

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P.O. BOX 621
HONOLULU, HAWAII 96809

FEB 26 1996

REF: LD: LT

FILE NO.: MA-2778

MICHAEL D. WILSON
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTY
GILBERT S. COLOMA-AGARAN

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND
ENVIRONMENTAL AFFAIRS
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT
WATER RESOURCE MANAGEMENT

MEMORANDUM

TO: Gary Gill, Director
Office of Environmental Quality Control

FROM: Dean Uchida, Administrator
Land Division

SUBJECT: Final Environmental Assessment (EA) for Zond Pacific, Inc.'s Temporary Installation, Periodic Maintenance, and the Collection of Data from Six Wind Energy Resource Monitoring Stations at Kaheawa/Ukumehame, Maui; TMK: 4-8-01: por. 08

OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

96 FEB 26

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The Department of Land and Natural Resources has reviewed the final EA and has determined that this project does not require the preparation of an environmental impact statement (EIS). Therefore, a Negative Declaration is being issued.

A Mitigation Plan which specifically addresses the potential impacts of the project to the environment is included in the recommendations for approval of the Departmental Permit.

Enclosed is a completed OEQC Bulletin Publication Form and four copies of the final EA. Should you have any questions, please call Lauren Tanaka at 587-0385, Planning and Technical Services Branch of the Land Division.

Enclosures

LT:lt

24

1996-03-08-MA-PEA-Zond Pacific

MAR 8 1996

FILE COPY

FINAL ENVIRONMENTAL ASSESSMENT
 FOR A PROPOSED PROJECT BY ZOND PACIFIC, INC.
TEMPORARY INSTALLATION, PERIODIC MAINTENANCE
AND COLLECTION OF DATA
FROM WIND RESOURCE MONITORING STATIONS AT
KAHEAWA/UKUMEHAME, MAUI

OFFICE OF
 MAUI COUNTY
 RECEIVED
 MAR 28 11:48 AM '96

TMK: 4-8-01: por. 8

ZOND PACIFIC INC
 485 Waiale Drive
 Wa iluku HI 96793
 808-244-9389

ENVIRONMENTAL REQUIREMENTS

(1) Identification of applicant or proposal agency

Zond Pacific, Inc. is the applicant. In a memorandum of understanding, Zond Pacific (ZPAC) joined with the Natural Energy Laboratory Hawaii Authority (NELHA) to facilitate the project's first objective of conducting a wind energy resource evaluation through the scientific collection and study of wind data. NELHA's program objectives are to facilitate alternate energy resource development and improve and expand the viability of commercial renewable wind energy.

Contact: Keith Avery, Vice President
Zond Pacific, Inc.
485 Waiale Road
Wailuku, Maui HI 96793
808-244-9389 (phone) 808-244-9539 (fax)

(2) Identification of approving agency

Contact: Board of Land and Natural Resources
State of Hawaii
Honolulu, Oahu HI

(3) Identification of agencies consulted in making assessment

The following groups have been notified of Zond's project intentions:

1. Department of Land and Natural Resources
54 S High Street
Wailuku, Maui HI 96793
Mr. Philip Ota/Allen Tokanagu
2. DLNR Office of Land Management
1151 Punchbowl Street
Honolulu HI 96813
Mr. Mason Young

3. DLNR Office of Conservation
1151 Punchbowl Street
Honolulu HI 96813
Mr. Steve Togowa
4. Office of Environmental Quality Control
220 S King Street, Suite 400
Honolulu HI 96813
Gary Gill, Director
5. DLNR Division of Forestry and Wildlife
54 South High Street, Rm 101
Wailuku, Maui HI 96793

Na Ala Hale Trail System
54 South High Street
Wailuku, Maui HI 96793
Mr. Mike Baker
6. DLNR Office of Historic Preservation
33 S Ring Street
Honolulu HI 96813
Ms. Annie Griffin
7. Department of Business Economic Development and Tourism
335 Merchant Street
Honolulu HI 96813
Mr. Maurice Kaya, Dean Nakano
8. Natural Energy Lab. Hawaii Authority
P O Box
Kailua-Kona HI
Mr. Robert Kihune
9. Pacific International Center for High Technology Research
2800 Woodlawn Drive, Suite 180
Honolulu HI 96827
Mr. Andrew Trenka, Warren Bollmeir
10. Maui Electric Company, Ltd.
P O Box 398
Kahului, Maui HI 96732
Mr. Thomas Jezierny/Edward Rheinhardt

11. County of Maui
Department of Planning
200 South High Street
Mr. Calvin Kobayashi
12. Maalaea Community Association
242-8155 874-4102
Harvey Janis, President
13. Sierra Club
P O Box 694
Makawao HI 967
14. Maui Malama - Pono Makena
2089 Wells Street
Wailuku HI 96793
Mr. Charlie Maxwell
15. Maui Tomorrow
877-2462
Mr. Rick Sand/Al Perez
16. Hawaii Blue Ocean Preservation Society
Paia, Maui HI 96790
Carl Freeman
17. Division of Consumer Advocacy
P O Box 541
Honolulu HI 96809
Mr. Charles Tutto
18. Hawaii Public Utilities Commission
465 S King Street
Honolulu HI 96813
19. U. S. Department of Interior
Fish and Wildlife Service
300 AlaMoana Blvd., Rm. 3108
Honolulu HI 96850
Brooks Harper

(4) General description of the action's technical, economic, social, and environmental characteristics

Zond Pacific, Inc. is proposing a two-phase wind energy development at the higher (1,600' to 2,600' ASL) elevation area of Kaheawa Ukumehame (see Site Map).

The initial phase, in cooperation with the Natural Energy Lab Hawaii Authority (NELHA), is to scientifically evaluate the potential extent of the wind energy resource in the circled area of the Site Map. Zond will utilize approximately 6 temporary tilt-up anemometer towers, with 8 to 10 being 100 feet in height, and 3 to 4 being 140 feet in height. The circled area is designated as the "General Research Area" (GRA).

Summary description of the affected environment, including suitable and adequate location and site maps.

Identification and summary of major impacts and alternatives considered.

Proposed mitigation measures.

The proposed action consists of collecting scientific wind data at 6 various sites at Kaheawa/Ukumehame. Zond has identified potential environmental impacts, both temporary and permanent, that could result from the data collection.

Potential impacts initially identified were examined with consideration to the significant criteria presented in Section 12 Chapter 200, Title 11; HAR. Primarily, none of the potential impacts identified would be significant according to the criteria.

Zond, in its determination to minimize any impacts to non-significant levels, has, through mitigation and discussion with affected groups, selected the General Research Area.

The land area being considered for action is on the Island of Maui at Kaheawa in the district of Ukumehame. The overall area of Kaheawa is 1,387.71 acres, of which only a very small ground area will be utilized.

In the initial General Research Area (GRA), an area of approximately 450 acres, is circled where 6 temporary guyed data towers would be dispersed in a pattern to best analyze the wind resource. Each tower has an 12" x 18" base plate that sits on top of the ground surface with four guy anchors about

65 feet from the base and at 90-degree angles to each other. The total ground area affected would encompass a little more than 1.25 acres of the 450 acres for all 6 towers. The data collection will not inhibit other allowed uses in the GRA, i.e., pasture grazing.

The land is owned by the State of Hawaii and is categorized as Conservation by the State Land Use Commission, pursuant to HRS Chapter 205. Being at the higher elevation and away from the coast, and designated for agriculture and pasture use, Special Use Permit, SMA, County Planning Commission or State Land Use Commission approval should not be required for scientific data collection.

The site area was selected to minimize environmental, visual, spiritual, and cultural impacts. The proposed site area is above and away from known historical sites, staying well above the Lahaina Pali trail.

Transmission lines are already in existence and cross the project site.

Approval for several similar wind data collection sites throughout the State were requested for and approved by DLNR in 1993. Ukumehame was requested, but the lease holders at the time refused accommodation. Those lease holders are no longer a part of the proposed land use area. Scientific wind data collection at Ukumehame was requested in October 1993 file #94-110 by R. Lynette & Associates and DBED&T. A Right of Entry was approved subject to 11 conditions.

Of the data towers placed throughout the State, no known adverse environmental effects have been identified. This includes any bird collisions with guyed cables. To further emphasize the cables, Zond can fly tassels on all the cables to alarm migratory and night-flying wildlife. Zond has over 600 similar towers throughout the world and has not experienced any bird casualties. We have had birds occasionally roost on the weather vanes.

The data monitoring will require general use of existing access and jeep roads by one small utility truck and a three-man crew. The 6 towers can be assembled at approximately one per day, depending on weather, and any minor or temporary disturbance of vegetation and associated wildlife habitat will be minimized.

DESCRIPTION OF PARCEL

The selected research area was chosen to minimize environmental and societal effects. The land is flattened ridges previously used for pastures. The proposed

request will not inhibit the continued use of pasture and is actually anticipated for a dual use. There are no trees on the site, only local grasses and wild flowers.

Maui Electric has an existing double 69 kva transmission line that bisects the proposed site. *Draft Environmental Impact Statement for the Maalaea-Lahaina Third 69 KV Transmission Line* was presented in December 1993. Under Section 13 Chapter 11-200, Zond anticipates the ability to reference the above-mentioned EIS.

