



Natural Disaster Survey Report

Hurricane Iniki September 6 - 13, 1992



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Weather Service, Silver Spring, Maryland



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April 1993

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Ronald H. Brown, Secretary

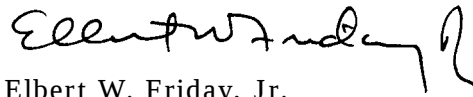
National Oceanic and Atmospheric Administration
Diana Josephson, Acting Under Secretary
for Oceans and Atmosphere

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for Weather Services

Preface

Although hurricanes are common over the eastern Pacific and annually are seen in parts of the central Pacific, they are not routinely found over Hawaii. Only four of these have impacted the Aloha State since 1950. Hurricane **Iniki**, with winds up to 160 MPH, was by far the strongest and most destructive. This storm also completed a “clean sweep” of National Weather Service (NWS) offices responsible for issuing hurricane warnings. The National Hurricane Center (**NHC**) in Coral Gables, Florida (Hurricane Andrew), the Joint Typhoon Warning Center (**JTWC**) in Guam (Typhoon Omar), and the Central Pacific Hurricane Center (CPHC) in Honolulu, Hawaii (Hurricane Iniki) were all struck by strong hurricanes within a 2-month span.

Relying on one geostationary satellite providing satisfactory, but less than ideal, coverage and an extremely sparse surface data network, NWS forecasters and meteorological technicians across the state provided excellent warning service to residents and visitors alike. I commend all who took part in this endeavor for their skill and professionalism under trying circumstances. This is especially true for those in Honolulu and **Lihue**.



Elbert W. Friday, Jr.
Assistant Administrator
for Weather Services

April 1993

Foreword

The report on Pacific Hurricane **Iniki** was prepared by a National Oceanic and Atmospheric Administration (NOAA) Disaster Survey Team (DST) following on-scene assessments and interviews conducted between September 17-22, 1992. DSTs are convened and such investigations are performed at the direction of the Assistant Administrator for Weather Services when significant storms occur.

The DST is extremely grateful to all those who assisted in conducting the survey. This includes NWS Pacific Region personnel; state and local civil defense and governmental officials; Army, Navy, Coast Guard, Air Force, and Hawaiian Air National Guard personnel; and representatives of the various media outlets from Oahu and **Kauai**.

The purpose of this survey was to evaluate how the warning and detection system in Hawaii worked in the case of **Iniki**. It was to identify systemic strengths and weaknesses so that necessary improvements could be developed and implemented. Although some scientific examination of **Iniki** was a necessary part of this process, this survey was not intended to produce an in-depth scientific analysis of the event. That will be left to others.

Some problems developed during the course of the investigation. The members of the DST felt these problems needed to be addressed in the survey report even though they were not directly connected with the events surrounding **Iniki**. First, although it is recognized that assembling a team on short notice can be very difficult, having a team member from an office involved can be uncomfortable for the person and for other team members especially during evaluative discussions. **DST Recommendation: NOAA and NWS procedures for putting together a DST should be annotated to suggest that it is not advisable to have a member of the DST be from the local office that was involved with the event.** It would be very beneficial, however, for the DST to have the **fulltime** assistance of such a person during its visit.

Second, whenever a storm such as **Iniki** strikes, many agencies are usually involved in assessing what happened. **DST Recommendation: NOAA should consider assigning responsibility for coordinating disaster survey overflights to the Office of the Federal Coordinator for Meteorology (OFCM).** One set of aerial photographs, for example, could undoubtedly serve the needs of all agencies involved in the disaster precluding the need for each agency to arrange for separate, and costly, flights. By establishing procedures beforehand, data gathering could begin quickly after the event so as to enhance its utilization by those involved and so that cleanup efforts would have minimal impact on the evaluation process. Had the DST had access to aerial photographs of the damage patterns before it went to the field, it could have identified and focused its efforts on the most seriously affected locations saving time and money.

Third, the DST suggests that its activities could have been more efficient if it had access to a cellular telephone. Meeting arrangements are often hastily made while the team is in the field, and opportunities may be short lived. Access to a cellular phone would enhance the DST's ability to schedule its time and fulfill its mission.

The Disaster Survey Team

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Acronyms and Abbreviations

AFB	A ir Force Base
AP	Associated Press
ATCF	Automatic Tropical Cyclone Forecast
AVN	Aviation Model
BAM	Beta-advection Models
CD	Civil Defense
COMSTA	Communications Station
CPHC	Central Pacific Hurricane Center
DST	Disaster Survey Team
EOC	Emergency Operation Center
ET	Electronics Technician
FEMA	Federal Emergency Management Agency
FNOC	Fleet Numerical and Oceanographic Center
GMS	Geostationary Meteorological Satellite
GOES	Geostationary Operational Environmental Satellite
HAWAS	Hawaii Warning System
HIPS	High Resolution Picture Transmission Information
HST	Hawaiian Standard Time
JTWC	Joint Typhoon Warning Center
KT	Knot
LABS	Leased Service A and B System
MB	Millibar
MG PACOM	Meteorological Group, United States Pacific Command
MIC	Meteorologist in Charge
MPH	Miles Per Hour
MWT	Marine Wind and Telephone Interface
NAVWESTOCEANCEN	Naval Western Oceanography Center
NAWAS	National Warning System
NHC	National Hurricane Center
NMC	National Meteorological Center
NOAA	National Oceanic and Atmospheric Administration
NOGAPS	Navy Operational Global Atmospheric Prediction System
NWR	NOM Weather Radio
NWS	National Weather Service
NWWS	NOAA Weather Wire Service
OCD	Oahu Civil Defense
OFCM	Office of the Federal Coordinator for Meteorology
OIC	Official in Charge
RECON	Reconnaissance
SAB	Synoptic Analysis Branch
SCD	State Civil Defense
SDM	Station Duty Manual

SLOSH	Sea Lake and Overland Surges from Hurricanes
TELEFAX	Telephone Facsimile
USACOE	United States Army Corps of Engineers
USAF	United States Air Force
USCG	United States Coast Guard
USN	United States Navy
WPM	Warning Preparedness Meteorologist
WSFO	Weather Service Forecast Office
WSMC	Weather Service Message Center
w s o	Weather Service Office
WSOM	Weather Service Operations Manual

Disaster Survey Team Members

On September 14, 1992, the NOAA Assistant Administrator for Weather Services directed that a DST be formed to investigate the services provided by the NOAA/NWS associated with destructive Hurricane **Iniki** and to develop suggestions for improving these services.

The members of the team included:

Team **Chief...John** Carey, NOAA Associate Deputy Under Secretary for Oceanic and Atmospheric Affairs, Washington, D.C.

Team Technical **Leader...Robert** Jacobson, NOAA/NWS, Marine and Applied Services Branch, Silver Spring, Maryland

Team **Member...William** Alder, Area Manager/Meteorologist in Charge (**MIC**), NOAA/Weather Service Forecast Office (**WSFO**), Salt Lake City, Utah

Team **Member...Dr.** Mark Handel, Private Consultant, Cambridge, Massachusetts

Team **Member...Benjamin** Hablutzel, Deputy **MIC**, NOAA/WSFO Honolulu, Hawaii

Team **Member...Scott** Smullen, Public Affairs Office, NOAA/National Marine Fisheries Service, Silver Spring, Maryland

Executive Summary

On the afternoon of September 11, 1992, a small but intense Hurricane Iniki struck Hawaii across the island of Kauai. With damage estimates of \$1.8 billion, this was one of the most destructive hurricanes on record anywhere in the United States. Seven persons died and about 100 were injured because of Iniki. However, because of the in-place warning system and the response of the populace, a greater human tragedy was averted.

Overcoming limitations in satellite coverage and with negligible surface observations, CPHC forecasters alerted the populace of Hawaii a day in advance that the storm would hit the state. The state and local emergency services organizations, the media, and the populace **all** responded quickly and appropriately. In short, the system worked.

Although hurricanes are common in the eastern Pacific Ocean, and not uncommon in central **Pacific** Ocean, they usually either remain well east of or cross south of the Hawaiian Islands. This was only the fourth time in the past 40 years that the state has been hit by such a storm. Despite this relative rarity, all involved were generally well prepared for the event. Some of this can be attributed to the well-publicized comparisons and similarities between Iniki and Hurricane Andrew that affected Florida and Louisiana shortly before **Iniki** formed.

There were, however, several problems identified that had the potential to severely impact the alert system. These include:

1. Communications. The reliance by all involved on telephone communications is probably the most critical of the problems uncovered. Backup, stand-alone communication's links, a more efficient method for interacting with the media and the general public, and a faster, more reliable way for hurricane forecasters to receive forecast guidance products are the most pressing issues.
2. Observations. With only one geostationary satellite covering the water areas south and east of Hawaii, there is an absolute necessity of making backup observational systems (especially polar orbiting satellite data) available to the hurricane forecasters. Had the one geostationary satellite failed, it is likely the warning time achieved would have been greatly reduced.
3. Capabilities of the CPHC. The forecasters are hampered by old computer and word processing equipment. Also, a greater level of expertise could be attained by specifying selected individuals from the Honolulu forecast office to staff the Hurricane Center and providing them with additional, ongoing training.
4. Navy Relations. The CPHC has total responsibility for tropical cyclone warnings in the central Pacific area. Because the United States military, specifically the Navy, has such a significant presence in the Pacific, it has a vital concern when such storms threaten Hawaii, especially Oahu. The interactions and information flow between the two organizations must be smooth so that the requirements of the Navy are known and addressed and the capabilities of the Navy are used to the advantage of the CPHC.

