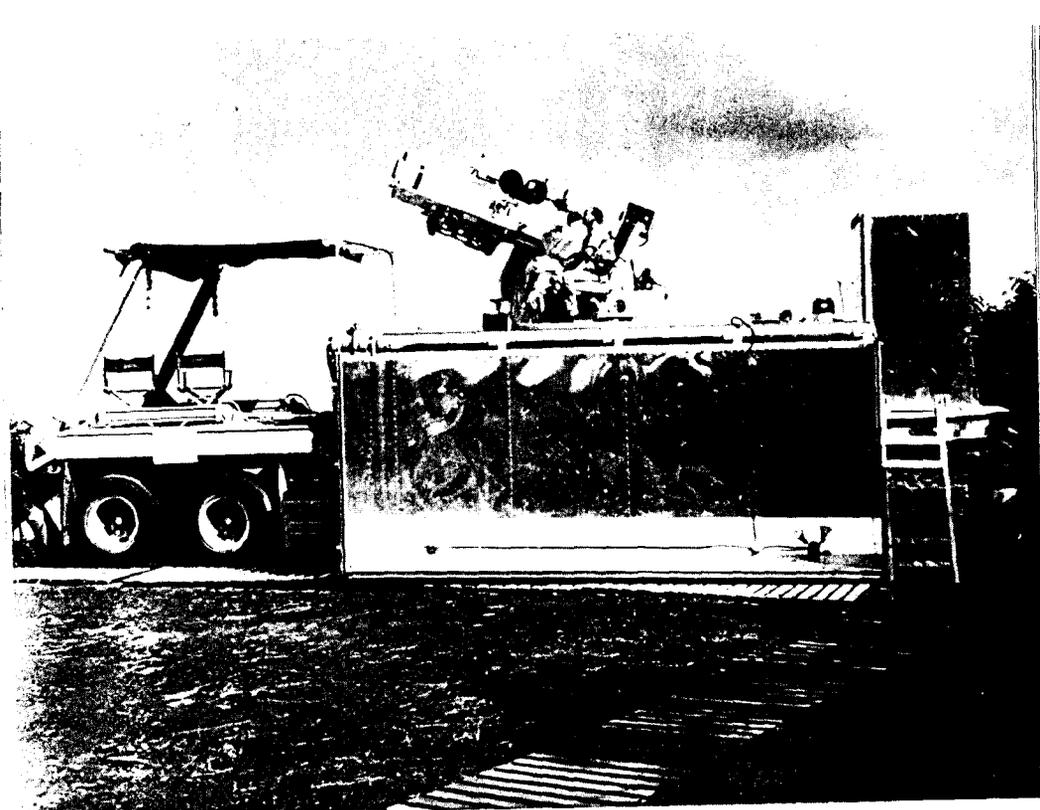
PAYLOAD RECOVERY

Most of the AEC-Sandia payloads can be equipped with a recovery system, which includes a parachute for retarding the velocity of the payload, a flotation bag, and a radio beacon.

DATA PLAYBACK

Discriminators on standard IRIG subcarrier frequencies permit field playbacks of the data tapes for "quick-look" data and the AME/DME trajectory can be determined within about 24 hours of the firing. Complete data reduction facilities are located in Albuquerque.