COMMENCEMENT DATE

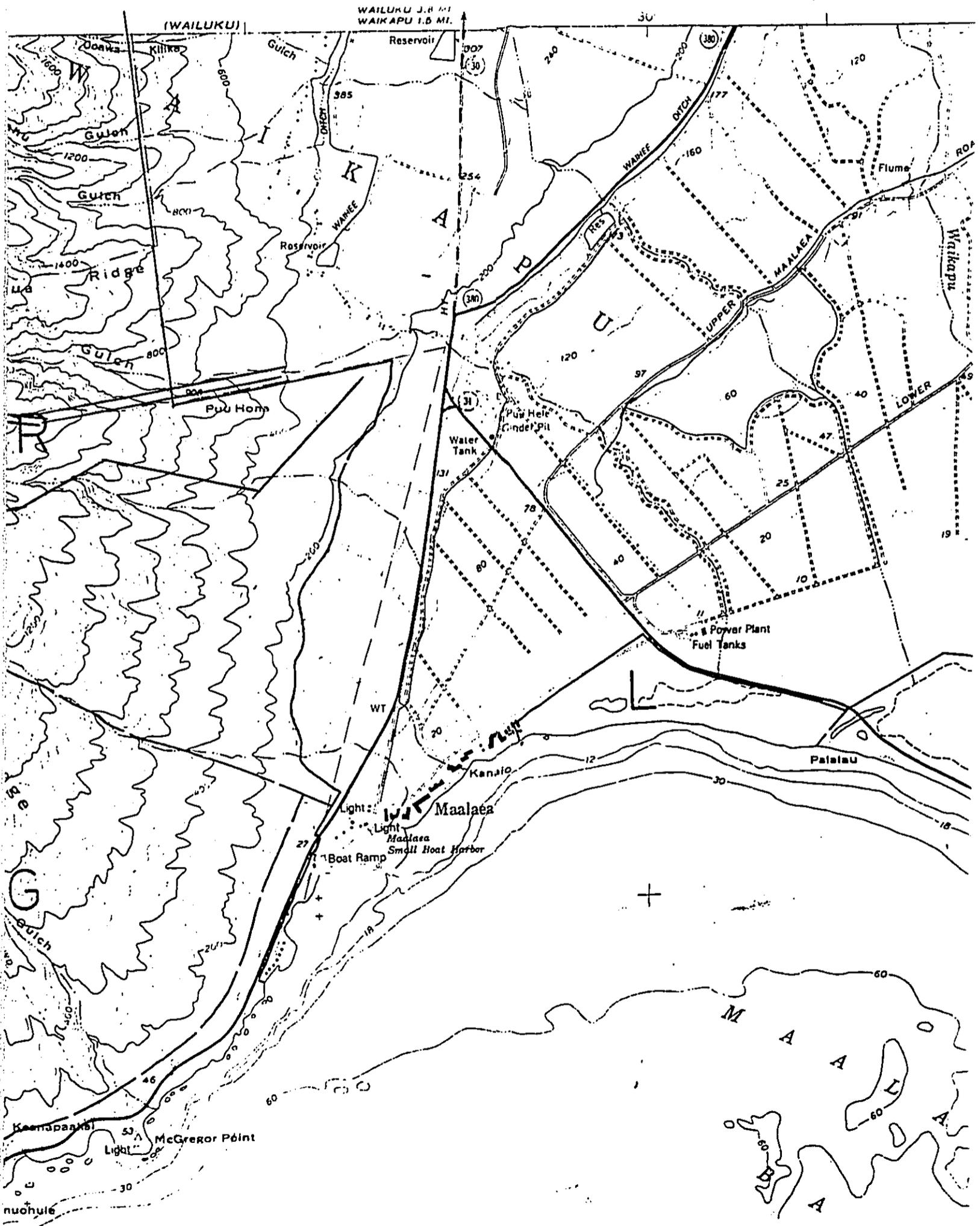
May/June 1996

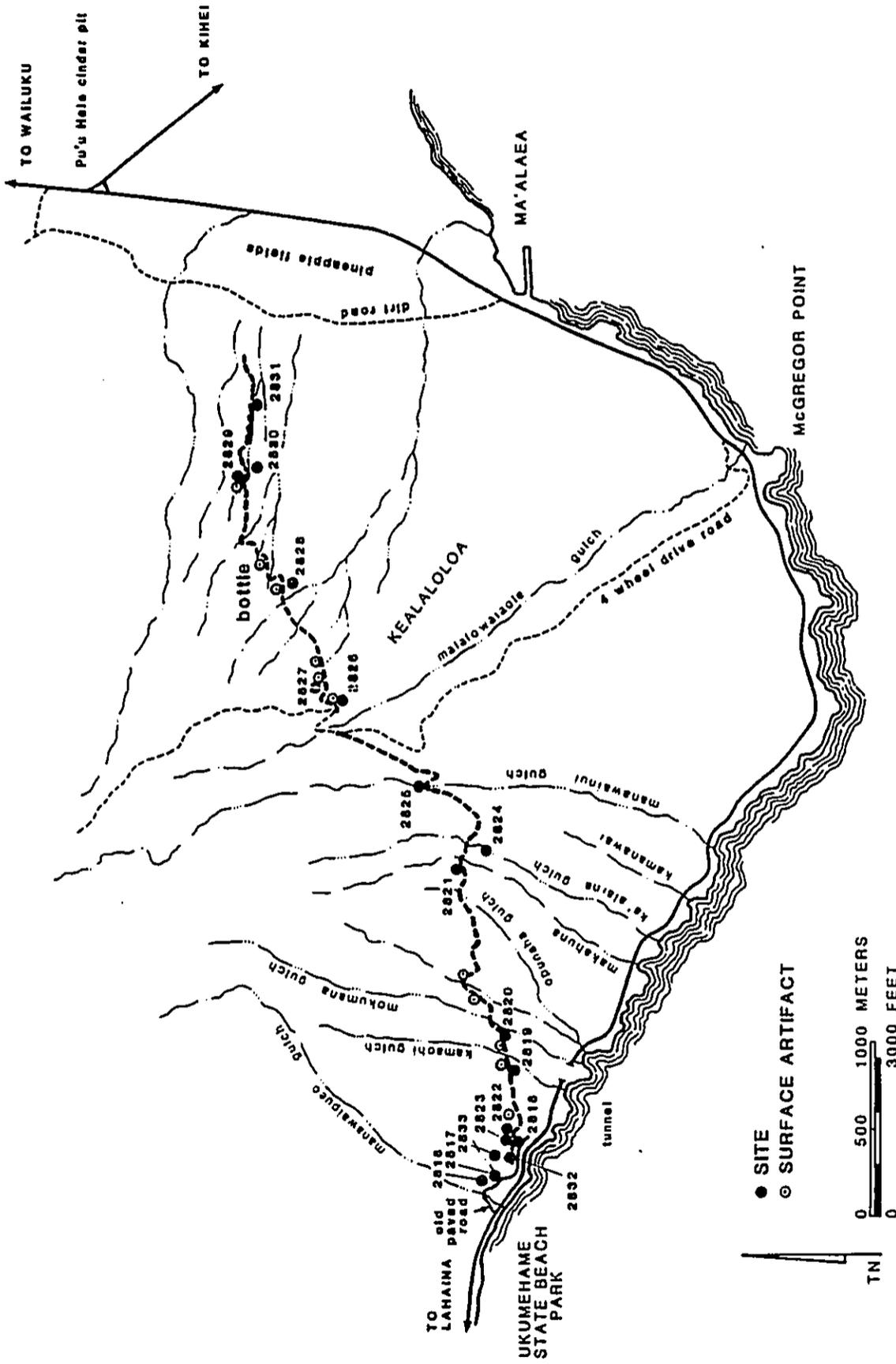
COMPLETION DATE

May/June 1997

Several site maps, including conservation, contours, tax key and aerial photos of the proposed resource evaluation area, are included.

DOCUMENT CAPTURED AS RECEIVED





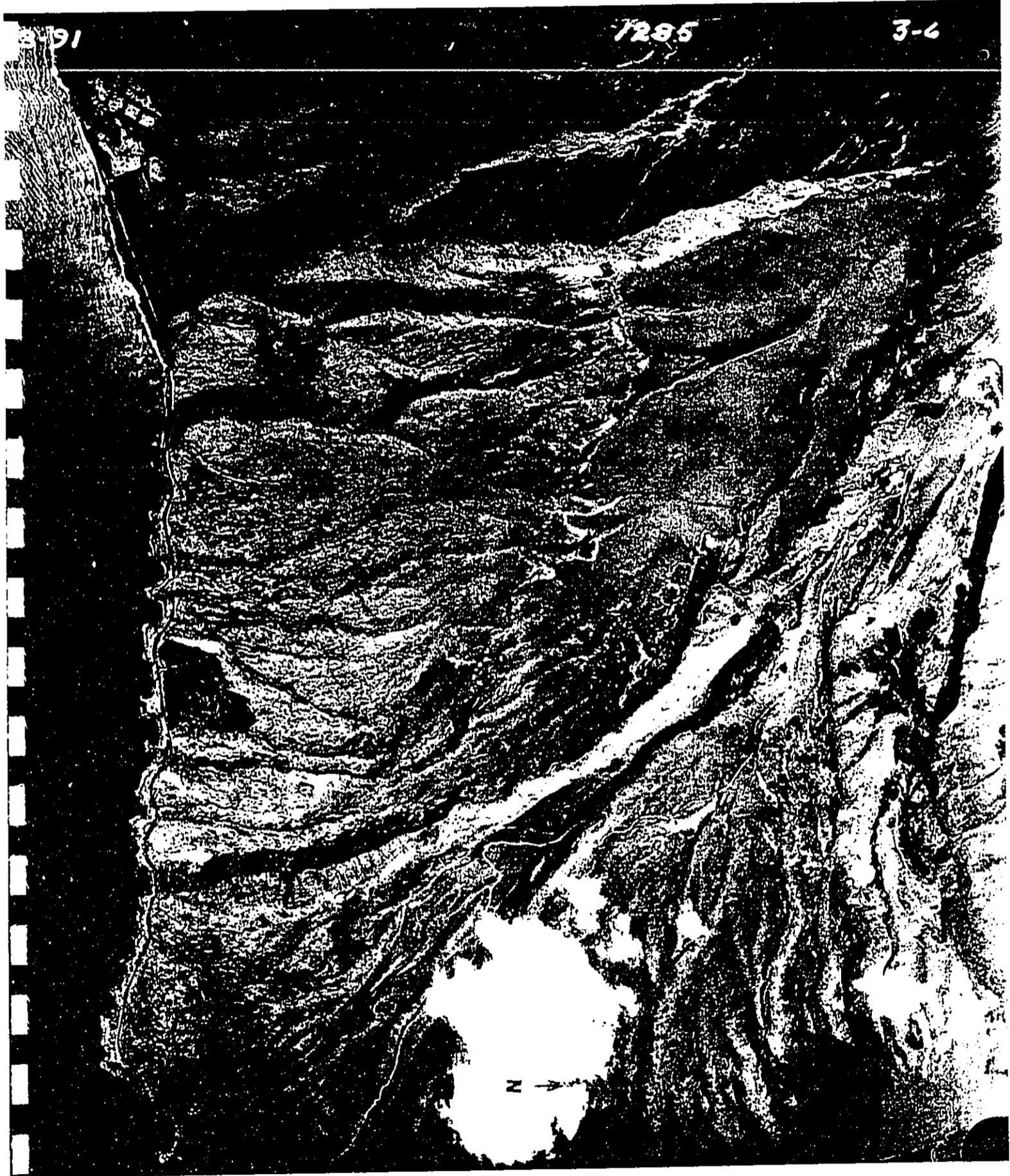
SITE LOCATIONS LAHAINA PALI TRAIL

1285

3-6



General Research Area (GRA) with meteorological Sites



Ikumehame area general aerial view

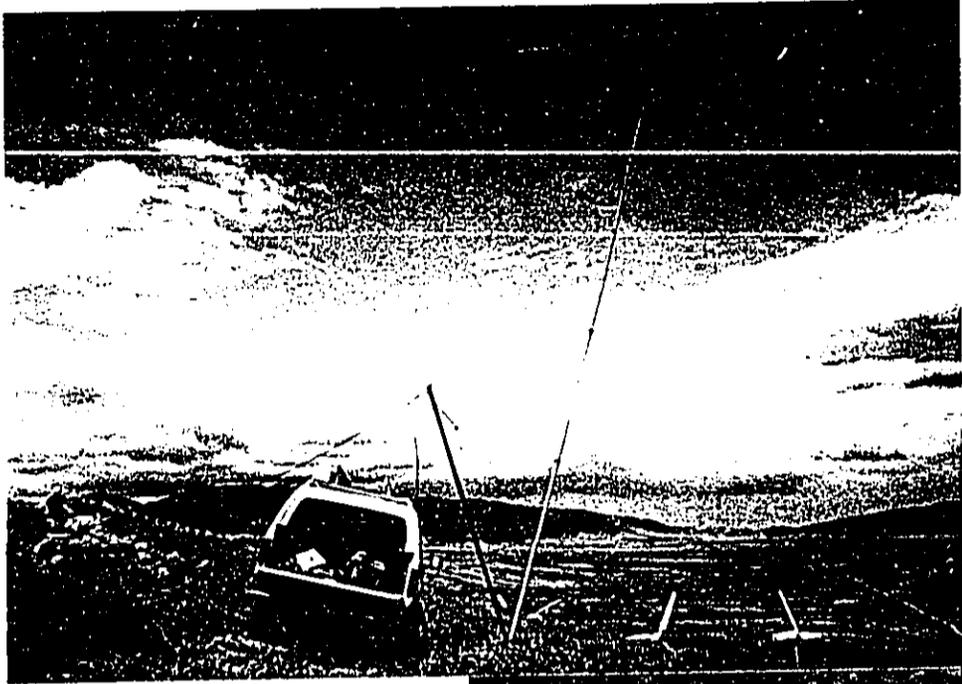
Procedure -

1.0 General Information

1.1 Tower Description and Parts List:

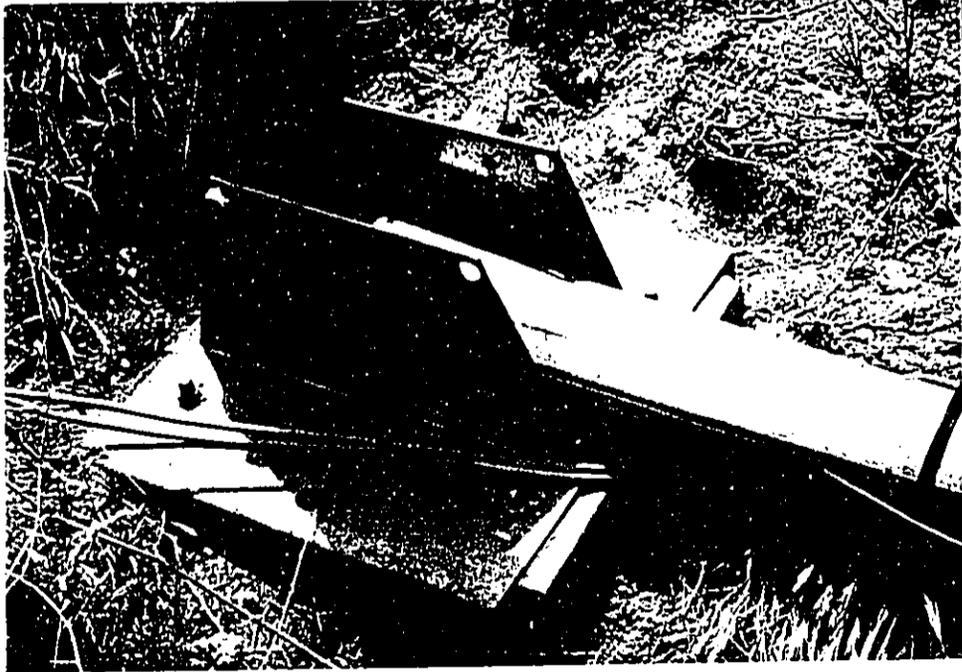
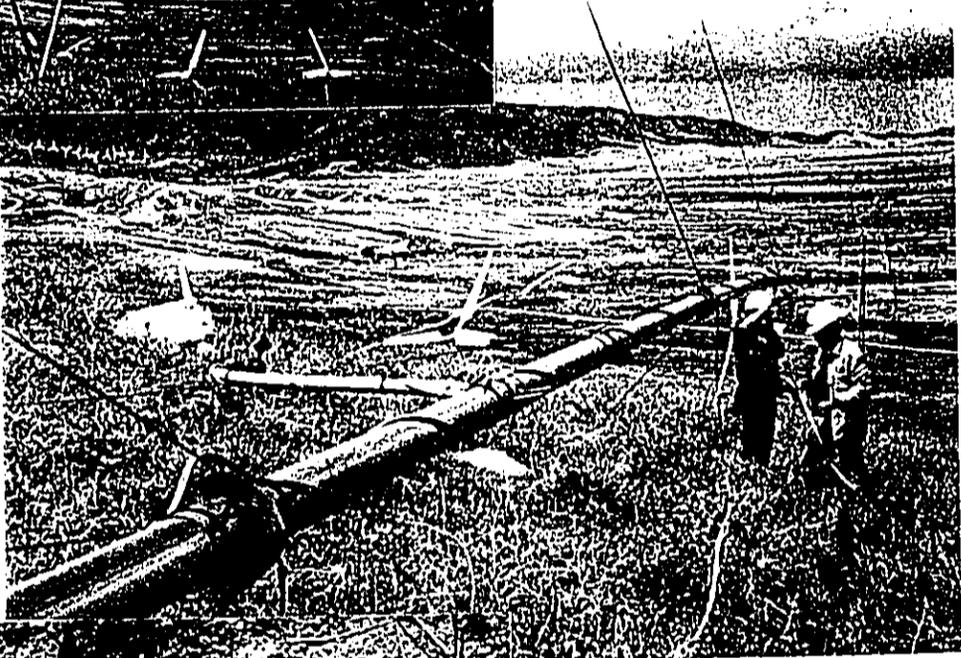
The Zond Anemometer Tower is made from 10' sections of steel tubing, guy wired every 20' in four directions. Standard tower heights are 130' and 90', and under special circumstances, may be erected as high as 150'. The 10' tower sections slide together without the use of bolts or clamps. The 130' and 90' tower is tilted up with a 40' gin pole by using an 8,000 lb. winch. The following is a list of tower parts that are included with each 130' tower.