Findings and Recommendations

Chapter 1. The Event and its Impact

Finding 1.1

A small but intense hurricane struck the state of Hawaii during the afternoon of September 11, 1992. Although **all** islands felt the storm, the islands of Kauai and Oahu were most impacted. Seven persons were killed and about 100 injured; total damage was about \$1.8 billion. The south shore of Kauai near Port **Allen** took the brunt of the storm with wind gusts measured to 143 miles per hour (MPH) and water levels (a combination of storm surge and waves) nearly 30 feet above normal.

Finding 1.2

Because of the apparently weak construction of many buildings, estimates of wind speed based on building damage may be unreliable. Estimates based on other indicators showed sustained winds of 130 to 160 MPH especially in areas where winds are enhanced by terrain.

Recommendation 1.2.1

The NWS should encourage the State of Hawaii to review its building codes in light of the Iniki damage.

Chapter 2. Scientific Analysis of the Event

Finding 2.1

Many objective hurricane forecast aids were available to CPHC forecasters. However, the communications links for receiving these products were cumbersome.

Recommendation 2.1.1

The NWS should review the methods by which CPHC forecasters receive guidance products to see if they can be delivered in a more timely and efficient manner. Some suggestions on this include:

- a) revamping the ways model input/output **both to/from** the NHC is transmitted to make it more efficient,
- b) upgrading the computer capabilities and adding available software packages such as the Automatic Tropical Cyclone Forecast (**ATCF**) system, and
- c) evaluating the feasibility of developing objective inland and coastal flood models for Hawaii.

Finding 2.2

The utilization of the available guidance products was limited because complete documentation was not available to CPHC forecasters and because model comparisons and error evaluations were not routinely done.

Recommendation 2.2.1

The NWS management should enhance the capabilities of the CPHC staff by:

- a) providing the CPHC with current written descriptions of all available forecast tools (e.g., up to date, complete documentation on the dynamic and analog/climatological models), and
- b) requiring that model comparisons and forecast error evaluations become a regular part of the CPHC forecast operation.

Chapter 3. Data Acquisition and Availability

Finding 3.1

Not all available analysis products, specifically the Deep Layer Mean Winds and Wind Shear Analysis, adequately cover the CPHC area of responsibility.

Recommendation 3.1.1

The NMC should extend the Deep Layer Mean Winds and Wind Shear Analysis west to the International Dateline.

Finding 3.2

The satellite unit at CPHC provided an invaluable service to the forecasters and to the public by determining and monitoring storm position and movement throughout Iniki's life cycle.

Recommendation 3.2.1

NWS management should insure that the satellite section currently in place be retained.

Finding 3.3

CPHC has no direct access to polar orbiting satellite data. The only backup for the one Geostationary Operational Environmental Satellite (GOES) capability available to the CPHC is provided by copies of polar orbiting satellite photographs sent (as time allows) from the Hickam Air Force Base weather facility.

Recommendation 3.3.1

The NWS should expedite the installation of systems, such as the High Resolution Picture Transmission Information Processing System (HIPS), to provide the CPHC with direct access to polar orbiting satellite data. Also, the NWS should consider providing the CPHC with capabilities for archiving selected GOES photographs and for directly accessing other data available via satellite. This would include tide gage data currently available from the GOES.

Finding 3.4

Although Iniki passed between the existing data buoy network south and west of Hawaii, the sea height information provided by this network was the only real-time data available and allowed CPHC forecasters to make reasonable coastal sea height forecasts.

Finding 3.5

Communications between Kauai and the rest of the state depend primarily on telephone links. Because these failed, no observations (or other reports) were available from Kauai to CPHC forecasters during the period of time beginning over 2 hours before Iniki hit and lasting several days until local power and telephone communication links were restored and a NWS electronics technician (ET) was able to get to Lihue.

Recommendation 3.5.1

The NWS should require installation of reliable, independent, backup communications with the Weather Service Office (WSO) in Lihue (and other Hawaiian WSOs).

Recommendation 3.5.2

The NWS needs to improve the arrangement for providing ET services at WSO Lihue.

Finding 3.6

Upper air observations were not made by WSO Lihue from the afternoon on September 11, 1992 through the morning of September 14, 1992.

Recommendation 3.6.1

The NWS needs to implement a policy that, except when safety considerations prevent, upper air soundings and other observations be taken at NWS facilities even though communications are disrupted.

Finding 3.7

During the recovery from **Iniki**, manual methods for taking temperature and humidity readings had to be made because power to the primary observing system was shut off by airport management.

Recommendation 3.7.1

The NWS should require that all critical observing systems have reliable backup power preferably under NWS control.

Finding 3.8

Radar information from **Hickam** Air Force Base, Kokee Air National Guard Base, and the Federal Aviation Administration provided some helpful information to CPHC forecasters.

Chapter 4. Preparedness

Finding 4.1

The responsible agencies of Oahu and Kauai were very well prepared.

Finding 4.2

The preparedness of the CPHC was somewhat hindered because it is staffed on a generally ad hoc basis from personnel assigned to WSFO Honolulu.

Recommendation 4.2.1

NWS management should consider modifying the organization of CPHC to increase the capabilities and expertise of the unit. Suggestions to implement this include:

- a) identifying a specific group of forecasters from WSFO Honolulu as members of the CPHC and providing this group with annual training possibly conducted by NHC,
- b) identifying one member of this unit as a Warning Preparedness Meteorologist (WPM) focal point (not a program leader), and
- c) investigating the advisability of increasing the direct contacts and interactions between the CPHC staff and hurricane specialists from the NHC.

Finding 4.3

The back-up plans for WSFO Honolulu would not have worked as written.

Recommendation 4.3.1

NWS management should see that the backup program for WSFO Honolulu is reviewed and necessary modifications implemented.

Chapter 6. Warning Services

Finding 5.1

The people of Hawaii were sufficiently warned.

Finding 5.2

The practice of downgrading the hurricane warning to a tropical storm warning or watch as **Iniki** was departing caused some confusion as to whether a second storm was approaching Hawaii.

Recommendation 5.2.1

CPHC should re-evaluate the procedures forecasters use when downgrading tropical storm and hurricane warnings.

Finding 5.3

The use of probability cones or ellipses would be desirable, especially to the United States Navy (USN).

Recommendation 5.3.1

The CPHC should consider including probability cones or ellipses for all tropical cyclone marine and public advisories.

Chapter 6. Coordination and Dissemination

Finding 6.1

Dissemination of NWS products to various user groups was sufficient but very labor intensive, relying greatly on commercial telephones and old word processing equipment.

Recommendation 6.1.1

CPHC management should consider alternatives to the current practice of having the duty CPHC forecaster answer telephone calls from users. Some suggestions include:

- a) staffing CPHC with a sufficient number of people to field media and public queries and thus allow forecasting personnel to concentrate on operational duties,
- b) dedicating specific hotline telephone numbers for the media only and for emergency officials only,
- c) when weather becomes critical, providing briefings to the media on a scheduled, frequent (e.g., hourly) basis,
- d) consider holding a workshop to sensitize the media to the process of tracking and forecasting tropical cyclones and of the times when the forecasts are updated, and
- e) conducting all in-house briefings in the media briefing room and not the forecast area.

Recommendation 6.12

The NWS should replace the PRIME/TAB terminals used by CPHC forecasters for message composition with an up-to-date system.

Recommendation 6.1.3

NWS/CPHC Management should consider enhancing CPHC capabilities by:

- a) reviewing the station's alerting procedures to see if a more efficient initial dissemination process can be developed, and
- b) establishing a Pacific Coordination Hotline similar to that currently serving the mainland United States.

Finding 6.2

It was very important to all users that the hurricane products for the central Pacific originate in Hawaii.

Recommendation 6.2.1

The DST suggests that, taking into account the available expertise within the agencies involved, the geography of the Pacific Basin, and the government's changing fiscal climate, a detailed look at the hurricane warning structure in the **Pacific**, involving the USN, United States Air Force (USAF), and NWS, be undertaken. In so doing, the DST affirms its belief in the importance of having a separate hurricane center in the Pacific.

Finding 6.3

NOAA Weather Radio (**NWR**) transmitters in Hawaii are operated through one central transmitter. Iniki knocked this station out eliminating the other stations as well.

Recommendation 6.3.1

The NWS should review the current NWR system to see if an alternative can be arranged whereby all NWR transmitters in Hawaii function independently.

Finding 6.4

The Naval Western Oceanography Center (**NAVWESTOCEANCEN**) in Hawaii, which relies on CPHC hurricane products, has special requirements for performing its mission. Similar special criteria are important to the state emergency services agencies.

Recommendation 6.4.1

The CPHC should elicit from users critical wind and sea height values and should highlight these in appropriate tropical cyclone products.

Recommendation 6.4.2

Better rapport needs to be developed between CPHC and NAVWESTOCEANCEN.

Finding 6.5

Several tropical cyclone products important to mariners were not broadcast by the United States Coast Guard (**USCG**) communications station (**COMSTA**) on Oahu.