ME-16 TRACKING TELESCOPE

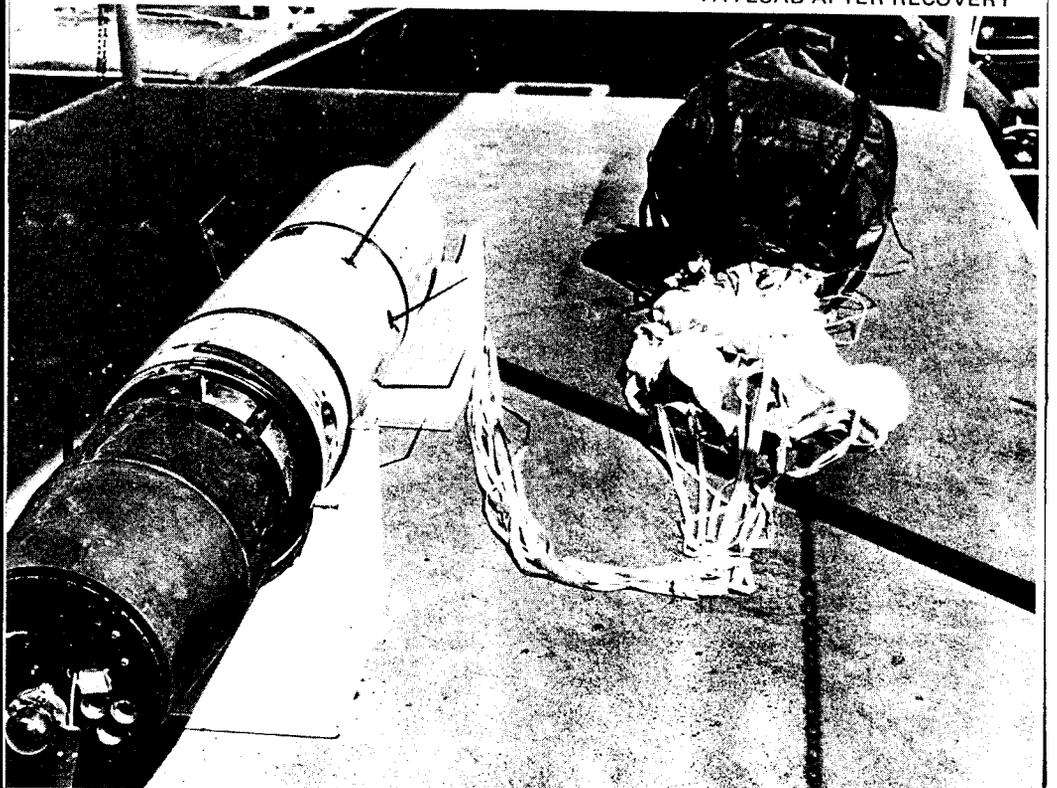
ASSEMBLY BUILDING



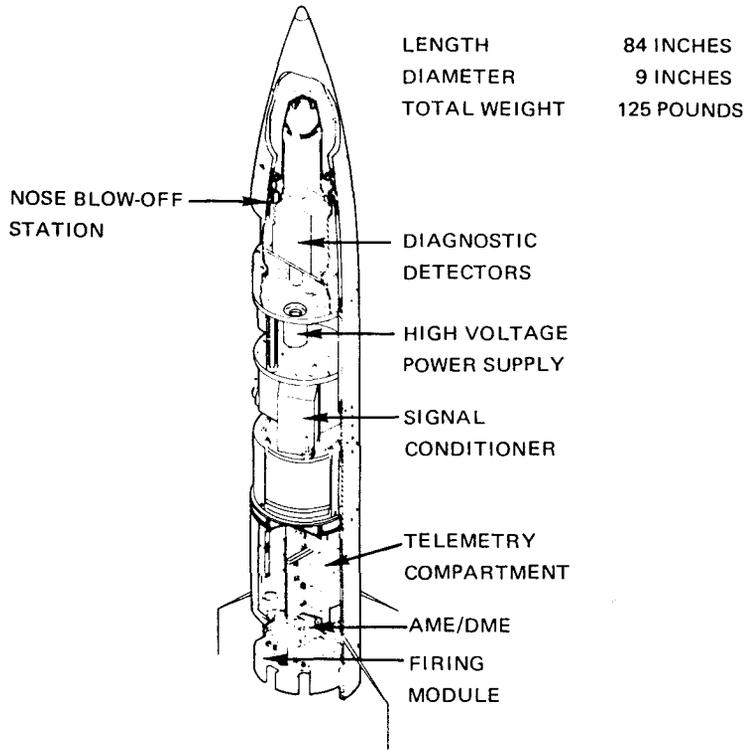


RECOVERED PAYLOAD ENROUTE TO LAUNCH SITE

PAYLOAD AFTER RECOVERY



TYPICAL NIKE-TOMAHAWK 9" PAYLOAD



USE OF THE FACILITY BY NON-AEC ORGANIZATIONS

Preliminary contacts are encouraged between a requesting agency and Sandia Laboratories, Department 9220, P. O. Box 5800, Albuquerque, New Mexico, 87115, to discuss technical matters and tentative schedules only.

Non-AEC organizations wishing to use the K T F facilities should submit a written request to USAEC, P. O. Box 5400, Albuquerque, New Mexico, 87115, Attn: Space and Special Programs Division, with a copy to USAEC, P. O. Box 580, Honolulu, Hawaii, 96809. The request should include the following information:

1. Technical concept of the operation.
2. Scientific and/or technical support required.
3. Logistic support required.
4. Desired date or time interval.
5. Security aspects of the test.

In general, AEC-Sandia will support non-AEC organizations under the following conditions: (1) the activity is sponsored by a Government agency, (2) AEC is reimbursed for its actual costs, and (3) the support is provided on a basis of non-interference with AEC programs.

COSTS

The requesting organization will be billed for AEC-Sandia costs incurred by the inclusion of a non-AEC experiment. An estimate of costs will be provided by AEC and must be funded by a funding document prior to the start of the activity. Billings will be made by AEC/ALO monthly on the basis of actual costs.

CLASSIFICATION AND SECURITY

The AEC-Sandia activities on Kauai are normally unclassified; however, with sufficient notice (generally 60-90 days), provisions for shipping, storing, and safeguarding classified documents and material can be installed.

Entrance to the PMR Facility (including KTF) is through a gate manned by PMR guards. Security clearances are not needed for entrance to the PMR Facility and during non-operational periods are not needed for entrance to KTF. During operational periods security clearances may be needed for entrance to KTF, therefore, visitors who have AEC or DOD clearances and who plan to be on site more than a day or two during operational periods should have their clearances forwarded through normal channels to AEC-Albuquerque. (See page 14 for complete address).

HOUSING, MESS FACILITIES, TRANSPORTATION, AND MEDICAL SERVICES

There is no housing or mess facility for visitors on the base, except that the PMR cafeteria may be used by visitors at lunch time.

Kauai has many tourist attractions and tourist facilities. The local airlines make approximately 20 round trips a day between Honolulu and Lihue, Kauai. There are many hotels on Kauai, but reservations are sometimes hard to obtain and should be made as far in advance as possible. All the major rental automobile companies have agencies at the commercial airport in Lihue.

The Waimea Clinic and the Kauai Veterans Memorial Hospital are located in Waimea, approximately 12 miles from the base.

MISCELLANEOUS

OFFICE SUPPLIES

Office supplies are available in limited amounts.

REPRODUCTION SERVICES

A dry-copy machine that utilizes letter- or legal-size paper is available.

MATERIALS HANDLING EQUIPMENT

Forklifts and trucks are available for the intrafacility movement of heavy materials and equipment. Private firms (e.g., Kauai Commercial) may be employed to move such items to or from KTF.

TELEPHONE NUMBER AND MAILING ADDRESS

The telephone number of KTF is (808) 3355611 which may be dialed directly from the mainland; the mailing address is P.O. Box 478, Waimea Kauai, Hawaii, 96796; and the shipping address is Sandia Corporation, Barking Sands, Kauai, Hawaii.