Item Number	Qty	Description
1	13	10' Tower Sections (one section w/hole at end)
2	4	10' Tower Sections for Gin Pole (one section w/hole at end)
3	48	Cable Clips (two per cable)
4	4	6" x 48" Screw-in anchors (unless otherwise specified)
5	7	Clevises (for attaching lifting eyes and winch or hoist to gin pole)
6	6	Guy Wire Sets (4 Pieces) one set for every 20' in elevation
7	1	Base Plate (with bolts and nuts for tower/gin pole mounting)
8	1	Anemometer/Windvane Assembly
9	1	Solar Panel Assembly
10	4	Hose Clamps
11	1	Windrunner (G or E model)
12	1	Windrunner Mounting Assembly (bracket, 2 spacers, bolts with nuts)
13	2	Rolls of Electrical Tape

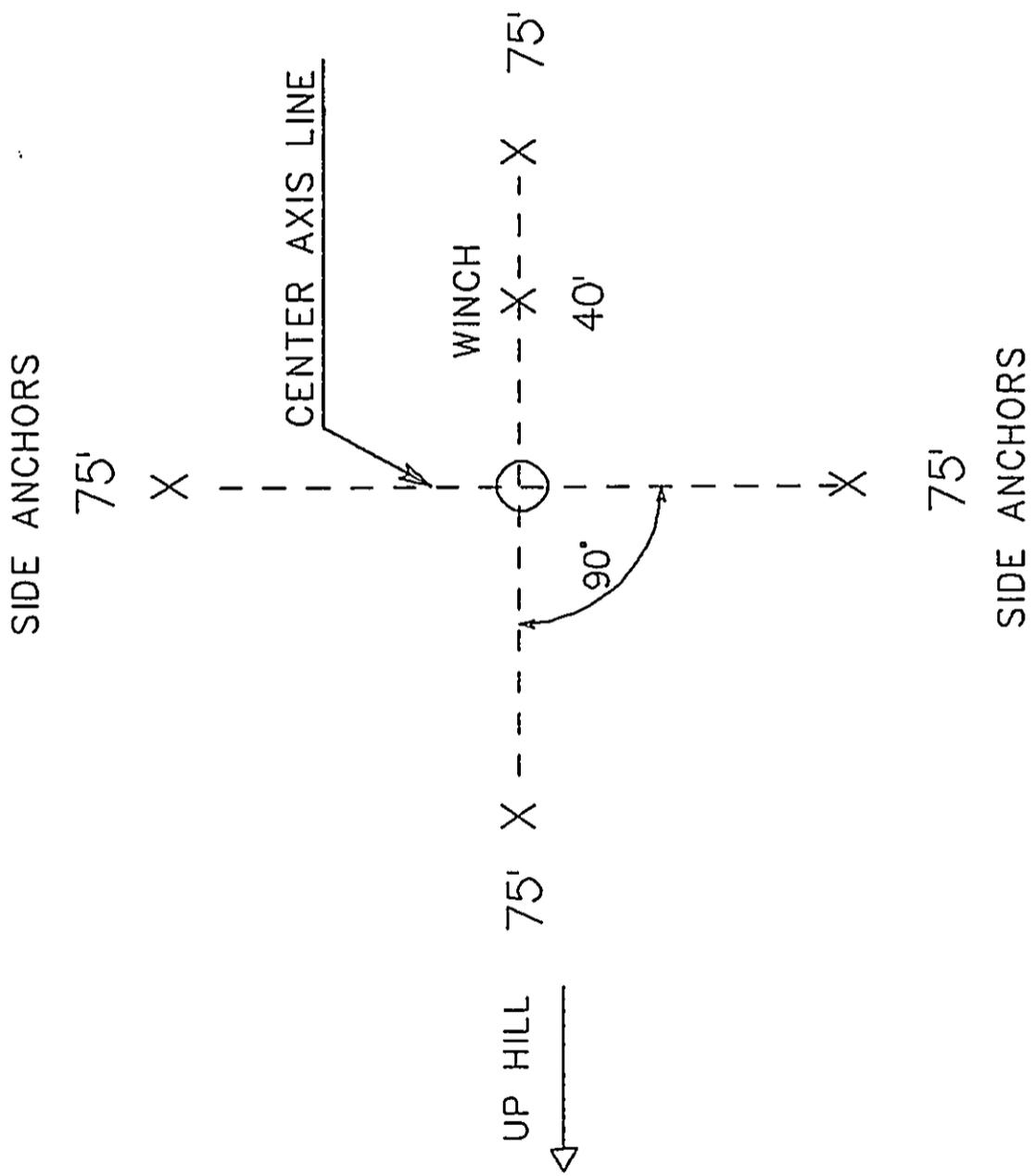


Tower erection in progress. Gin-pole is removed after erection.

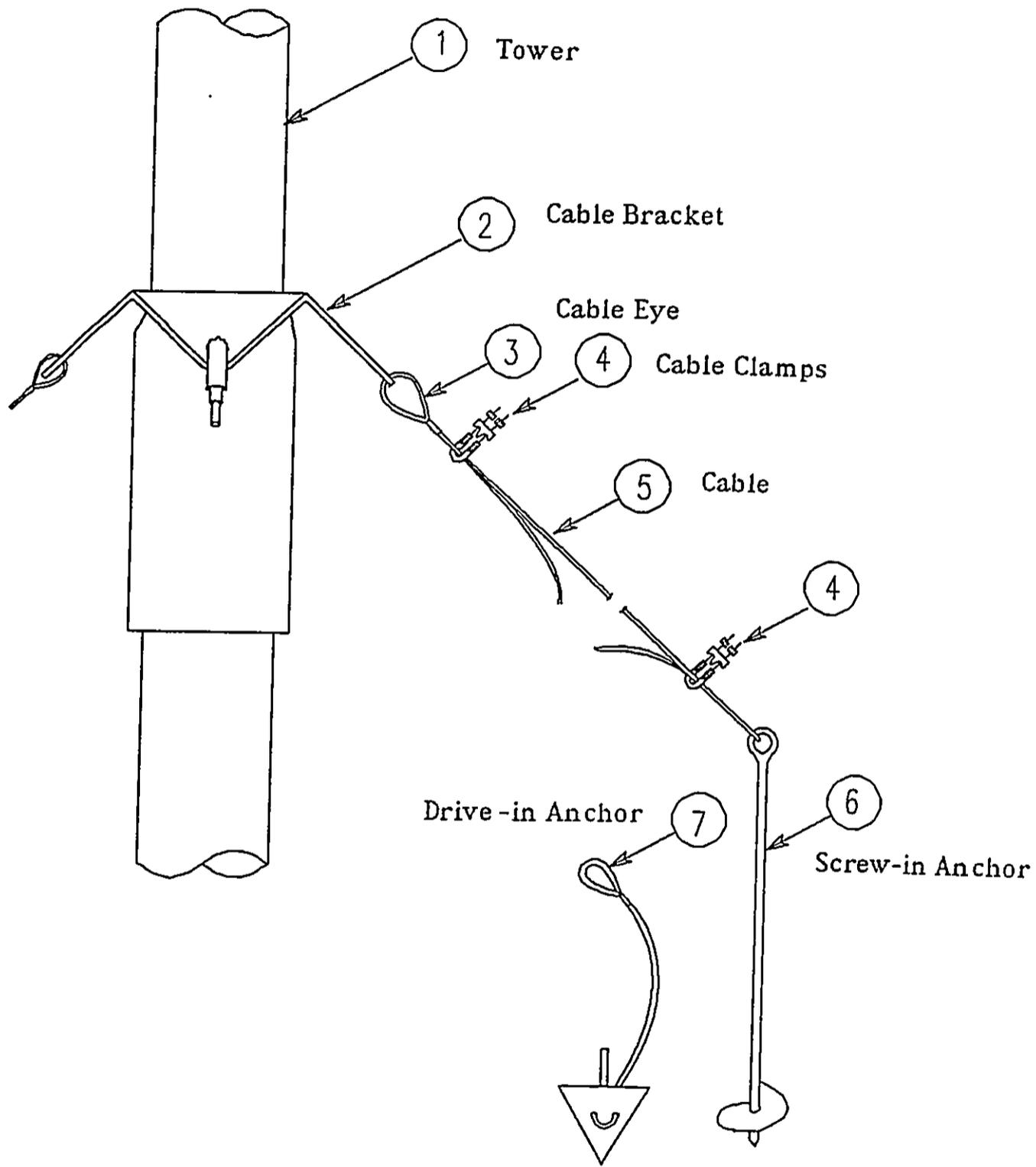
Installation of wind vane and anemometer cups prior to erection.



Tower base-plate with gin-pole.



Typical Anchor layout.



Two Types of Tower Anchors and Cable Assembly.

take extreme care and place some tension on the cable. Loose cables make the erection of the tower very difficult.

Different soil conditions require different anchors, i.e., screw in anchors and arrowhead types for average soil conditions, and duck bill types for rocky conditions.

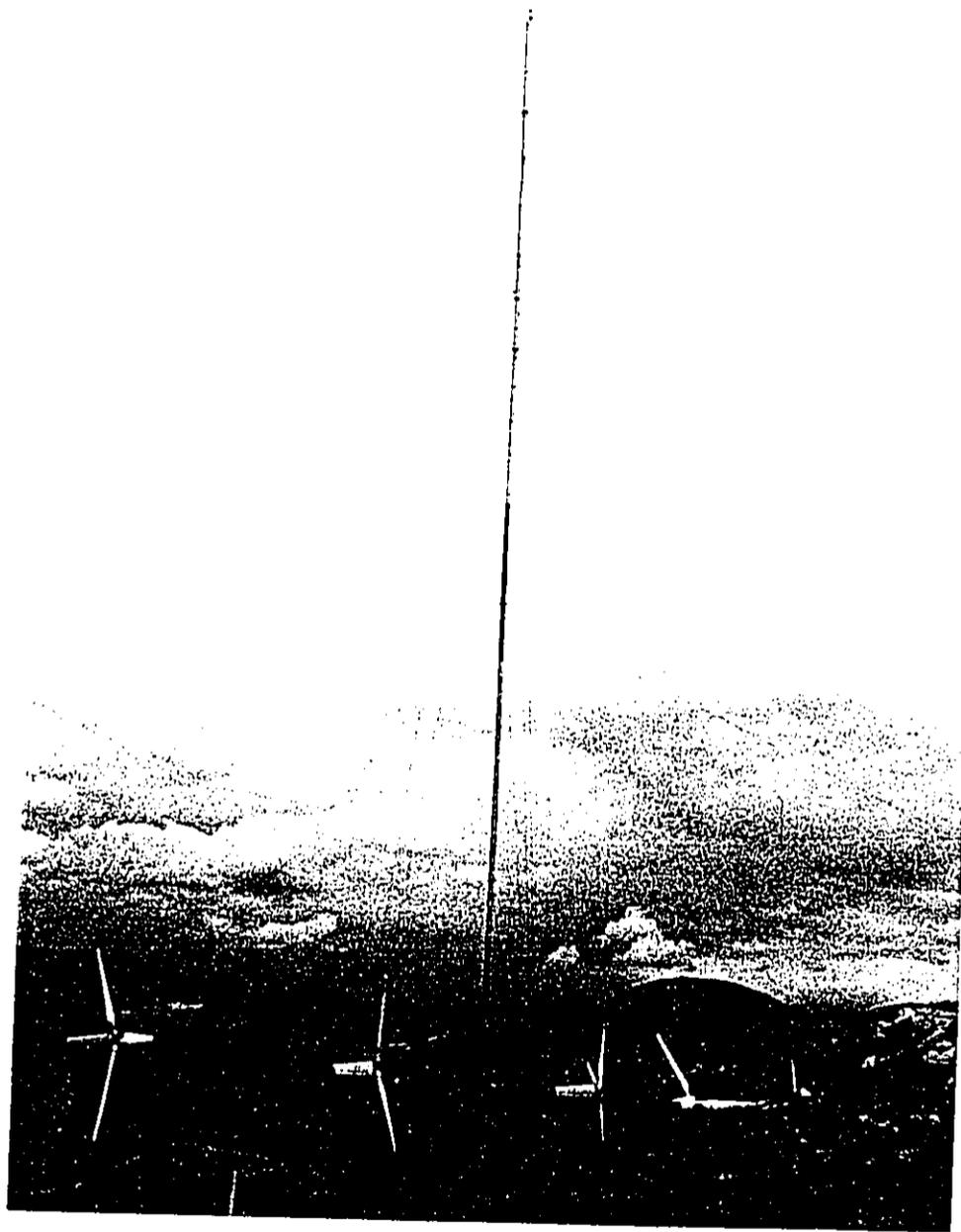
3.0 Tower Assembly

3.1 Tower (Reference Attachments 1, 2 and 3)

1. Looking at the base plate from the side there are two holes, one through the side plates down low and another up and to the side. There is a tower section with a hole through the sleeve 1 3/4" from the end. Place the sleeve of the tower between the side plates and bolt it to the base plate using the lower holes.
2. Slide two additional sections onto the first section. Slide the first guy collar stamped 1" at the 20' level until it rests on the top of the sleeve. Be sure the ears of the guy collar are pointing down and the one labeled with the stamped number is on top of the tower. The collars are stamped in order of placement, i.e., 1=20', 2=40', 3=60', and so on until all the collars are installed.
3. Secure the guy wires to the side anchors using two cable clips. Remove all but one inch of slack from the side cables and tighten one cable clip on each cable. One clip is sufficient to hold the tower during erection.