Recommendation 6.5.1

The NWS should review the list of products broadcast by the USCG COMSTA in Hawaii. Tropical cyclone marine advisories should be added to the list.

Chapter 7. User Response

Finding 7.1

By and large, the populace of Hawaii responded appropriately to the hurricane warnings. Designated shelters were known and used. However, in several cases, the shelters, though appropriate for tsunamis, were not appropriate for hurricanes.

Recommendation 7.1.1

The NWS should encourage the State of Hawaii to review its criteria for disaster shelters to make them more appropriate for hurricanes. Expanded criteria may exclude facilities where the room ceiling is also a roof and rooms with windows from being a shelter.

Finding 7.2

People on Kauai ignored hurricane warnings unless accompanied by the sounding of a siren. They then took action promptly.

Recommendation 7.2.1

The **NWS**, in coordination with Hawaiian Civil Defense officials and with the help of the media, should conduct a public awareness campaign to educate the public on the importance of watches and warnings not accompanied by sirens.

Additional. Disaster Survey Team Management

Finding 8.1

During its investigation, the DST was impacted by in-place policies and procedures that, if changed, could improve the conduct of future surveys.

Recommendation 8.1.1

NOM and **NWS** procedures for putting together a DST should be annotated to suggest that it is not advisable to have a member of the DST be from the local **office** that was involved with the event.

Recommendation 8.1.2

NOAA should consider assigning responsibility for coordinating disaster survey overflights to the OFCM.

Chanter I -- The Event and its Impact

Hurricane Iniki, a small but intense tropical cyclone, moved northward over the Hawaiian Islands during the late afternoon hours of September 11, 1992. It was the most destructive hurricane to strike Hawaii in the 20th century (see Table 1).

With estimated peak sustained wind speeds over Kauai of between 130 and 160 MPH, Iniki was considered the equivalent of a minimal Category Four on the **Saffir-Simpson** Hurricane Classification Scale. (According to the OFCM National Hurricane Operations Plan, the **Saffir-Simpson** Scale is not considered valid for the Pacific Islands.) By comparison, Hurricane Iwa, the last hurricane to strike this area, was equivalent to a minimal Category Two.

The eye of **Iniki** crossed the Kauai Coast in the Waimea area (Figure 1) just before 4 p.m. Hawaiian Standard Time (**HST**) (all times in this report, unless otherwise noted, will be **HST**) and departed over Haena about 40 minutes later. In its wake, Iniki left a path of **destruction** expected to approach 1.8 billion dollars. In actual dollar value, this would make **Iniki** the sixth costliest hurricane in United States history (see Table 2).

Damage

Every island in the state suffered to a greater or lesser extent from the heavy and destructive surf and from strong damaging winds brought by Iniki. As with other recent hurricanes, however, the island of Kauai took the brunt. The damage here was widespread, with only the western sections of the island being spared from the most severe devastation. The DST saw few buildings on Kauai that escaped at least some impact from the storm. According to the Red Cross, 14,350 homes on the island were affected with 1,421 destroyed and 5,152 suffering major damage. Wind damage was generally the major contributor, although a number of buildings along the coast that were subject to surf damage suffered nearly total destruction.

Interestingly, the WSO at Lihue sustained remarkably little abuse; the roll-up door lost several slats **and** some of the windows were broken on the inflation shelter and a ground measuring device for tracking rawinsondes was damaged. The solid construction of the facility appeared to be the

<u>NAME</u>	<u>DATE</u>	<u>EYE LANDFALL/ CLOSEST LOCATION</u>	<u>DAMAGE</u> (Not Adjusted for Inflation)
NINA	NOV-DEC,57	120 NM WSW KAUAI	\$100,000 (Surf damage)
DOT	AUG,59	KAUAI	\$6,000,000
IWA	NOV,82	20 NM NW KAUAI	\$312,000,000
INIKI	SEP, 92	KAUAI	\$1,800,000,000

Table 1. Recent Hawaiian Hurricanes

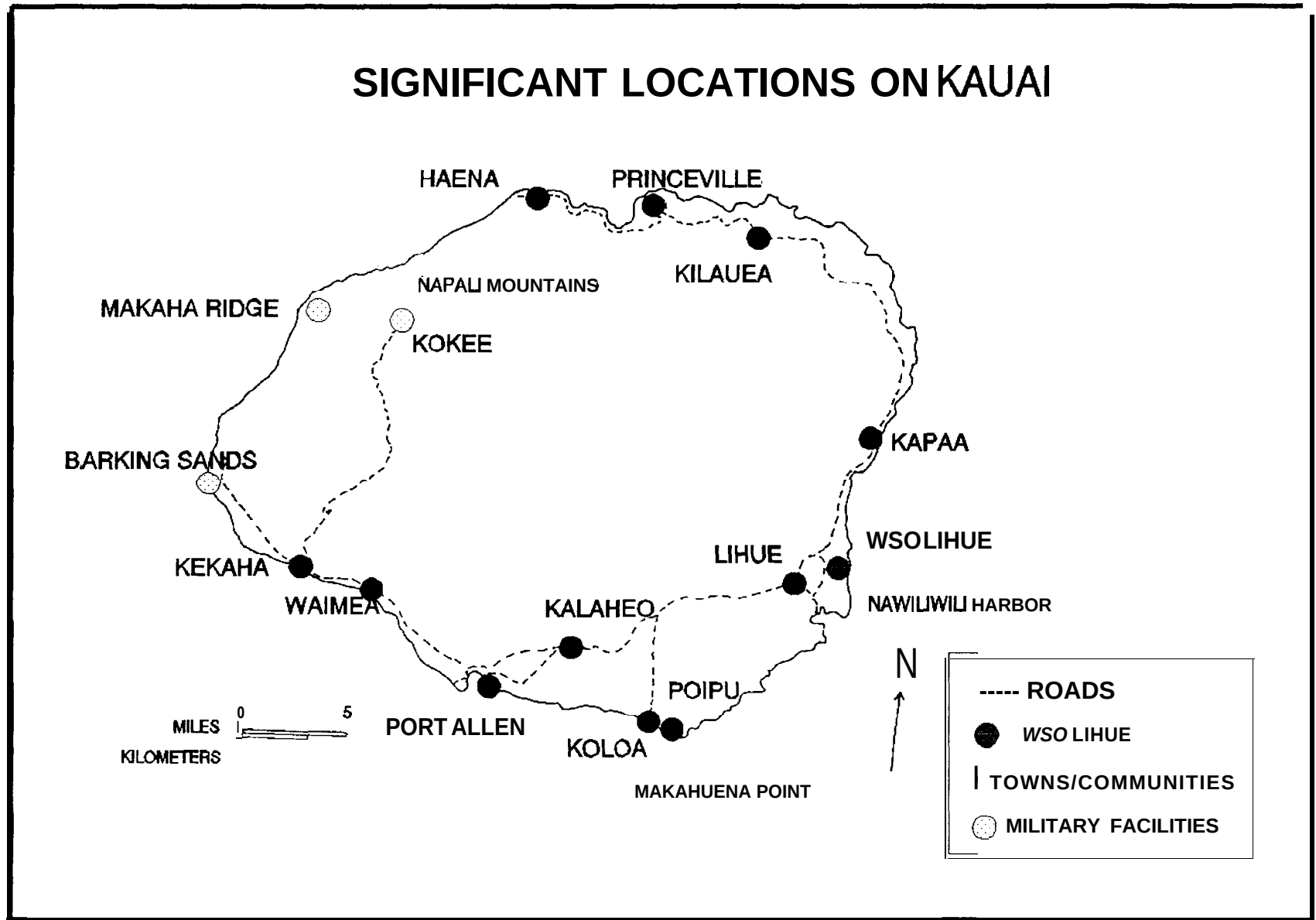


Figure 1. Significant Locations on Kauai

<u>HURRICANE</u>		<u>YEAR</u>	<u>CAT</u>	<u>DAMAGE(U.S.)</u>
1. Andrew	(FL/LA)	1992	4	\$30,000,000,000*
2. Hugo	(SC)	1989	4	7,000,000,000
3. Frederic	(AL/MS)	1979	3	2,300,000,000
4. Agnes	(NE U.S.)	1972	1	2,100,000,000
5. Alicia	(N TX)	1983	3	2,000,000,000
6. Iniki	(HI)	1992	4	1,800,000,000*
7. Juan	(LA)	1985	1	1,500,000,000
8. Camille	(MS/AL)	1969	5	1,420,700,000
9. Betsy	(SE FL/SE LA)	1965	3	1,420,500,000
10. E l e n a	(MS/AL/NE FL)	1985	3	1,250,000,000

Source - NOAA Technical Memorandum NWS NHC 31, updated March 1990

* - Values for **Iniki** and Andrew are estimated

Table 2. The Costliest Hurricanes of the Twentieth Century (based on adjusted dollar values)

primary reason (see Figure 2). Electric power and telephone service were lost throughout the island with over 50 percent of the lines and poles destroyed. Only 20 percent of power supply had been restored four weeks after the storm hit.

Vegetation damage was likewise extensive, especially on Kauai (see Figure 3). Sugar cane fields were stripped or knocked down. Fruit and nut trees (such as macadamias and date palms) were defoliated, broken, or uprooted. Lush growth had covered the island, nicknamed the Garden Island, before Iniki. Almost all of the green covering was gone.

Winds

Winds accounted for most destruction. The highest speeds occurred when **Iniki** was just south of the island of Kauai. Based on USAF **recon** flights and satellite information, surface winds (all winds listed in this report will be surface winds unless otherwise denoted) at this time were estimated to be 145 MPH with gusts as high as 175 MPH. During the four hours preceding eye passage, winds increasing to more than 100 MPH with frequent higher gusts battered Kauai.

Iniki's eye moved north crossing the central highlands of the island and the cliffs of the Na **Pali** Coast. Although a detailed aerial analysis may refine the exact track of **Iniki**, Figure 4 gives the **DST's** best estimate of the eye passage over Kauai based on conversations with island residents and surface observations made by the **DST**.

As a rule, winds are strongest in the right-front quadrant of a tropical cyclone relative to the direction in which it is moving. The combination of this with the interaction between the hurricane's circulation and the islands topography caused the peak winds over the southern part of the island to be from an easterly direction and to occur ahead of the eye (First Winds noted in Figure 5A).



Figure 2. WSO Lihue Following Hurricane Iniki (Photograph Courtesy of William Alder)



Figure 3. Tree Damage Along Highway 56 West of Kilauea (Photograph Courtesy of William Alder.)

On the north shore, in places such as Princeville and Kilauea, the worst conditions came after eye passage. This was most likely due to a combination of downslope accelerations and interactions between the hurricane circulation and the mountains (Second Winds noted in Figure 5B).

Few recording wind instruments are available on Kauai. Of these, the strongest measured winds (Figure 5C) occurred east of Port Allen. The Marine Wind and Telephone Interface (MWT) instrument at Makahuena Point was showing winds at 81 MPH gusting to 121 MPH when its transmission power failed about 3 hours before Iniki reached land. The peak gust at that site, taken from the data recorder after the storm, was 143 MPH. At WSO Lihue, the strongest sustained wind was 97 MPH. The gust recorder at this station measures only to 115 MPH (100 knots [KT]). However, WSO Lihue personnel estimated the peak gust to have been 129 MPH.

The third recording wind instrument on Kauai is located on the USN facility at Barking Sands. It showed one isolated peak gust of 96 MPH. In general, the fastest winds at this site ranged between 80 and 85 MPH. This station is on the extreme western edge of the island and was west of the eye in the weaker part of Iniki.

A 217 MPH gust was reported by personnel at the USN radar site at Makaha Ridge, 9 miles northeast of Barking Sands. This site is located at the top of a high cliff which would undoubtedly enhance wind speeds. However, because the locally installed instrument was uncalibrated, its accuracy could not be determined.

As noted above, peak sustained winds on the island are estimated to have been between 130 and 160 MPH. These values were found in scattered locales primarily in areas where winds were channeled by topography. Sustained winds over the majority of the island at the peak of the hurricane were likely in the 100 to 120 MPH range. Such estimates are based on observations by the DST and on preliminary results from work by Dr. T. T. Fujita of the University of Chicago. Figures 5A and 5B are based on these results. The NWS has contracted with Dr. Fujita to do a detailed analysis of winds throughout Kauai using visual and infrared photographs. The results of this analysis are to be completed during the summer of 1993.

One of the problems in estimating winds is that when no actual wind recordings are available, values have to be inferred from damage patterns. Damage to buildings, however, can either be the result of high winds or of weak construction. Although none of the DST are engineers, some of the damage did appear to be the result of building practices. **DST Recommendation: The NWS should encourage the State of Hawaii to review its building codes in light of the Iniki damage.**

On Oahu, wind damage was not nearly as wide-spread as on Kauai. However, several homes and other buildings, found mainly along the southwest coast from Barbers Point through Makaha and Kaena Point (Figure 6), did suffer substantial harm.

During its survey, the DST discovered that many of the police stations on Oahu are equipped with non-recording anemometers. According to officers at the Waianae office, located in the center of the southwest coast of Oahu, their device showed sustained winds of 50 to 55 MPH with gusts to 82 MPH. By the DST's visual inspection, this anemometer was close to the standard height used by the NWS (10 meters) and had no nearby obstructions. These speeds appeared to be consistent with overall damage patterns.