3.2 Gin Pole

1. Place the first gin pole section on top of the tower base with the sleeve between the side plates of the base plate. Insert a bolt through the base plate and sleeve.
2. Assemble the remaining sections of the gin pole and roll out the guy cables marked for lifting to the eye bolts on the end of the gin pole.
3. Attach the lifting eyes to one gin pole eye bolt, utilizing a 1/4" U bolt or clevice.
4. Attach safety ropes to the other gin pole eye bolt then run them out to the side anchors. These ropes will guy the gin pole during the erection.
5. Position the winch 40' from the base plate. If the winch is mounted on a vehicle, be sure to lock the wheels. If the winch is NOT on a vehicle, install an earth anchor and attach the lifting device to the anchor. Run the cable out to the gin pole and attach to the top eyebolt.



Completely installed meteorological tower

4.0 Pre-Erection

4.1 Safety Instructions

Prior to the erection of the tower, ensure that all personnel involved with the erection have been instructed as to their job assignments and sign the ZAT safety brief form

Have a clear line of sight to the tower, and each other at all times. Hard hats are required. Do not be directly under the tower when lifting. Ensure all hazards associated with the site are discussed prior to the work beginning. One person must be designated as a safety spotter and constantly watch the tower and gin pole once the erection begins.

4.2 Checklist

1. Safety brief is presented and understood by all.
2. All anchors are firmly imbedded in the ground.
3. Guy wires are free of frays, breaks or corrosion.
4. All guy wires have the required slack (approximately 1").
5. At least one cable clamp is tightened, securing each cable to the side anchor.
6. Guy wire collars are properly positioned. Tight against the tower sleeve.
7. Lifting eyes are attached to the gin pole.
8. Safety ropes are attached to gin pole and side anchors.
9. Winch cable is attached to the gin pole.
10. Wheels of the vehicle are chocked or the winch is securely attached to a lifting anchor.
11. Tower sections and gin pole are properly assembled.
12. Base plate is stable and staked so it will not slide.
13. All personnel are wearing proper safety gear.
14. All personnel have the proper tools.
15. One person is designated as the safety spotter.
16. All personnel have read, understood, signed and dated the Erection Procedure.

5.0 Erection

5.1 Rough Tuning

Disengage the clutch of the winch. One person will walk the gin pole up until it is 90° to the Anemometer on the ground. Simultaneously, another person is taking in the slack of the main cable of the gin pole with the winch. When all of the slack is removed, the two people on each side anchor will keep tension on the guy cable while slowly raising the tower two to three feet off the ground. Check that the tower is straight. Some guy cables may have to be adjusted to accomplish this. Also check to see if the tower is sagging away from or towards the ground. A slight sagging of the lower half toward the ground is preferable. However, if it bows away, the tower will be susceptible to failure during the erection phase. It is possible to adjust the bow without lowering the gin pole all the way. Lower the tower back on the ground and add or subtract cable at the collar

There should be approximately two feet of extra lifting cable on each collar for this purpose. Double check the cable clips on the collars for tightness if adjustments are made.

5.2 Sensor Installation

After the rough tuning has been accomplished, raise the tower so the top is about shoulder height.

NOTE: Anytime the tower is raised or lowered, great care must be taken not to move the tower too vigorously. Sudden movements of the tower can cause damage that may result in a collapse.

Use a compass to determine true north then attach the anemometer/windvane to the bracket and the bracket to the tower at the desired height with the hose clamps provided. Once the tower is vertical it can be turned slightly with the gin pole to point the windvane directly at true north. However, the closer the estimate now, the easier it will be to adjust later. Run the sensor cable down the length of the tower and secure it with cable ties. Install the solar panel and face it towards the South. After the sensors and solar panel are mounted and the cables secured, the tower is ready to be tilted up.

5.3 Tower Tilt-Up

Begin lifting the tower, closely watching the guy cables and the tower

NOTE: If the side anchors are higher than the base plate, the guy wires will loosen as the tower goes up. If the side anchors are lower, then they will tighten.

Stop lifting whenever adjustments are required on the guy cables. Continue lifting and adjusting until the tower is about 45 degrees up. Stay clear of the lay down zone. Attach the guy cables to the back anchor at this time. These guy cables may be walked to the side anchors to get a safe approximate length then attached to the back anchors at this length. At least two, preferably three persons, are to hold two cables each and allow the winch to pull against them until the tower is vertical. Personnel tending the back cables should pull away from the tower and to the side of the back anchors. If there is still slack in the back cables after the tower is vertical, one person must remove the slack while the other still keeps tension on the cable. After the excess slack is removed from all of the back cables, and the cable clips have been tightened, the lifting guys on the gin pole can be transferred to the remaining anchor. Maintain even, constant tension while removing the lifting guys from the gin pole and re-attaching to the last anchor. Remove them one at a time. After all guy cables are attached and cable clips tightened, disconnect the lifting device and safety ropes from the gin pole.

5.4 Fine Tuning

Before tightening any cables, use a compass to verify that windvane placement is correct. (Be certain you know the degrees off of true north for proper adjustment of the equipment. Most airports can supply this information.) The gin pole can be used to twist the tower if an adjustment is required. Place a carpenter's level against the side of the tower to determine which way to pull cables to ensure that it is perpendicular. Begin with the lowest guy cable progressing to the highest, one side at a time. Use the come-along to pull cables as needed. Be certain that the come-along is securely holding the cable being pulled before loosening the cable clamps. It may be necessary to add slack to the opposite side cable during this

process. After the tower is straightened from this side of view, move the level 90 degrees and continue the process with the remaining side guy cables. When completed, the tower is straight and vertical. Tighten all cable clips at this time. Mount the Windrunner, utilizing the hardware provided in accordance with the Windrunner Manual. The final item is to start up the site Windrunner and fill out an anemometer master file form. Ensure all information is updated on the anemometer request form.

6.0 Final Walk Through

Before leaving the area, ensure all tools, ropes, etc. are put away and pick up all trash or debris. Check the cables one final time for appropriate tension not more than 10% of work load limit (MAX) and ensure ALL cable clamps are tight.

7.0 Lightning Protection

The ZAT is available with lightning protection equipment. It is recommended the lightning protection equipment is placed on all ZATs which may be subject to lightning strikes. Reference Fig. 9 for the proper equipment and installation configuration.

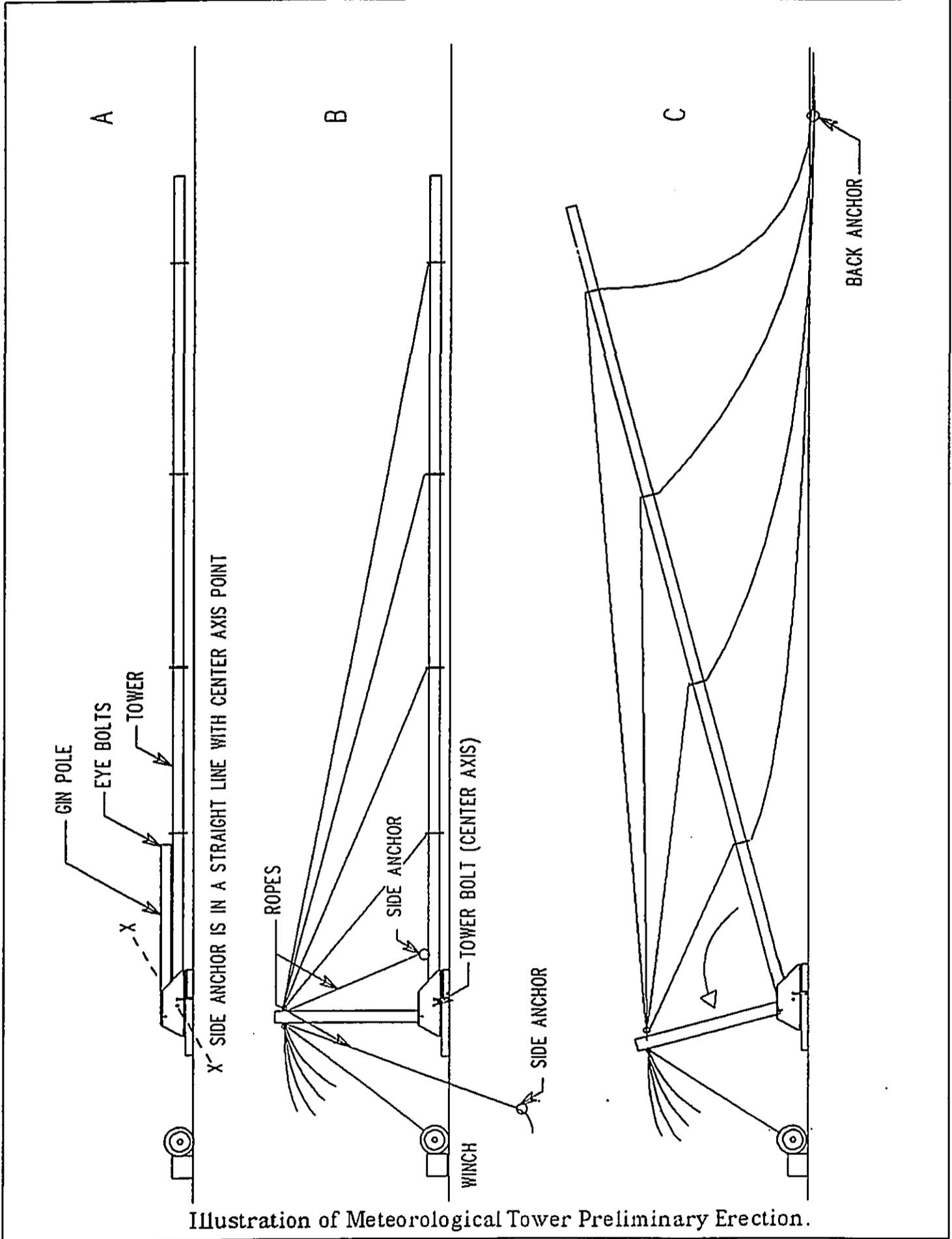


Illustration of Meteorological Tower Preliminary Erection.