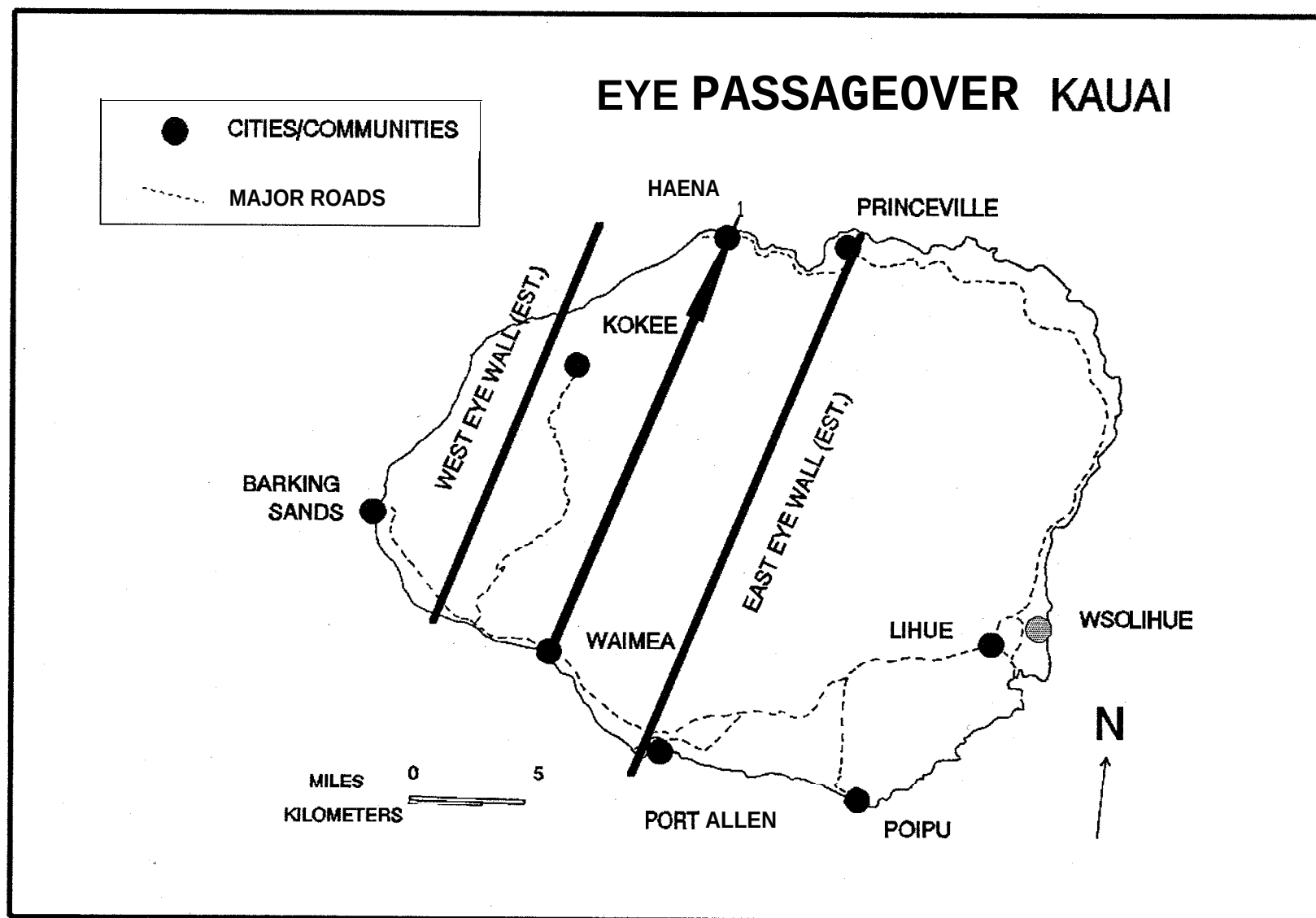


Figure 4. Estimated Iniki Eye Passage Over Kauai

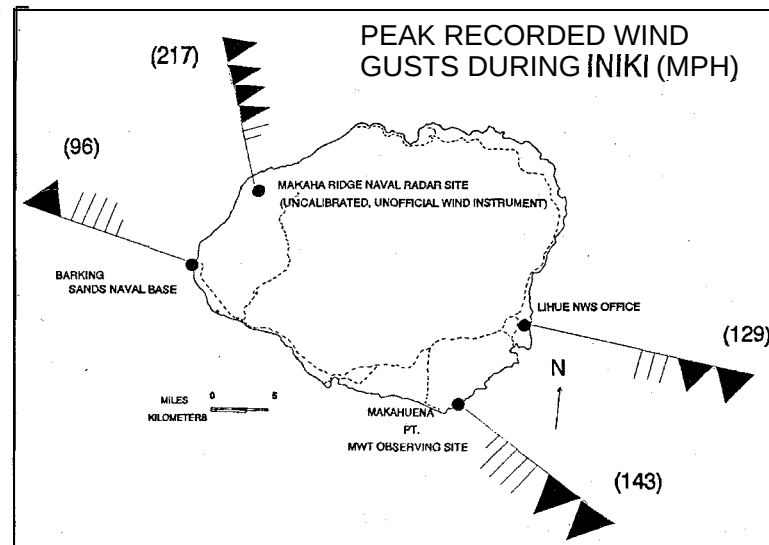
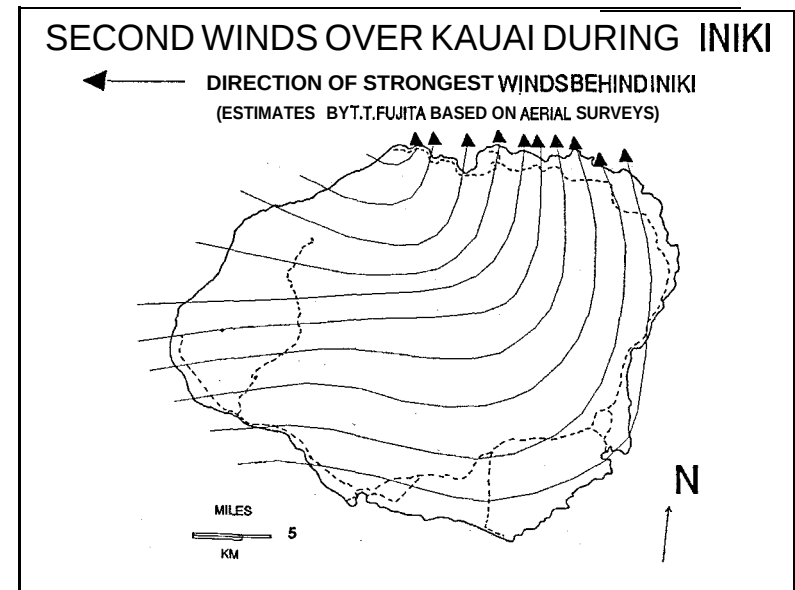
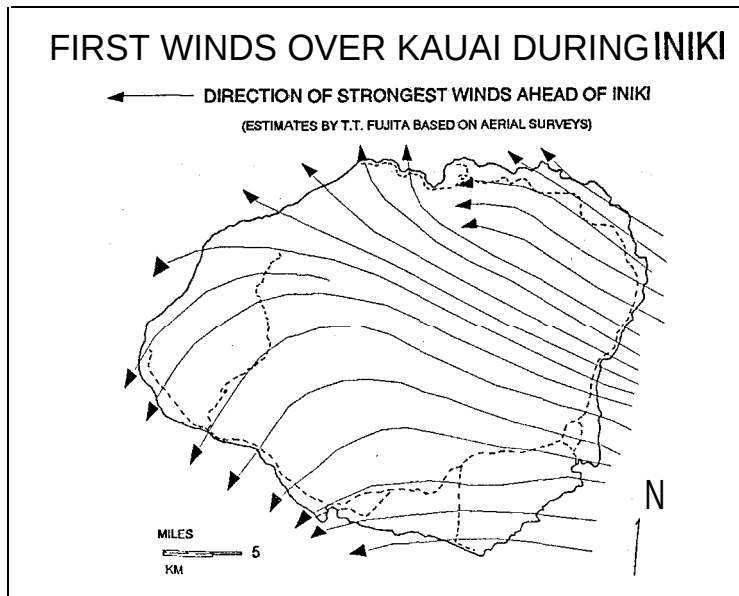


Figure 5. Winds on Kauai From Iniki

SIGNIFICANT LOCATIONS ON OAHU

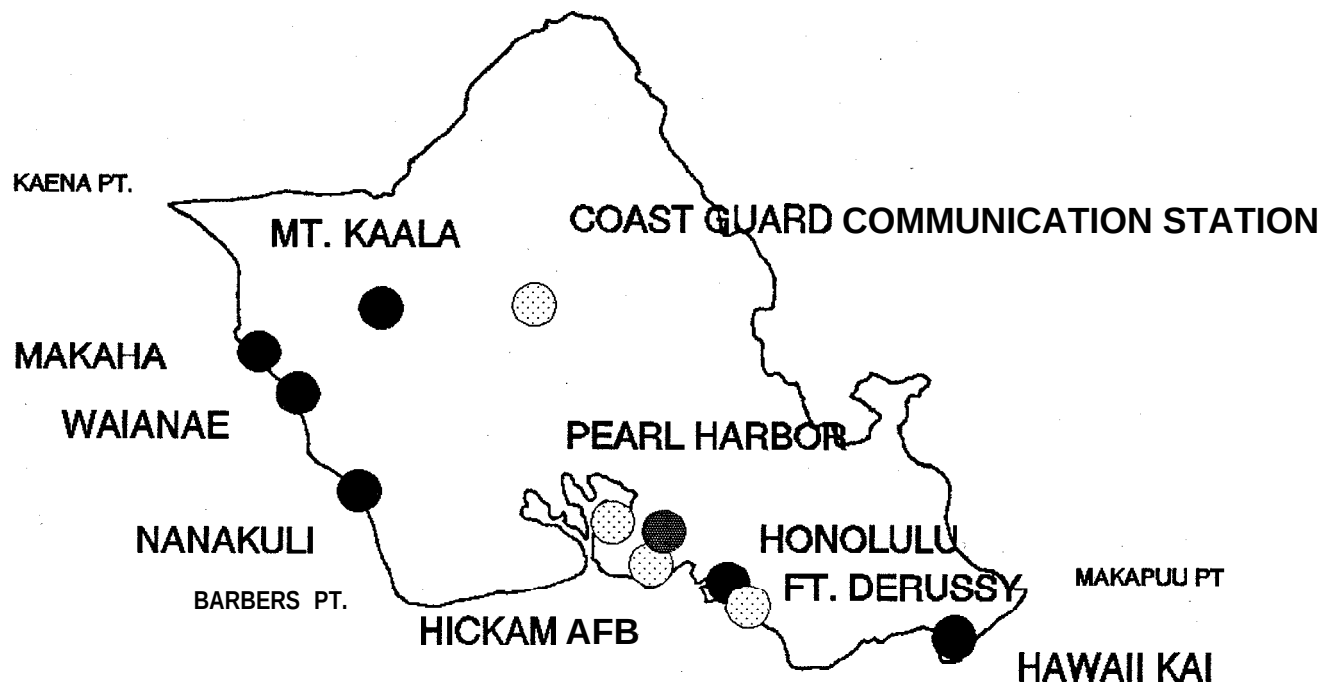


Figure 6. Significant Locations of Oahu

Location		High Water Mark (FT) (from USACOE)	Tide Gage Height (FT) (Source included)	Wave Height (FT) (Approximate)
Kauai				
Kekaha:	#1	12.36	5.0 (Port Allen)	7
	#2	10.79		6
Pakala		10.11		5
Waimea		10.92		6
Koloa:	#1	22.20		17
	#2	19.10		14
	#3	12.59		8
	#4	17.17		12
	#5	14.85		10
	#6	13.19		8
Poipu	#1	18.26		13
	#2	15.64		11
	#3	18.54		14
	#4	14.69		10
Nawiliwili		7.05	2.6 (Nawiliwili)	5
Wailua River		13.60		11
Oahu				
Makaha	#1	12.67	2.3 (Waianae)	10
	#2	18.62		16
	#3	9.84		8
Sand I. (8 sites)	Max	9.81	1.8 (Honolulu)	9
	Min	5.64		4
Ala Moana	#1	5.63		4
	#2	5.38		4
Fort DeRussy		8.71		7
Diamond Head		9.38		8

Table 3. Hawaii Water Level Measurement with Iniki

Although most of the damage seemed to result from straight line winds, the DST saw evidence of touchdown of a small (about 200 feet across at base), very weak (F1 on the Fujita Tornado Intensity Scale) tornado in the town of Nanakuli.

Seas

Because of the bathymetry of the area, water level rises associated with hurricanes in the Caribbean, the Gulf of Mexico, and along the Atlantic Coast of North America are generally higher than those in Hawaii. However, waves and the storm surge generated by Iniki did

impact some coastal areas. Damage was extensive over southern Kauai and over the western part of the island of Oahu, especially along the Waianae coast.

The south shore of Kauai from Nawiliwili Harbor to Poipu, Port Allen, and Kekaha received a severe pounding by surf from swells moving northward ahead of Iniki. Shoreline hotels and condominiums, especially around Poipu, were particularly hard hit. Preliminary reports from the United States Army Corps of Engineers (USACOE) noted high water marks ranging from just over 7 feet at Nawiliwili Harbor to slightly over **22** feet at Waikomo Stream south of Koloa (Table 3 and Figure 7).

Waves generated by the incoming swells accounted for most of the high water. Tide gage reports showed storm surges (i.e. water level increases not including the waves) were generally between **2** and 4 feet on Kauai and western Oahu with peaks along the south Kauai shore of from 4 to 6 feet.

On Oahu, the hardest hit areas were along the Waianae Coast from Barbers Point through Makaha and Kaena Point. Less damage was seen along the south shore from Ewa Beach to Hawaii Kai. Water heights ranged from just over 5 feet around Honolulu to just under 19 feet at Makaha Shores.

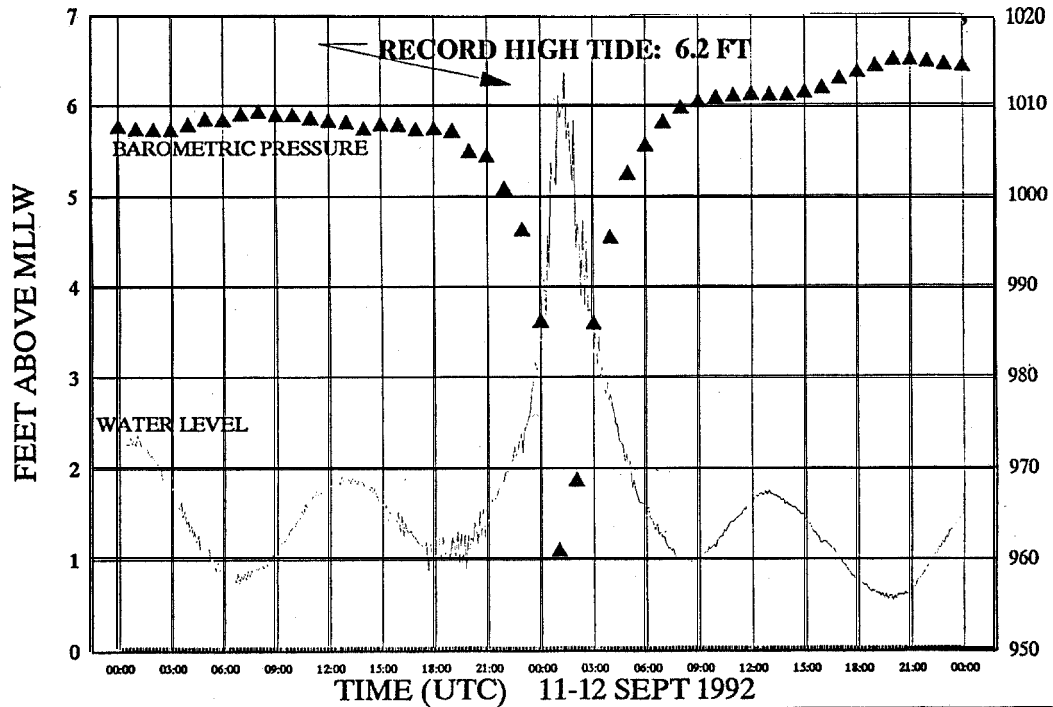
Elsewhere, some damage occurred on the Islands around Maui and the Big Island of Hawaii where southwesterly swells pounded shoreline facilities and small boat harbors and anchorages.

Deaths/Injuries

Despite the widespread damage, death and injury figures were surprisingly low. Seven persons died from injuries associated with **Iniki** while about 100 were injured. Of those who were killed, two mariners were lost when their boat was swamped south of Kauai, one mariner was lost at sea north of Kauai, one man on Kauai was hit and killed by flying debris, one woman on Kauai was crushed when her home collapsed on her, and one person on Kauai died of a heart attack. The seventh person died in a fire on Oahu started by a candle that had been used for light during the power outage caused by the hurricane.

PORTALLEN - HURRICANE INIKI

AS RECORDED AT NOS TIDE STATION



HONOLULU - HURRICANE INIKI

AS RECORDED AT NOS TIDE STATION, PIER 4

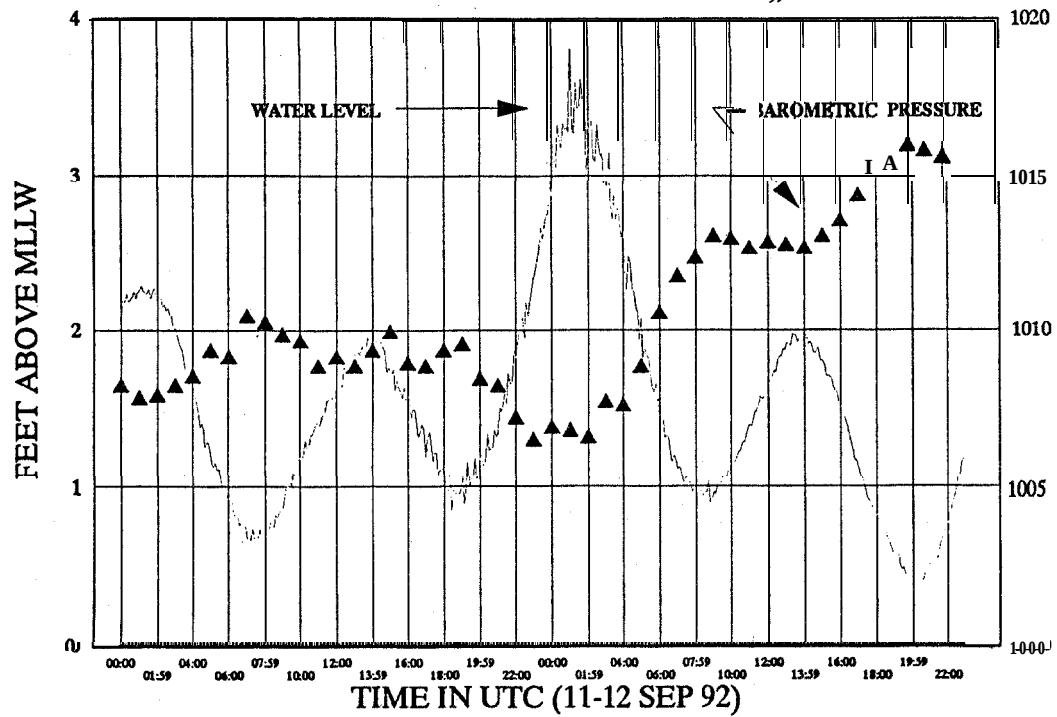


Figure 7. Water Levels at Port Allen and Honolulu During Iniki

Chapter II -- Scientific Analysis of the Event

CPHC forecasters believe that there is a strong correlation between hurricane occurrences in Hawaii and the existence of El Niño conditions, the so-called warm event, in the equatorial eastern Pacific. However, Iniki was not a typical late season El Niño cyclone. Two of these, Iwa of 1982 and Nina of 1957, formed during the mature phase of a late November El Niño near the Line Islands far to the south of Hawaii and approached Hawaii from a southern direction. Although there was a strong 1991-92 El Niño event, Iniki came during its waning stage. However, sea water temperatures were 1-3° Celsius above normal in the area where Iniki generated.

Chronology

Tropical Depression Eighteen-E, the precursor to Hurricane Iniki, (see Figure 8 and Table 4) organized on September 5, 1992, in an area of disturbed weather centered near 12°N,135°W;

Date/Time (UTC)	Bulletin Pos Lat Long	BestTrack Lat Long	Max Wind Knots	MIN Pressure MB
06/1800	12.2N 140.0W	12.2N 140.0W	30	1008 - est
07/0000	12.5N 141.0W	12.3N 141.1 W	25	1008 - est
0600		12.3N 141.7W		
1200		12.2N 142.4W		
1800	11.5N 143.0W	12.1N 143.0W	30	1004 - est
08/0000	12.0N 144.5W	12.0N 144.5W	35	1002 - est
0600	12.2N 145.8W	12.0N 146.0W	40	1000 - est
1200	12.2N 147.5W	12.1N 147.5W	40	1000 - est
1800	12.4N 149.0W	12.3N 149.0W	50 G65	996 - est
09/0000	12.4N 150.2W	12.4N 150.2W	60 G75	996 - est
0600	13.0N 151.5W	12.7N 151.6W	65 G80	992 - est
1200	13.2N 152.9W	13.0N 152.9W	65 G80	992 - est
1800	13.5N 154.2W	13.4N 154.3W	80G100	984 - est
10/0000	14.0N 155.4W	13.8N 155.5W	85G105	980 - est
0600	14.6N 156.9W	14.3N 156.9W	90G110	960 - drop
1200	14.9N 158.1W	14.7N 157.8W	100G125	960 - est
1800	15.2N 158.7W	15.2N 158.6W	100G125	951 - drop
11/0000	15.9N 159.3W	15.9N 159.3W	110G135	948 - drop
0600	16.8N 159.5W	16.8N 159.8W	115G140	939 - drop
1200	18.2N 160.2W	18.2N 160.2W	120G145	938 - drop
1800	19.5N 159.9W	19.5N 160.0W	125G150	938 - drop
12/0000	21.5N 159.7W	21.5N 159.8W	115G140	945 - drop
0600	23.7N 159.4W	23.7N 159.4W	100G125	959 - drop
1200	25.7N 159.0W	25.7N 159.0W	80G100	980 - est
1800	28.1N 158.9W	28.1 N158.9W	80G100	980 - est
13/0000	30.4N 158.7W	30.4N 158.8W	65 G80	990 - est
0600	33.0N 158.7W	33.0N 158.7W	65 G80	990 - est
1200	35.0N 158.5W	35.0N 158.5W	50 G65	1000 - est
1800	36.7N 158.1 W	36.7N 158.1 W	40	1002 - est

Note: EST = estimated
 DROP = Aerial Reconnaissance Dropsonde
 G = Gust

Best Track = Position of hurricane based on post-storm analysis
 Bulletin Pos = Hurricane location given in hurricane bulletin

Table 4. Hurricane Iniki Best Track

about 1600 miles southwest of Baja California. It is possible that this depression originated from a tropical wave that departed the coast of Africa on August 18, 1992. Using satellite photographs, this wave was tracked for a week across the Atlantic Ocean by the NHC in Coral Gables, Florida. It then drifted over the northern sections of South America becoming diffuse and difficult to track. Extrapolation of this wave would put it near Panama on August 28, 1992. Although it can not be conclusively proven that this was the genesis of Eighteen-E, the possibility does exist.