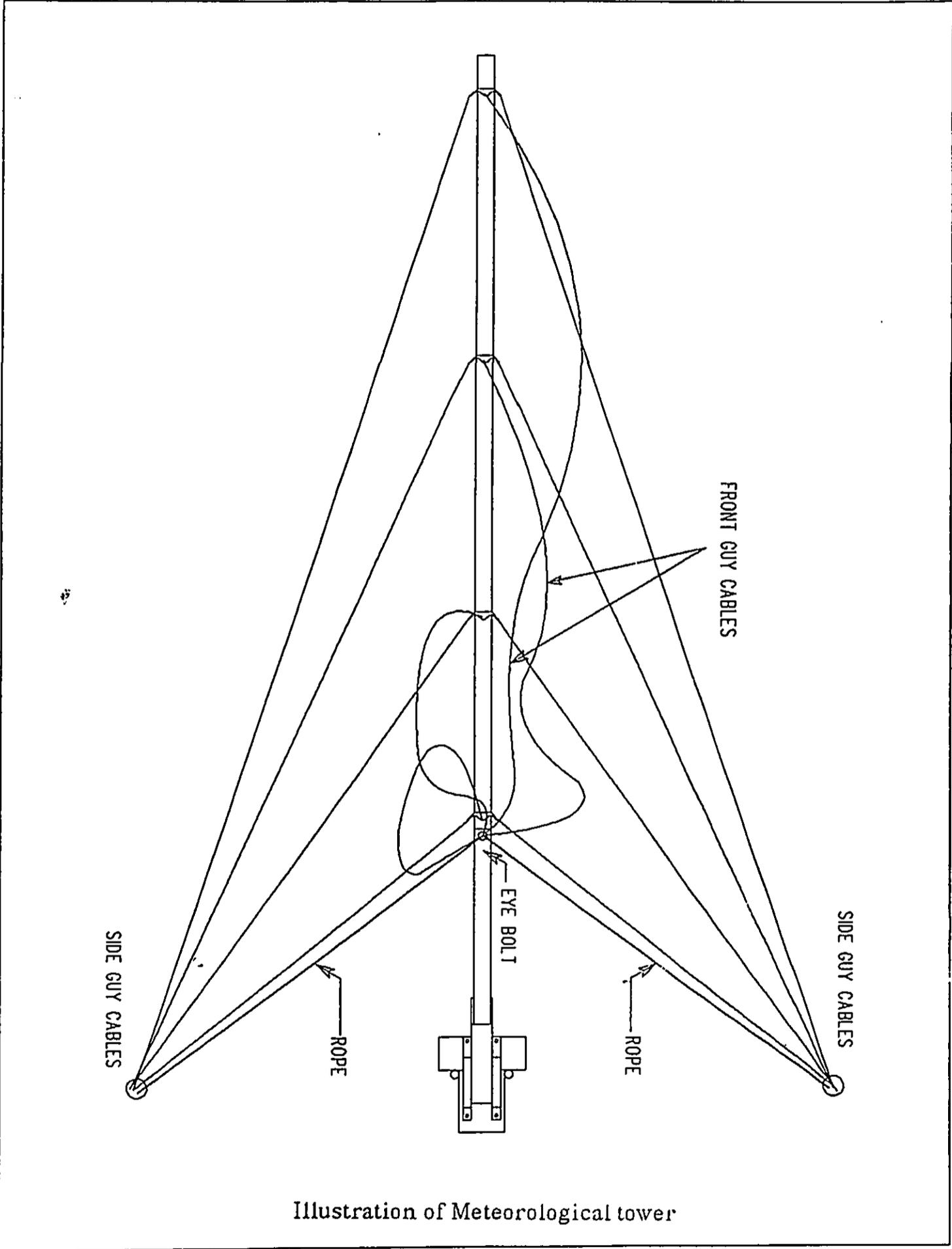


Illustration of Meteorological tower

ZOND SYSTEMS LIGHTING PROTECTION

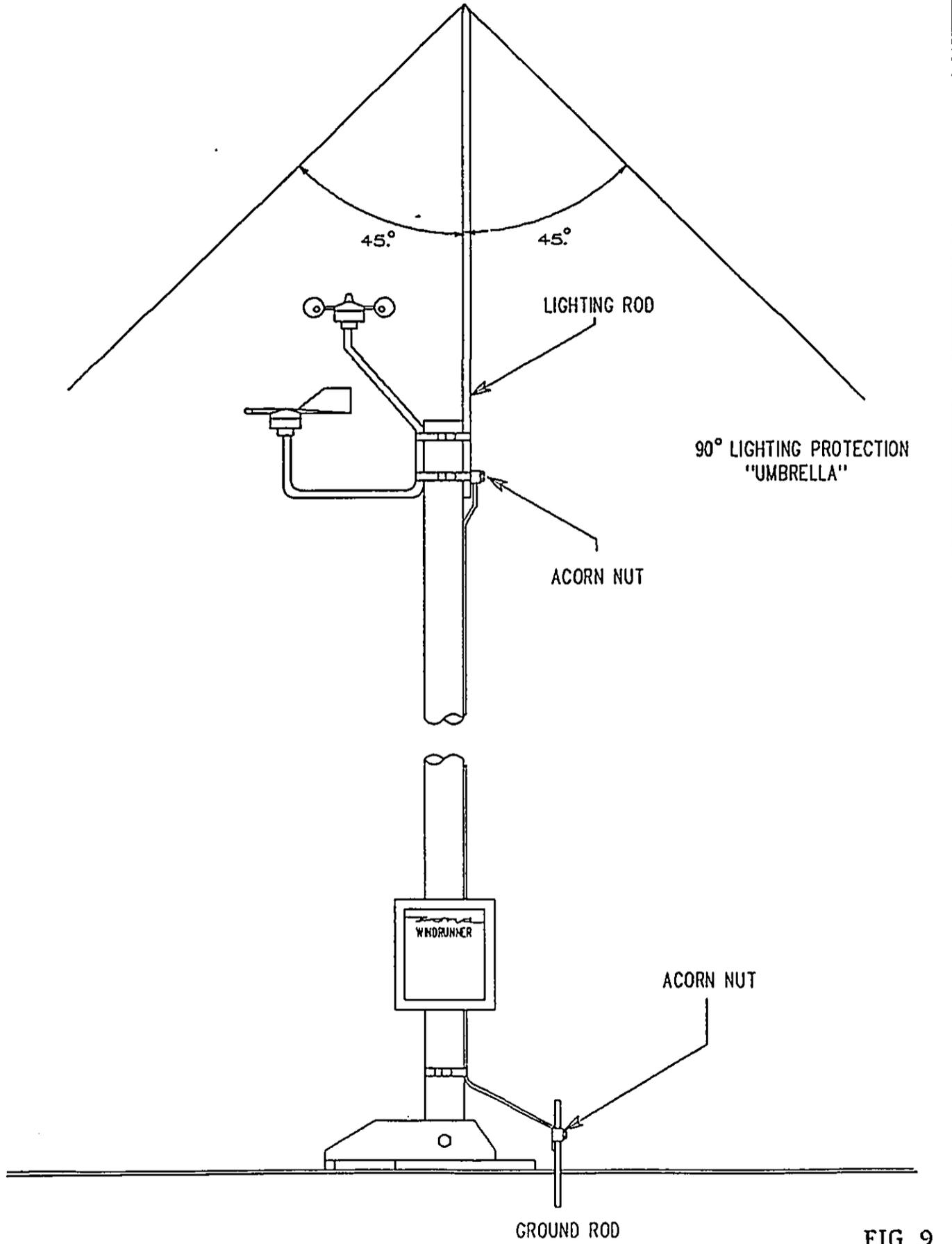
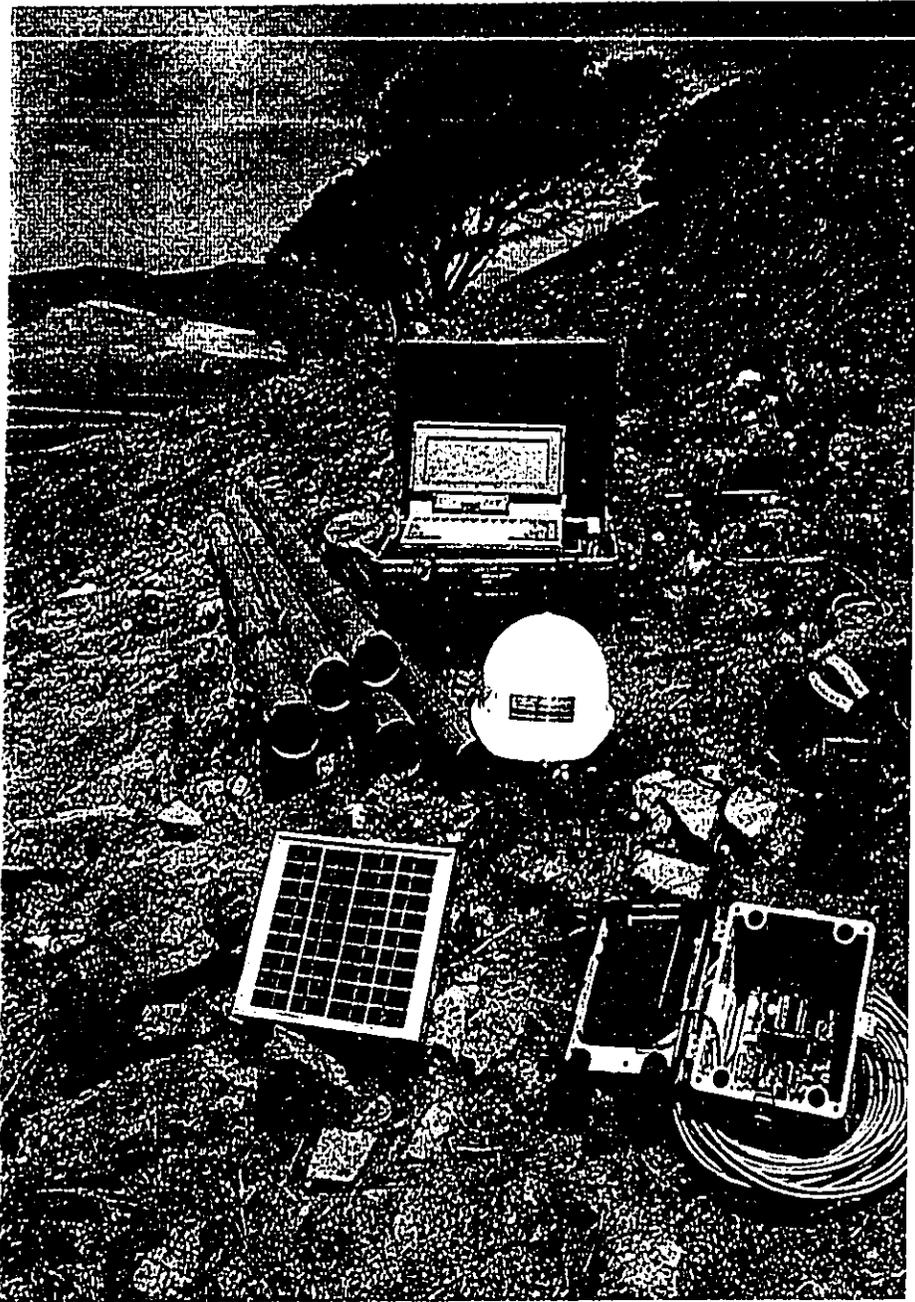


FIG. 9

*Anemometry And Meteorological
Equipment And Services*

Zond's instruments were developed to meet the rigorous demands of commercial wind resource assessment and windpower project development. Whether your wind data requirements are for commercial wind resource analysis or for residential, aviation, farm, or other use, Zond has the right instrument for you.



Monitoring Equipment.

1.0 Features:

The Zond Model WRG 5000 Windrunner is an advanced CMOS microprocessor based, wind data acquisition instrument, designed to record data from three independent anemometers and one wind vane. Recorded data includes: average wind speeds, standard deviation of wind speed, peak gust wind speeds, primary wind direction, a 32 point wind rose and a 32 point wind power rose for the survey period. Real time wind speed and wind direction are available through the instruments serial port for display on any lap top, palm top or notebook type computer. Wind speed is recorded continuously, without sampling, allowing the true integrated average to be calculated.

A large memory space allows 1700 hours of hourly average data recording time. Programming, data collection and real time display of wind speed and wind direction are handled by a simple lap top, palm top or notebook computer with easy to use menu driven software. This same computer can be used to provide 10 different prints and plots of the recorded data including summary tables of the wind speed, standard deviation, and wind direction tables and histograms of wind speed and power distribution, and wind direction time and power distribution. All of these prints and plots are available when using Zond Windsoft software running on an IBM PC or compatible with a standard dot matrix printer.

A unique feature of the Windrunner operating system allows the instrument to be programmed for a specific number of survey hours. The instrument will send data collected for this survey period while still collecting data for the next period. This allows one operator to record data from one or more instruments for the same period of time without the operators presence being required.

The Windrunner comes mounted within a sealed enclosure, operates for up to eight years on the internal batteries when charged from the solar panel provided, negating the need for battery replacements. Batteries, enclosure, anemometer, windvane, solar panel and cables come complete with the Windrunner.

Software requirements are minimal and are included with purchase of a Zond Windrunner. Windcol is the data collection and Windrunner programming software that operates printing software that works with your desk top computer.

**Correspondence and Responses from the Project Notification in
The Environmental Notice, January 23, 1996, p. 11(5),
Published by the Office of Environmental Control**

BENJAMIN J. CAYETANO
Governor of Hawaii



Chairperson
MICHAEL D. WILSON
Board of Land and Natural Resources

Deputy Director
GILBERT COLOMA-AGARAN

STATE OF HAWAII

REF:OCEA:SKK

DEPARTMENT OF LAND AND NATURAL RESOURCES

P. O. Box 621
Honolulu, Hawaii 96809

Aquaculture Development
Aquatic Resources
Boating and Ocean Recreation
Bureau of Conveyances
Conservation and Environmental Affairs
Conservation and Resources Enforcement
Forestry and Wildlife
Historic Preservation
Land Management
State Parks
Water and Land Development

FILE NO.: MA-2778
ACCEPTANCE DATE: 9/5/95
180-Day Exp. DATE: 3/3/96

SEP 28 1995

Mr. Keith Avery, Vice President
Zond Pacific, Inc.
485 Waiale Road
Wailuku, Hawaii 96793

Dear Mr. Avery:

NOTICE OF ACCEPTANCE AND PRELIMINARY ENVIRONMENTAL DETERMINATION
Conservation District Use Application

This acknowledges the receipt and acceptance for processing of your application for a Departmental Permit by Zond Pacific, Inc. (ZPAC) for the temporary installation, periodic maintenance and data collection of wind energy resource monitoring equipment on State-owned land at Kaheawa/Ukumehame, Maui, TMK: 4-8-01.

According to the application, ZPAC would erect up to twelve (12) temporary tilt-up anemometer towers at various sites within a 450-acre area of the General "G" subzone. The monitoring is to be conducted to determine the viability of establishing a twenty (20) megawatt (MW) wind energy farm.

Each station would consist of a 100'-140' tall pipe tower supporting an anemometer, weather vane and computer housed in a small weather-proof case. Each pipe tower would be supported by four (4) guy wires attached to 3-foot twist anchors. The twist anchors would be the only subsurface alteration.

The anemometer towers would be tilted up on top of their two (2) sq./ft. metal base with a winch equipped four-wheel drive truck. Each station can be erected by a three-man crew within one day. Access to the various sites within the 450-acre "General Research Area" (GRA) would be via existing access and jeep roads.