Initially, Eighteen-E was estimated to have wind speeds of just over 25 MPH and was moving generally to the west at around 10 MPH. This continued until the NHC passed responsibility for tracking the depression to CPHC during the morning of September 6, 1992. CPHC monitored the depression during the day. By evening, **the** system appeared on satellite photographs to be weakening, and CPHC forecasters expected Eighteen-E to dissipate within 24 hours. (See Appendix A.)

By late morning on September 7, 1992, however, forecasters noted that conditions were changing. Eighteen-E, located near **11°N, 143°W** and still a tropical depression, was now embedded in a fairly deep easterly flow along the south edge of the semipermanent subtropical anticyclone (denoted by an A near the top center of Figure 9). This high, centered near **42°N** latitude between **130** and **170°W** longitude, remains over this area most of the summer. Eighteen-E was becoming better organized and stronger. (Figures 9 through 17 follow the progression of **Iniki** at various heights in the atmosphere.)

By the evening of September 7, 1992, the cyclone, now located near **12°N, 145°W** and having estimated wind speeds of 40 MPH, was upgraded to Tropical Storm **Iniki**. On September 8, 1992, it continued intensifying and increased its westward motion to about 15 MPH as the subtropical ridge shifted slightly southward to along **40°N** latitude between **130** and **165°W** longitude. By 11 p.m., **Iniki** had developed hurricane force winds. It was located near **13°N, 152°W**, 510 miles south southwest of **Hilo** and was moving west northwest at just under 15 MPH. It was to continue on this same general course for the next 24 hours with a steady increase in intensity.

Up to this point, the system was similar to other hurricanes which cross south of the Hawaiian Islands. However, **Iniki** was approaching the western edge of the subtropical high. Coincidentally, the upper level flow pattern across the North Pacific was undergoing some changes (Figures 15-17). A large low pressure system was seen by CPHC forecasters on satellite pictures from the Japanese Geostationary Meteorological Satellite (**GMS**) and was forecast by the NMC models to develop during the next 48 to 72 hours well to the northwest of the storm. This low and its associated trough extended along the International Dateline north from Midway Island and was surrounded on the west, north, and east by a horseshoe shaped high. This pattern was watched by CPHC forecasters as it was considered favorable to maintain or increase the intensity of the storm. The minimal amount of vertical shear that existed to the west and north of the storm was also favorable for strengthening.

A surface low pressure area was developing near **30°N, 160°W** just east of the trough (Figures 11-12). **Iniki** continued west northwestward at about 15 MPH on September 9, 1992. By early morning September, 10, 1992, it was near **15°N, 159°W**, or 465 miles south of Honolulu.