Having reviewed the application, we find that:

There are significant concerns regarding the impact of the project to avian life in the area, including the Nene which have been part of a release project in the West Maui Forest Reserve above the GRA, which have not been adequately addressed. Additional information/explanation should be provided.

We further find that:

1. The proposed use is identified as Data Collection within the General "G" subzone of the Conservation District pursuant to Title 13, Chapter 5, Hawaii Administrative Rules;
2. A public hearing pursuant to Section 183C, Hawaii Revised Statutes (HRS), as amended, will not be required;
3. In conformance with Title 11, Chapter 200, Hawaii Administrative Rules, and Act 241, Session Laws of Hawaii (SLH), 1992, a negative declaration is anticipated based on the draft environmental assessment for the proposed action.

As the applicant, please be advised that it will be your responsibility to comply with the provisions of Sections 205A-29(b), Hawaii Revised Statutes (HRS), relating to Interim Coastal Zone Management (Special Management Area) requirements.

As required by law, negative action on your application by the Department can be expected should you fail to obtain from the County 30 days prior to the 180-day expiration date noted on the first page, one of the following:

1. A determination that the proposed project is outside the Special Management Area (SMA);
2. A determination that the proposed project is exempt from the provisions of the County Ordinance and/or regulation specific to Section 205A-29(b), HRS; or
3. A SMA permit for the proposed project.

This application is being accepted for processing with the understanding that ZPAC has the burden of providing the Department with all the necessary and relevant information for decision making on this application.

Pending action on your application by the Department in the near future, your cooperation on any and early response to the matter presented herein will be appreciated.

Should you have any questions, feel free to contact Steve Tagawa of our Office of Conservation and Environmental Affairs at 587-0377.

Aloha,


MICHAEL D. WILSON

DEPARTMENT OF LAND AND NATURAL RESOURCES
Division of Forestry and Wildlife
Maui District

NOV 17 1995

November 15, 1995

MEMORANDUM

TO: Wayne Ching, Resource Management Forester *WChing*
THRU: Wesley H. C. Wong, Jr., District Manager *W*
FROM: Meyer L. H. Ueoka, Wildlife Manager
SUBJECT: Proposed Installation of Wind Monitoring Towers

The following are our comments and recommendations after a meeting with Mr. Keith Avery of Zond Pacific, Inc. on October 30, 1995 to discuss measures to mitigate the hazards of the towers to birds, particularly the endangered nene:

1. Our concern is still the collision of birds with the monitoring tower and supporting guy wires.
2. Our more recent concerns involve the nene because of a release program that was implemented in a section of the State Forest Reserve above the proposed wind monitoring tower site. We feel the structures are potentially hazardous to nene in flight.
3. Rather than the 12 proposed towers, six towers could obtain the necessary wind data according to Mr. Avery.
4. A smaller area than was proposed could be utilized west of Manawainui Gulch and below the grassland (pasture) and native brush transition zone.
5. Place streamers and reflectors on the tower and guy wires to make them visible to birds. And replace immediately when necessary.
6. Should contact U. S. Fish and Wildlife Service for possible Section 7 (mitigation) consultation.
7. A Zond employee will monitor for possible bird collisions twice a week and report any bird kills. Video cameras will be used to further monitor any bird kills at the tower.
8. Zond is willing to provide funds to assist in the propagation of nene or on any other nene projects in other areas and for other endangered bird species. Any funds shall be earmarked for nene projects or other endangered bird projects.



November 13, 1995

Mr. Leslie Wong, District Mgr.
Department of Fish and Wildlife, Maui
545 S High Street, Room 101
Wailuku HI 96793

RE: MEETING WITH MYER UEOKA IN REFERENCE TO SCIENTIFIC METE-
OROLOGICAL STUDY OF THE WIND RESOURCE AT UKUMEHAME, MAUI IN
ASSOCIATION WITH THE STATE'S NATURAL ENERGY LAB HAWAII AUTHORITY

Dear Mr. Wong:

On October 30, 1995 I met with Mr. Myer Ueoka, John Medeiros, and Philip Ota regarding Zond Pacific/NELHA's request to collect scientific meteorological data at Kaheawa/Ukumehame. We visited the proposed site and discussed the ramifications of installing 12 temporary anemometer towers. The major concerns revolved around mitigating potential impacts with the newly established Hawaiian Nene release program at upper Ukumehame and other migratory birds potentially colliding with the towers' guy wires.

Zond as an environmentally conscious company wishes to minimize any impacts to avian life and any other flora and fauna in Ukumehame. Every bird, whether endangered or not, is important. We will take all mitigating measures to reduce the impact potential to the avian life at Ukumehame.

In our discussions with Myer, we realized that there have been no known problems or adverse experiences with data collection towers and bird mortalities in Hawaii. This does not mean that there has not been or won't be an occurrence in the future. Our discussion reflected that of not denying the project or further delaying, but in minimizing its impact and studying the process over time to see if there actually are potential problems.

I feel we agreed to initially reduce the number of towers from the requested twelve (12) to eight (8). Additionally, those eight towers would have some type of tassel or

P.O. Box 12186
Lahaina, Maui, Hawaii 96761
808-244-9389
FAX - HI: 808-244-9539 • FAX - CA: 805-822-7880



Mr. Leslie Wong, District Mgr.
Department of Fish and Wildlife, Maui
November 13, 1995
page 2

reflective tape attached to the guy wires to warn of the cables. Also, Zond, along with those DLNR officials in the area, will make a diligent effort to observe during site visits any avian situations or mortalities.

Zond intends to collect data for one year. We have applied for a "Right of Entry" for the temporary data collection, and that "Right" is for one year. After the initial data is analyzed and the wind resource verified, Zond will pursue a 20 MW wind energy farm. We will then apply for a CDUA for the wind farm project. At that time we will address in every detail the avian situation and through continuous open communication, find solutions to minimize any potential avian problems.

It is important to know that there have been no known bird mortalities involving wind data towers or wind turbines in Hawaii. Zond, with the DLNR and other experts, through examining and studying more intensely the avian situation, will better understand potential problems as well as discover solutions to remedy those problems. One process Zond could be involved with when a wind farm is developed would be to participate in Nene and other affected bird propagation programs. This ultimately improves the bird populations, even after taking into account natural and other mortalities.

Renewable energy development on State lands has tremendous economic and social benefits, as well as supporting the State plans and laws of energy self-sufficiency and the reduction of importing and burning fossil fuels. Zond and the NELHA wish to receive approval for this very important project for verifying the wind resource in this area of Maui.

At this time we are only collecting scientific data, and considering our discussions of mitigation with Myer Ueoka, we respectfully request approval to go ahead with the data collection.

We thank you for your consideration. If you have further concerns or questions, please call me at 808-244-9389 on Maui.



Mr. Leslie Wong, District Mgr.
Department of Fish and Wildlife, Maui
November 13, 1995
page 3

I am waiting to receive a copy of "Colton's Survey of Scientific Literature" referencing all data available on avian life and wind energy. As soon as I receive it, I will forward the reference to you.

We look forward to your reply.

Sincerely,


Keith Avery, Vice President
Zond Pacific, Inc.

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
54 SOUTH HIGH ST., ROOM 101
WAILUKU, HAWAII 96793-2198

November 21, 1995

MICHAEL D. WILSON
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTY DIRECTOR
GILBERT S. COLOMA-AGARAN

AQUACULTURE DEVELOPMENT
PROGRAM
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RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

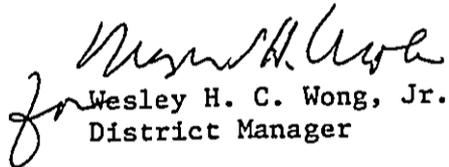
Mr. Keith Avery, Vice President
Zond Pacific, Inc.
485 Waiale Road
Wailuku, HI 96793

Dear Mr. Avery:

This is in response to your faxed letter dated November 13, 1995 referring to your meeting with Meyer Ueoka and request for approval to your proposed wind testing project at Ukumehame.

Mitigative measures and recommendation for the proposed project have been forwarded to Mr. Wayne Ching of our Oahu office for formal review and further evaluation of this project. We are not in a position to give you a determination directly without proper review. Determination will be through Mr. Roger Evans, Office of Conservation & Environmental Affairs (OCEA).

Sincerely,


Wesley H. C. Wong, Jr.
District Manager

cc: Wayne Ching

Zond

ZOND PACIFIC INC.

December 28, 1995

Mr. Michael G. Buck, Administrator
Division of Forestry and Wildlife
Department of Land and Natural Resources
1151 Punchbowl Street, Rm. 325
Honolulu, HI 96813

Re: Response to mitigation consultation with Mr. Meyer Ueoka,
wildlife biologist, Maui; regarding Zond/ NELHA proposed
installation of wind monitoring towers at Maalaea, Ukumehame
Maui. File no. MA-2778.

Dear Mr. Buck:

I appreciate your guidance on recommending a meeting with Mr.
Meyer Ueoka on Maui. On October 30th we met with Mr. Ueoka to
discuss mitigation methods as well as having a site visit.

We specifically discussed measures to mitigate potential collision
hazards of the guyed towers to birds including the Nene and other
nocturnal fliers and migratory water birds.

From our discussions, Mr. Ueoka responded with comments and
recommendations to Mr. Wayne Ching. This memo of November 15,
contains twelve points which we would like to respond to.

If I may, I first wish to reiterate that Zond and the Natural Energy
Lab Hawaii Authority, as renewable energy developers, are greatly
concerned with the preservation of all natural life and the integrated
use of our renewable energy resources. Further, determination of a
viable wind energy resource in this area offers the opportunity to
comply with State Law in supporting the development of indigenous
energy resources on State Lands whenever possible.

P.O. Box 12788
Maui, Hawaii 96761
808 244-9389
FAX - HI: 808 244-9539 • FAX - CA: 805 822-7880

Mr. Michael Buck
December 28, 1995

page 2

Our following comments are derived from a phone conversation with Mr. Ueoka on December 27th regarding the twelve points from the November 15th memo.

We have agreement on the first five points of comment and recommendations. We do wish to comment that to date there is no supporting data in Hawaii regarding bird collisions with the guy wires from any of the hundreds of various guyed radio, telephone, utility, armed forces, or meteorological towers throughout the state. This does not conclude that there is no potential hazards but suggests that with the installation of these (six) towers that we more closely monitor for possible bird collisions.

Today's meteorological stations are serviced by computers that continuously collect and store data. They need only to be visited once a month or once every two months. We have agreed to visit the site three to four times a month to monitor for potential bird strikes. The use of video cameras at this very remote site is technologically unavailable and economically prohibitive.

We have contacted the U.S. Fish and Wildlife Service concerning a possible Section 7 consultation and were verbally told that one was not necessary. We have since requested a statement in writing. Due to the twice shutdown of the Federal Government the U.S.F.&W.S. are on furlough and further action is on hold.

Regarding funds for propagation or bird mortality Zond is agreeable to put \$3000 to \$5000 in a holding or escrow type account that may be used for compensation. We do feel that no amount of money is compensatory for life. If a windfarm is proven viable and Zond is able to develop the wind resource a continuously funded bird propagation program could be supported by Zond from the revenues produced by the windfarm.

Mr. Michael Buck
December 28, 1995

page 3

Continuing on to comments number 9, Zond agrees to keep any disturbances to a minimum. No activities other than the site visits are anticipated.

To verify a sites potential wind energy resource requires a minimum of three months. This allows for the variability of the seasonal wind changes to be corrolated to long term wind data stations.

We have addressed comment number 11 and agree to number 12 except for (b.). There are approxemately six miles of very remote, rocky, and traditionaly unrepaired jeep trails. The road is adequate for existing services and is usable for the installation and periodic monitoring of the metereological towers. Zond does foresee the need to improve the existing roads in order to develop a windfarm and will discuss it at that appropriate time.

On December 1, 1995 we recieved a "Right of Entry" for the project contingient on recieving our requested "Departmental Permit".

I spoke with Lauren Tanaka today and I was deeply concerned about some of her comments regarding our scheduling and reporting in the O.E.Q.C. bulletin. I now understand that besides the conservation public notice that the O.E.Q.C. notice that was required was never published.

Also, that we are now no longer on the DLNR Board agenda for January 12, 1996, but as we were told several months ago are not required a board hearing for a "Departmental Permit. I have Asked Lauren to clarify our position so that we may recieve approvals as soon as possible noting that our application was sent in June 1995 and wasn't accepted until September 28, 1995.



Mr. Michael Buck
December 28, 1995

page 4

Zond joined with NELHA to verify a potentially valuable resource for the State of Hawaii. We need to collect scientific wind data to confirm that the resource is adequate for wind energy development. Our project has numerous social and economic benefits for the people of Hawaii and Maui.

We will do all in our power to minimize any disturbance of the area while maximising our efforts to protect all the natural life at Ukumehame.

We look forward to a successful conclusion and will continue to keep open all lines of communication and cooperation.

Sincerely,

Keith Avery,
Vice Pres. Zond Pacific, Inc.

cc: Wesley Wong
Lauren Tanaka

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
1151 PUNCHBOWL STREET
HONOLULU, HAWAII 96813

MICHAEL D. WILSON
CHAIRPERSON
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STATE PARKS
WATER AND LAND DEVELOPMENT
WATER RESOURCE MANAGEMENT

December 29, 1995

Mr. Keith Avery, Vice-President
Zond Pacific, Inc.
485 Waiale Road
Wailuku, HI 96793

c:\wayne\edua\9596\ma-2773c.wfc

Dear Mr. Avery:

Thank you for your recent facsimile in regard to your meeting with Mr. Meyer Ueoka. From what I can ascertain from your fascimile, the meeting went well. Comments and/or concerns on the part of the Division of Forestry and Wildlife were addressed at the meeting and a concensus was met as to best approach this project. Because of this, we have no objections to your project. Again, I reiterate that you should keep Mr. Ueoka informed of the progress of your project.

In regard to the "Departmental Permit", I recommend that you continue pursuing your project with Ms. Lauren Tanaka of the Office of Conservation and Environmental Affairs. Departmental permits stem from her office after reviews have been received from concerned parties. I will be sending a copy of this letter and your fascimile to Ms. Tanaka as well as Mr. Ueoka.

Thank you for your concern in regard to Hawaii's natural resources.

Sincerely,

A handwritten signature in black ink, appearing to read "Wayne F. Ching".

Wayne F. Ching
Acting Administrator

cc: L. Tanaka, OCEA
Maui DOFAW

BENJAMIN J. CAYETANO
GOVERNOR



GARY GILL
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
220 SOUTH KING STREET
FOURTH FLOOR
HONOLULU, HAWAII 96813
TELEPHONE (808) 588-4196
FACSIMILE (808) 588-3462 4186

January 19, 1996

Michael Wilson, Chairperson
Office of Conservation and Environmental Affairs
Department of Land and Natural Resources
1151 Punchbowl St.
Honolulu, Hawaii 96813

Attention: Lauren Tanaka

Dear Mr. Wilson:

Subject: Draft Environmental Assessment (EA) for Zond Pacific Installation of
Wind Energy Monitoring Equipment, Ukumehame, Maui; TMK:4-8-1:
por. 8

Please include the following in the final EA:

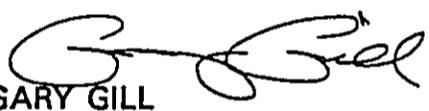
1. What are the expected start and end dates of this project?
2. A description of the function of an anemometer tower. The draft EA lists these towers as temporary; how long will they be in place?
3. A map of the island indicating the project location.
4. Indicate on Map M-6 (Conservation Zone map) what the one-letter abbreviations represent.
5. How close are the nearest neighbors? Will any public or private mauka or makai viewplanes be affected?

Michael Wilson
January 19, 1996
Page 2

6. There are photos showing a tower installation. Where and when were these taken?

If you have any questions, please call Nancy Heinrich at 586-4185.

Sincerely,


GARY GILL
Director

GG/nh

c: Keith Avery, Zond Pacific



ZOND PACIFIC INC.

February 7, 1996

Michael Wilson, Chairperson
Office of Conservation and Environmental Affairs
Department of Land and Natural Resources
P.O. Box 621
Honolulu, HI 96809

Attention: Lauren Tanaka

Dear Mr. Wilson:

RE: Response to comments from the Office of Environmental Quality Control regarding Zond Pacific's proposed installation of wind monitoring equipment at Ukumehame, Maui.

The following are responses to questions from Mr. Gary Gill, Director of the Office of Environmental Quality Control.

1. What are the expected start and end dates of the project.

Anticipating approval for a Departmental Permit, we would install the towers in April 1996 and collect data for one (1) year.

2. A description of the function of an anemometer tower. The draft EA lists these towers as temporary; how long are they in place?

An Anemometer tower suspends aloft wind speed and wind direction sensors; i.e. weather vane and spinning cups. The sensors send impulses to a micrologger at the base of the tower that records the pulses that are later transcribed into hourly averages of wind speed and wind direction. The sensors height on the tower corresponds to the hub height of the wind energy generator. The data collected will be correlated to other long term monitoring stations and be given a wind energy resource value which in turn establishes the resources viability.

P.O. Box 12186
Lahaina, Maui, Hawaii 96761
808/244-9399
FAX - HI: 808/244-9539 • FAX - CA: 805/822-7880

Michael Wilson
February 7, 1996

page 2.

3. A map of the island indicating the project location.

I have inclosed a map of Maui and the projects location.

4. Indicate on Map M-6 (Conservation Zone Map) what the one-letter abbreviations represent.

The one letter DLNR designations represent the following types of zones:

- (R) - Resource**
- (P) - Protective**
- (L) - Limited**
- (G) - General**

5. How close are the nearest neighbors? Will any public or private mauka or makai viewplanes be affected?

The project site ranges in elevation from 1600' asl to 3000' asl. The nearest neighbors are the community of Maalaea approximately six (6) miles away and at sea level. The site is very remote and at uninhabited elevations. The towers are only 6 inches in diameter and will be unnoticable.

6. There are photos showing a tower installation. Where and when were these taken?

The photos were taken in 1995 at one of Zond's wind-farm sites at Tehachapi, California. More than 50 of these types of towers have been installed in Hawaii.



Michael Wilson
February 7, 1996

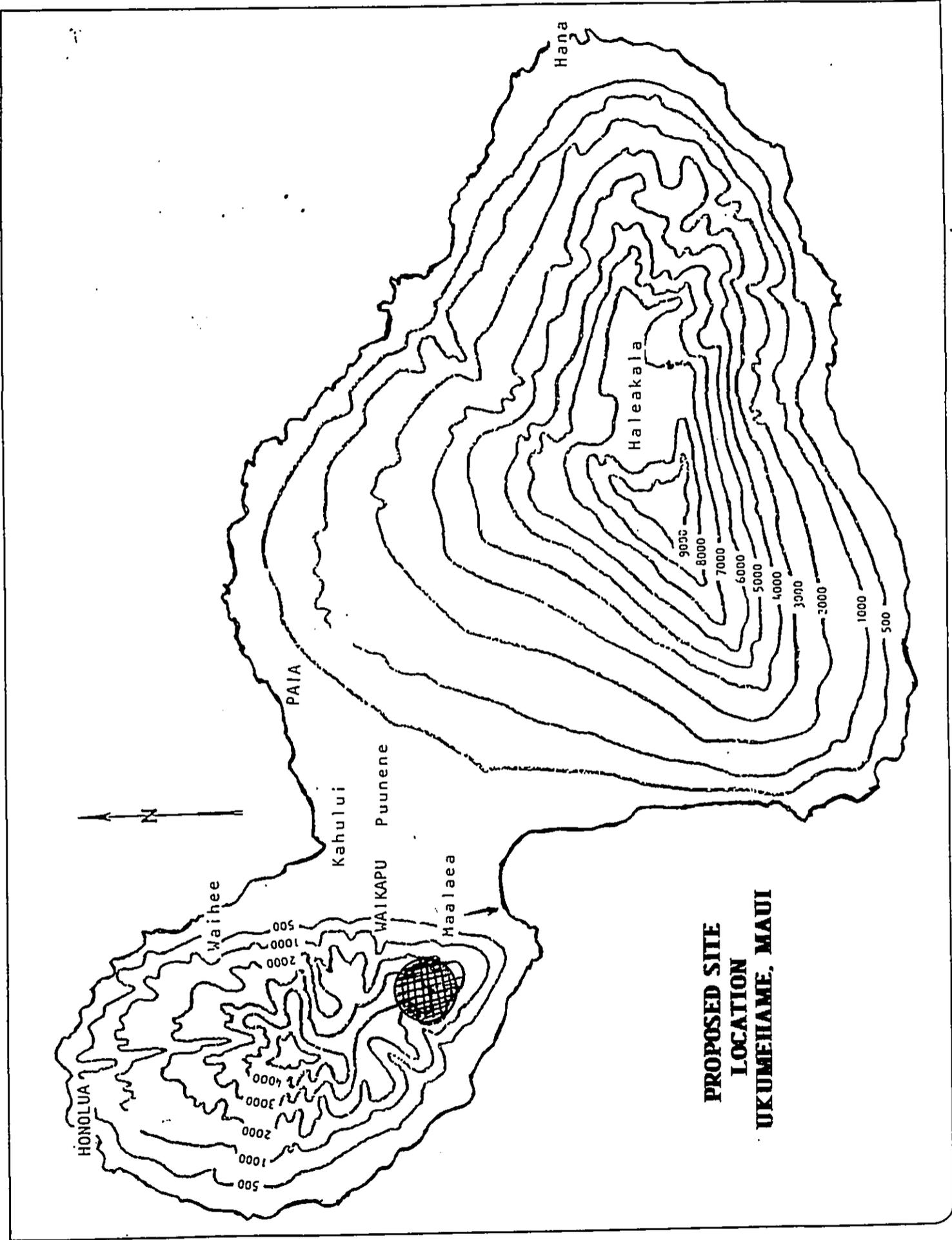
page 3.

I hope the responses to your questions are adequate. If you have any other concerns or comments please contact me at 244-9389 on Maui.

Sincerely,

A handwritten signature in black ink, appearing to read "K. Avery", with a large, sweeping flourish extending to the right.

Keith Avery,
Vice Pres., Zond Pacific, Inc.



BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



MICHAEL D. WILSON
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTY
GILBERT S. COLOMA-AGARAN

REF:OCEA:LT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P.O. BOX 621
HONOLULU, HAWAII 96809

JAN 11 1996

FILE NO.: MA-2778
ACCEPTANCE DATE: 9/5/95
180-Day Exp. Date: 3/3/96

AQUACULTURE DEVELOPMENT
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LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT
WATER RESOURCE MANAGEMENT

Mr. Keith Avery, Vice President
Zond Pacific, Inc.
485 Waiale Road
Wailuku, Maui 96793

Dear Mr. Avery:

By letter dated September 28, 1995, we acknowledged receipt and acceptance of Zond Pacific, Inc.'s (ZPAC) application for a Departmental Permit. The proposed project will involve temporary installation, periodic maintenance and collection of data from wind energy resource monitoring equipment on State-owned land identified by TMK: 4-8-01: por. 08, located at Kaheawa/Ukumehame, Maui.

ZPAC proposes to install up to six (6) temporary wind resource monitoring stations within a 450-acre area of the subject parcels. The project will involve the analysis and verification of wind energy to determine the viability of establishing a twenty (20) MW wind energy farm to facilitate alternate energy resource development.

At each site will be placed one 90'-140' tubed tower four to six inches in diameter and built from 10' interconnecting pipes with stabilizing guy cables placed in four directions. The towers will be erected on the top of a 2' square metal base plate which rests on the ground.

During the project review, concerns were raised by the Division of Forestry and Wildlife's (DOFAW) District Manager for Maui County and concurred with by the Administrator of DOFAW. The guy wires are not visible to nocturnally flying birds and would be hazardous to the pueo, barn owl, wedge-tailed shearwater, dark-rumped petrel, and most of the migratory waterbirds like the sanderling, ruddy turnstone, golden plover, wondering Tattler, shoveler duck and pintail duck, who may use the area as a corridor of travel.

Of particular concern to DOFAW, was the Nene which had been part of a release program in the West Maui Forest Reserve, Hanaula, which would be utilizing the grassland pastures above the proposed wind monitoring sites.

As the Nene are considered to be an endangered species, the U.S. Fish and Wildlife Service (USFWS) was asked to review the proposed project for Section 7 (mitigation) consultation and project information was transmitted. To date, there is no documentation from that agency with the exception of notes of a telephone conversation on October 16, 1995 with Christine Willis, a Biologist with USFWS, that the topic of compliance with the Federal Migratory Bird Protection Act had been discussed. During the past month, several telephone calls to the Honolulu office were made. However, due to the furloughs of federal employees, there was no one available to discuss their position on the project.

By transmittal letter dated October 2, 1995, we received from ZPAC, three documents which analyze the effects of wind turbines to avian life, and the claim that Zond has not experienced any known bird collisions at the various sites which they have throughout the State. However, this is not to say that it has not occurred. According to DOFAW, it is possible that birds do fly into the wires, become injured, and further down the path of their flight, may become the prey of other wildlife.

The placement of tassels or markers on the guy cables, the monitoring of bird mortalities in the areas where the wind data will be collected, and the diversion of a portion of the revenues produced from wind energy for use in future bird programs were the mitigative efforts Zond offered regarding the issues to the avian wildlife.

On November 11, 1995 and December 4, 1995, additional comments from DOFAW were faxed to you and requests for Zond's response. Although there has been no written response from you on either of these transmittals, we understand that you have been in verbal communications with staff from the Maui County DOFAW office and the Planning Branch of the Land Division.

During the preparation of this letter, there was further discussion with you, the Maui District Land Agent, and DOFAW, as well as the mitigation measures ZPAC will implement to address the most current comments from the Maui District Wildlife Biologist, Meyer Ueoka, with whom you met on October 30, 1995. The telephone conversations are now verified through receipt of written documents.

Mr. K. Avery

-3-

File No.: MA-2778

Of significant concern to the department, is that once a Nene is injured and dies, it cannot be replaced, nor can it be accurately determined that its death or injury was a direct result of a collision with the towers or wires. It is extremely difficult to place a monetary value on avian wildlife, in particular those on the endangered species list.

A determination has been made that a draft environmental assessment (EA) should have been published in the OEQC Bulletin, in compliance with Chapter 343, HRS, requirements. (The October 23, 1995 issue contained a notice of your project in the Conservation District Notices section, but not a draft EA.) We have filed a draft EA for the project based on the permit application. It will be published in the January 23, 1996 bulletin and the deadline for comments is February 22, 1996. Please be advised that you will be responsible to respond in writing to the comments, if any, submit a final EA with copies of both your response and public comments, at the latest, February 27, 1996, so that we may issue a Negative Declaration.

As the Departmental Permit requires signature of approval by only the Chairperson, we will have to give him the remaining three days to review and sign to meet the March 3, 1996, expiration date. If you are not able to assist in the timing of this process, we will have to recommend denial of the permit based on noncompliance with Chapter 343, HRS.

Aloha,

Michael D. Wilson
for MICHAEL D. WILSON

xc: Maui DOFAW
DOFAW - Wayne Ching

Mr. K. Avery

- 3 -

File No.: MA-2778

cc: Maui Board Member
Maui Land Agent
County of Maui Planning Department
County of Maui DPW
U.S. Fish and Wildlife
DOH/OEQC/OSP/DOT/OHA
DOT (Airports Div)



United States Department of the Interior

FISH AND WILDLIFE SERVICE
 Pacific Islands Ecoregion
 300 Ala Moana Blvd., Room 3108
 P.O. Box 50088
 Honolulu, Hawaii 96830

In reply refer to: CMR

FEB 15 1996

Mr. Dean Uchida, Administrator
 Land Division
 Department of Land and Natural Resources
 State of Hawaii
 P.O. Box 621
 Honolulu, Hawaii 96809

Dear Mr. Uchida:

The U.S. Fish and Wildlife Service (Service) has reviewed the Draft Environmental Assessment (EA) for a Project by Zond Pacific, Inc.: Temporary Installation, Periodic Maintenance and Collection of Data from Wind Resource Monitoring Stations at Kaheawa/Ukumehame, Maui. The proposed project involves the installation of 12 temporary wind monitoring stations (100-140 feet in height) for collecting data to determine the viability of establishing a 20-megawatt wind energy farm at Kaheawa in the District of Ukumehame on the island of Maui, Hawaii. The proposed project site is in the area between Kealahoa Ridge and Papalaua Gulch, between 1600 and 2600 feet in elevation.

General Comments

The Draft EA for the proposed project includes a summary description of the affected environment. However, this summary does not adequately describe the existing species or address the impacts the proposed project may have on these species.

Specific Comments

Our main concern is the effect of this project (and certainly of a wind energy farm) on the native birdlife and bats of the area. The monitoring towers and guy wires would present a significant collision threat to birds and bats using this airspace. Endangered Nene or Hawaiian Geese (*Branta (=Nesochen) sandwicensis*) are found in this area. In fact, one of the State Division of Forestry and Wildlife (DOFAW) release sites for captive-bred nene is in a State Forest Reserve above the proposed project site. Other species we are concerned with in this area are Wedge-tailed shearwaters (*Puffinus pacificus*), endangered Hawaiian hoary bats (*Lasiurus cinereus semotus*), and possibly

endangered Dark-rumped petrels (*Pterodroma phaeopygia sandwichensis*), and White-tailed tropicbirds (*Phaethon lepturus*). All of the above-mentioned bird species are protected under the Migratory Bird Treaty Act of 1918 [16 U.S.C. 703-712; 40 Stat. 755], as amended.

The statements in the Draft EA that "Of the data towers placed throughout the State, no known adverse environmental effects have been identified. This includes any bird collisions with guyed cables." are misleading. No systematic study was conducted to quantify such effects. A significant body of literature exists documenting the problem of birds colliding with man-made structures. It appears very likely that birds and bats will collide with the proposed test towers. The applicant indicated to DOFAW biologists that they are willing to visit the sites 3-4 times per month to monitor potential bird strikes. It is unlikely that visits at such a low frequency would find a downed bird or bat before it was carried away or consumed by an introduced mammal such as a dog, cat, mongoose, or rat.

The Draft EA also does not address existing endangered plant species at the proposed project site or measures that will be taken to avoid impacts to these species.

Endangered plants in the area include: *Bobea tilmontoides* ('Ahakea), *Cystopteris douglasii*, *Exocarpos gaudichaudii* (Heau), *Melicope orbicularis* (Alani), *Trisetum inaequale*, *Dissochondrus biflorus*, *Santalum freycinetianum* var. *lanaiense* (Iiahi), and *Hibiscus kokio* ssp. *kokio* (Koki'o 'ula 'ula). *Sandalwood*

Summary Comments/Service Recommendations

The Service recommends that the applicant conduct two types of biological surveys. One of these would be a botanical survey to determine the distribution of listed plants in the proposed project area. A survey of this type should be conducted by a botanist familiar with Hawaii's listed plant species. Such a survey would make it possible to select monitoring station sites so that no endangered plants are impacted.

We also recommend a survey of the bird and bat occurrence at the proposed project site. This would involve extensive observations, including the use of radar and night-vision equipment, over an extended period of time. Similar studies have been conducted on the island of Kauai in relation to a proposed powerline installation and at a military facility on the island of Hawaii.

We recommend that decisions to proceed with the project be delayed until further surveys of significant natural resources are conducted and a more comprehensive

DOCUMENT CAPTURED AS RECEIVED

impact assessment is completed. Results of these studies and evaluations should be included in a revised Draft EA that is resubmitted to the public for review.

The Service appreciates the opportunity to comment on the proposed project. If you have any questions, please contact Fish and Wildlife Biologist Craig Rowland at phone: 808/541-3441 or fax: 808/541-3470.

Sincerely,



for Brooks Harper
Field Supervisor
Ecological Services

cc: D.I.N.R., Honolulu
DOFAW, Honolulu
DOFAW, Maui



ZOND PACIFIC INC.

October 20, 1995

Mr. Philip Ota, Manager
Division of Land Management
Department of Land and Natural Resources
54 S. High St Rm. 101
Wailuku, Maui, Hawaii 96793

Re: Request for " Right of Entry" for the installation and periodic monitoring and maintenance of up to twelve (12) Scientific Wind Resource Monitoring Stations at Kaheawa/Ukumehame, Maui; Tax Map: 4-8-01.

Dear Phil:

Zond Pacific, Inc., (Zond) in association with the Natural Energy Lab Hawaii Authority (NELHA) has applied for a Departmental Permit, Sec. 13-5-33, HRS; to collect wind resource data, Sec. 13-5-22, P-1 data collection (A-1); at Kaheawa/ Ukumehame. (See site map GRA).

Zond and NELHA wish to analyze and varify the wind energy resource at the proposed General Research Area (GRA) to determine the viability of a twenty (20) MW wind energy farm.

I have enclosed an areal photo of the GRA with the approximate locations of the twelve monitoring stations. At each site will be erected a 90' tilt-up tube tower, 4" to 6" in diameter. At three or four of the sites, the tower height will be 140'. The tower is built from ten foot interconnecting pipes with stablizing guy cables placed in the four cardinal directions. The tower sits on top of a two foot square metal base plate that rests on top of the ground.

Four, twist in anchor rods support the monitoring tower. Each anchor is three feet long and approxemately 65' from the base.

P.O. Box 12186
Lahaina, Maui, Hawaii 96761
808/244-9389
FAX - HI: 808/244-9539 • FAX - CA: 805/822-7880



Mr. Philip Ota, "Right of Entry"
October 20, 1995, page 2.

The monitoring equipment consists of a small tower mounted, solar charged, micro-processor housed in a waterproof case. An anemometer and weather vane are mounted at the top of the tower prior to the tilt-up erection.

Depending on the weather, it will take one day to assemble and install each tower. The work will require three men and a utility type four wheel-drive truck with a winch. Once a month, a technician will visit each monitoring station to download the saved scientific data. This is normally a one day process.

Zond with the NELHA wish to collect data for one year starting upon receiving our Departmental Permit.

We wish to thank you for your consideration of our request for a "Right of Entry". If you have any questions please contact me at 244-9389 on Maui.

Sincerely,

A handwritten signature in black ink, appearing to read "Keith Avery", with a large, sweeping flourish at the end.

Keith Avery
Vice Pres., Zond Pacific

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



MICHAEL D. WILSON
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTY
GILBERT S. COLOMA-AGARAN

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF LAND MANAGEMENT
54 SOUTH HIGH STREET, ROOM 101
WAILUKU, HAWAII 96793-2198

AQUACULTURE DEVELOPMENT
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HISTORIC PRESERVATION
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT
WATER RESOURCE MANAGEMENT

December 1, 1995

Mr. Keith Avery
Zond Pacific, Inc.
P.O. Box 12186
Lahaina, Maui, Hawaii 96761

Dear Mr. Avery:

Subject: Request of a Right of Entry for the Installation, Periodic Monitoring and Maintenance of Twelve (12) Resource Monitoring Stations on State Lands Identified by Tax Map Key: 3-6-01: Portion 14 and 4-8-01: Portion 08, Maalaea and Ukumehame, Maui.

This acknowledges your October 20, 1995 right of entry request for the installation, periodic monitoring and maintenance of approximately twelve (12) resource monitoring stations on State lands identified by Tax Map Key: 3-6-01: Portion 14 and 4-8-01: Portion 08 situate respectively at Maalaea and Ukumehame, Maui.

The project will involve the analyzation and verification of wind energy at your General Research Area proposed within the subject area to determine the viability of a twenty (20) MW wind energy farm.

A 90 ft. tilt-up tube tower measuring 4 to 6 inches in diameter will be erected at each site except for three (3) to four (4) sites which will have a tower height of 140 ft. The tower will be built from 10 ft. interconnecting pipes with stabilizing guy cables placed in four (4) cardinal directions. The tower will sit on top of a two (2) ft. square metal base plate that rests on top of the ground.

In addition, four (4) twist in anchor rods will support the monitoring tower. Each anchor will be three (3) feet long and approximately 65 feet from the base. The monitoring equipment will consist of a small tower mounted solar charged micro-processor housed in a waterproof case. An anemometer and weather vane will be mounted at the top of the tower prior to the tilt-up erection.

Mr. Keith Avery - Right of Entry
December 1, 1995
(continued) Page 2

The installation work will require three (3) men and a utility type four-wheel drive truck with a winch. Once a month, a technician will visit each monitoring station to down load the accumulated scientific data.

At this time, Zond Pacific, Inc. is in the process of obtaining a departmental permit subject to the requirements of Chapter 13-5, Hawaii Administrative Rules for the Conservation District.

Zond Pacific, Inc's request for the subject right of entry is hereby approved, subject to the following terms and conditions:

1. That the subject right of entry shall commence from the date of the Conservation District departmental permit and cease one (1) year from the permit date.
2. Zond Pacific, Inc. shall indemnify and hold the State of Hawaii harmless against all claims for personal injury, death or property damage caused by or in any way connected with the permission granted herein.
3. Zond Pacific, Inc. shall obtain a liability insurance policy naming the State of Hawaii as additional insured, with the following minimum limits to be established:

Bodily Injury	\$1,000,000.00
Property Damage	50,000.00
Medical Benefits	5,000.00
4. Zond Pacific, Inc. shall be responsible for cleaning and restoring the subject lands to its original condition or a condition satisfactory to the Department of Land and Natural Resources, Division of Land Management, upon completion of this project.
5. All tools, equipment, improvements and other property brought or placed upon the subject properties by Zond Pacific, Inc. shall remain the property of same and be removed within a reasonable time upon expiration of the subject right of entry.
6. Upon completion of the project, a representative of Zond Pacific, Inc. shall provide the Maui District Land Agent with a 24-hour notice to schedule a field inspection of the subject lands.

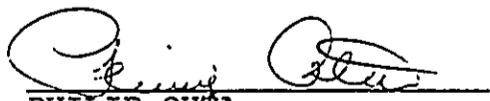
Mr. Keith Avery - Right of Entry
December 1, 1995
(continued) Page 3

7. Zond Pacific, Inc. shall comply with all applicable rules, regulations, ordinances and statutes of the County, State and Federal governments relative to the use of the subject lands, including those relating to public health and safety.
8. Zond Pacific, Inc. shall notify the Maui District Land Office, 24 hours in advance, of its intent to initiate the subject project and to conduct its monthly data collection.
9. The entry key shall be acquired from the Maui District Land Office after the 24 hour advance notice has been given and returned on the following working day after the monthly data collection has been completed.
10. There shall be no duplication of the entry key.
11. Zond Pacific, Inc. shall comply with all conditions required on the Conservation District departmental permit.
12. Any noncompliance of the subject terms and conditions on Zond Pacific, Inc's part shall automatically terminate the subject right of entry.
13. The Department of Land and Natural Resources, Division of Land Management and its Chairperson reserve the right to impose additional terms and conditions, if deemed necessary.

Please indicate your acceptance and compliance with the above terms and conditions by placing your signature in the space provided on the next page and return a copy to this office.

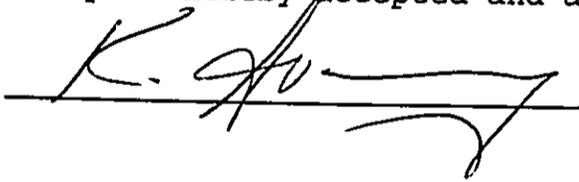
If you may have any questions, please contact this office at the address described on the letterhead or by telephone at 243-5352.

Very truly yours,


PHILIP OHTA
Maui District Land Agent

Mr. Keith Avery - Right of Entry
December 1, 1995
(continued) Page 4

The foregoing terms and conditions of the above described right of entry is hereby accepted and acknowledged:



12/28/95
DATE

cc: Mr. Dean Y. Uchida
Mr. W. Kennison