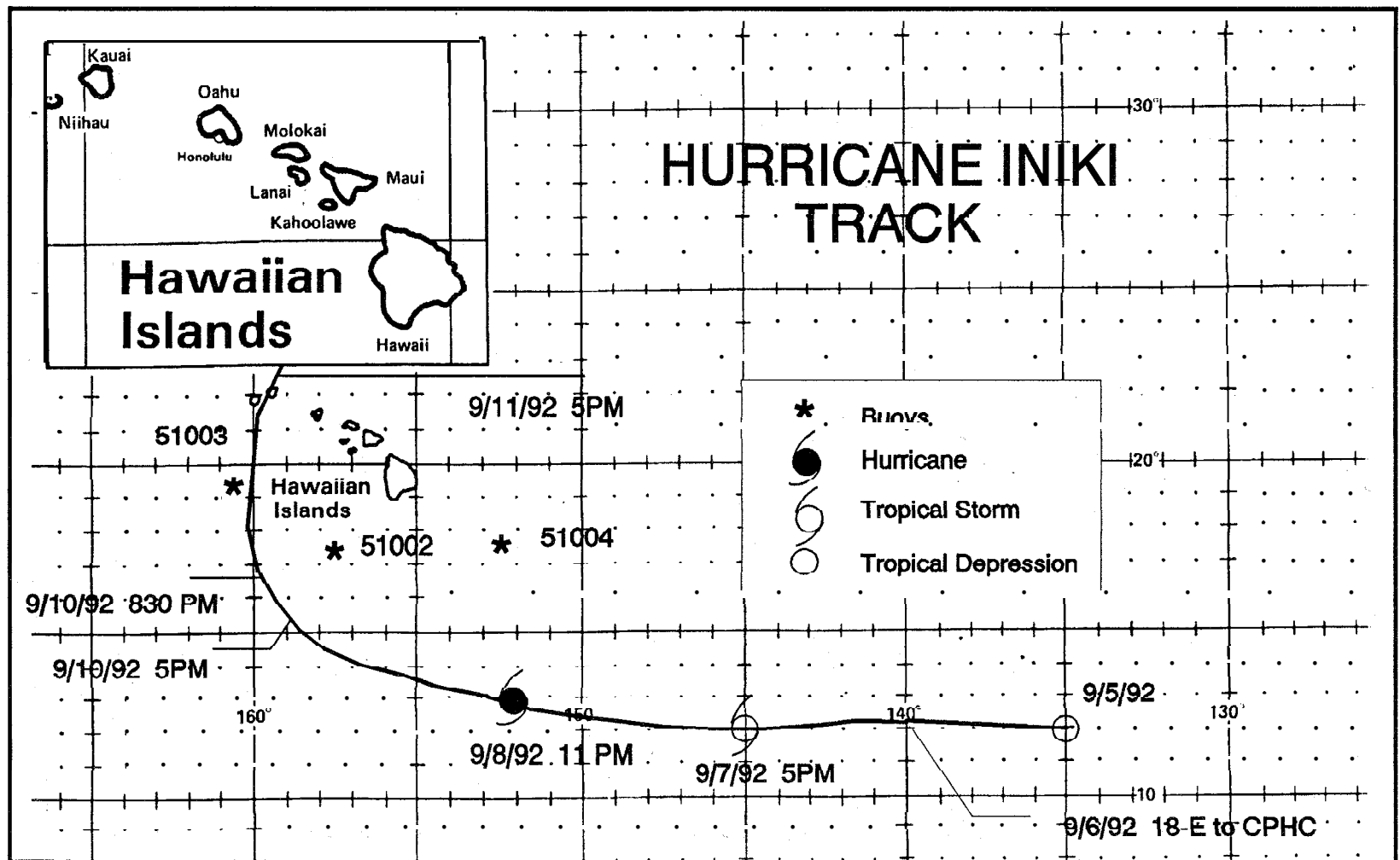


Figure 8. Track of Hurricane **Iniki**

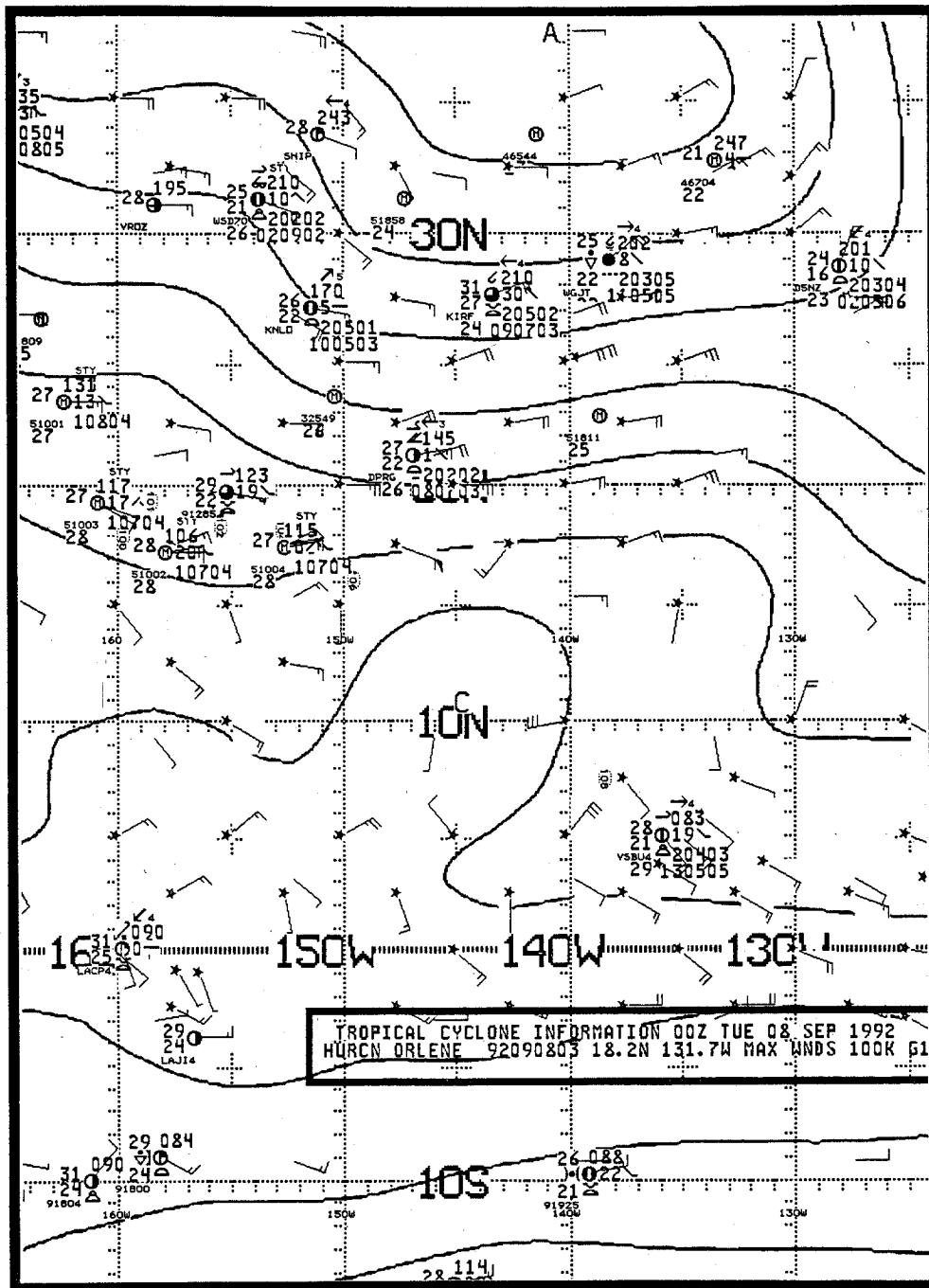
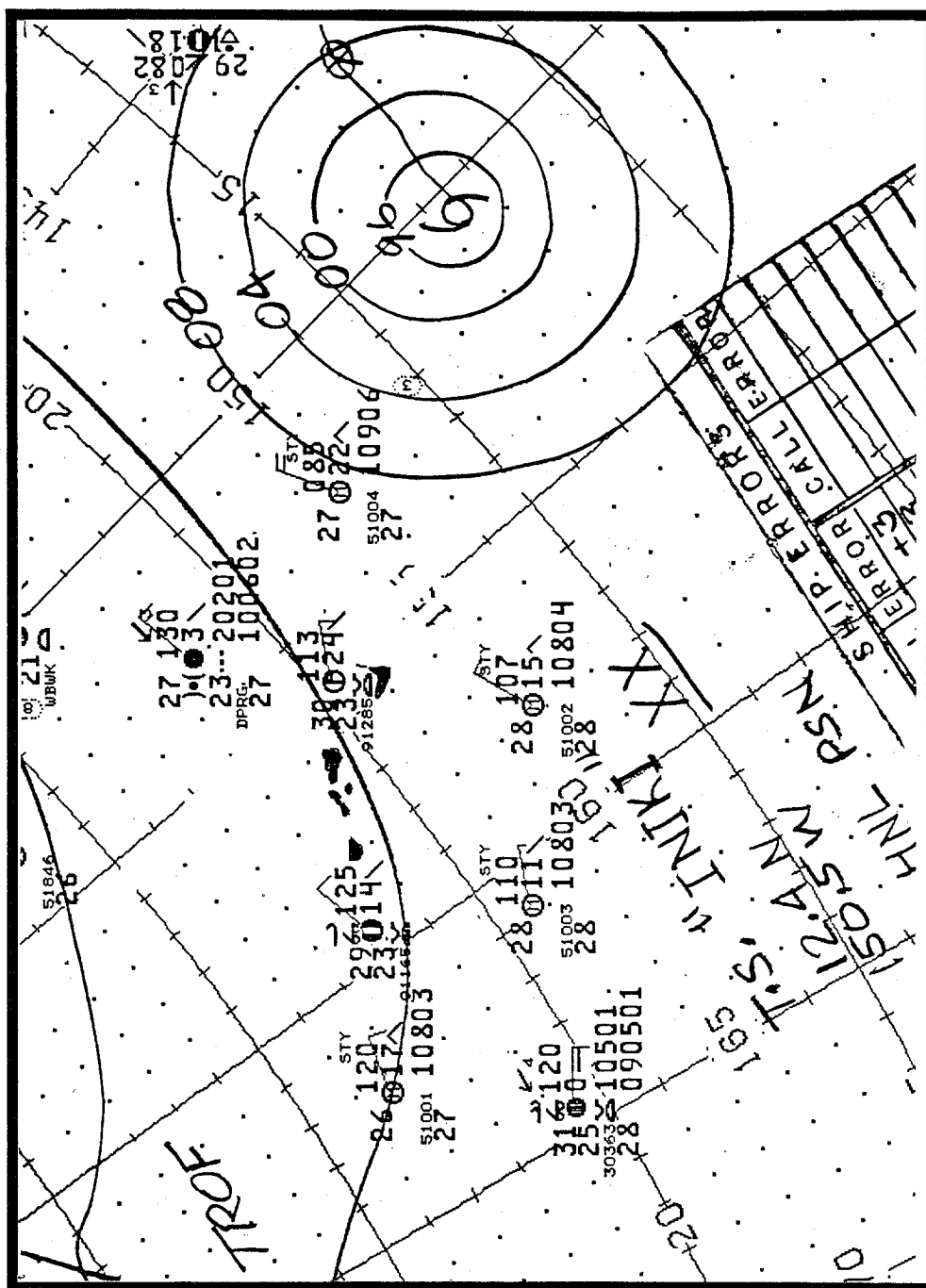


Figure 9. Low Level (Generally Below 700 MB) Tropical Wind Fields Derived from Satellites. 2PM HST Mon Sep 7, 1992



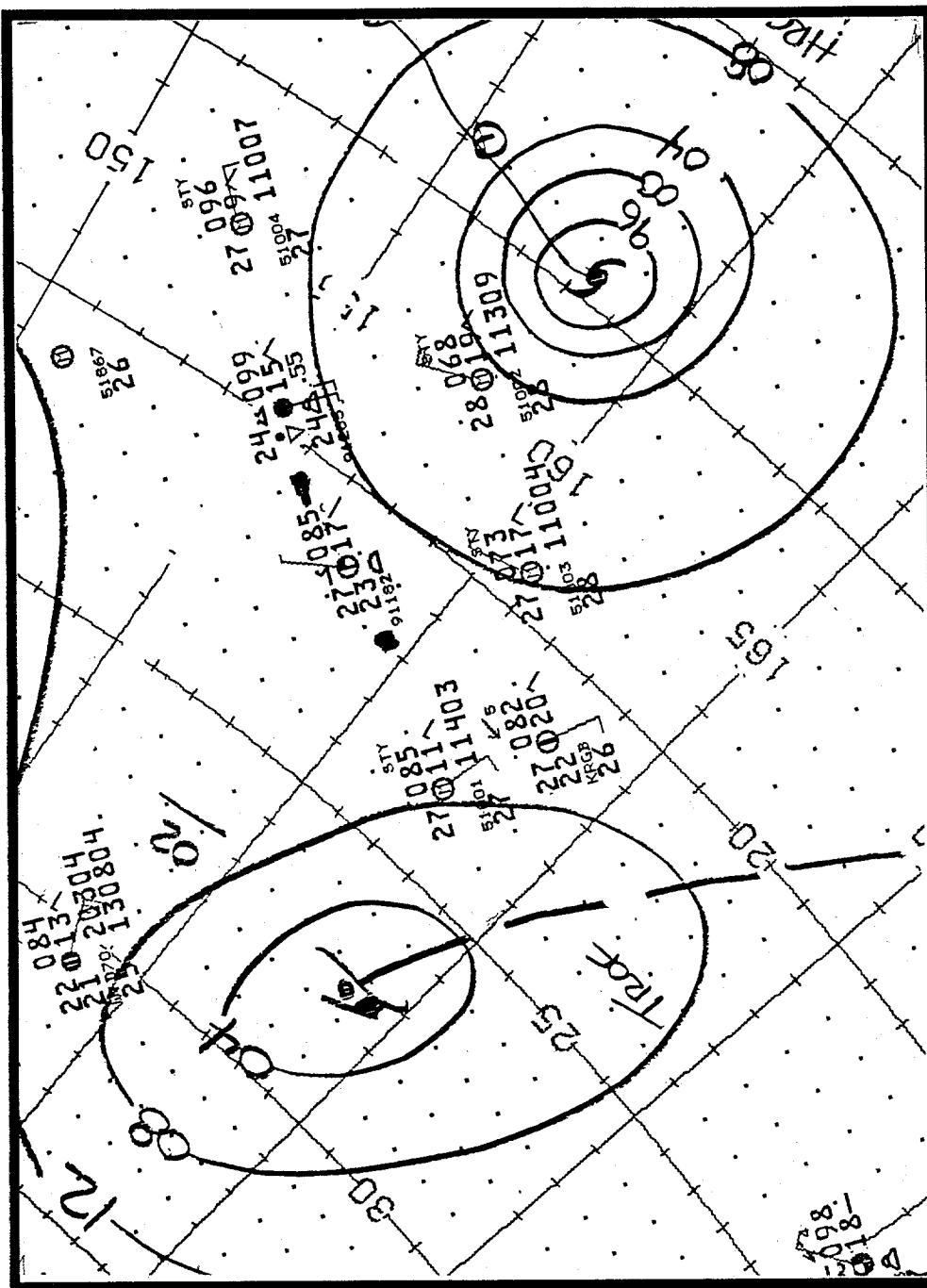
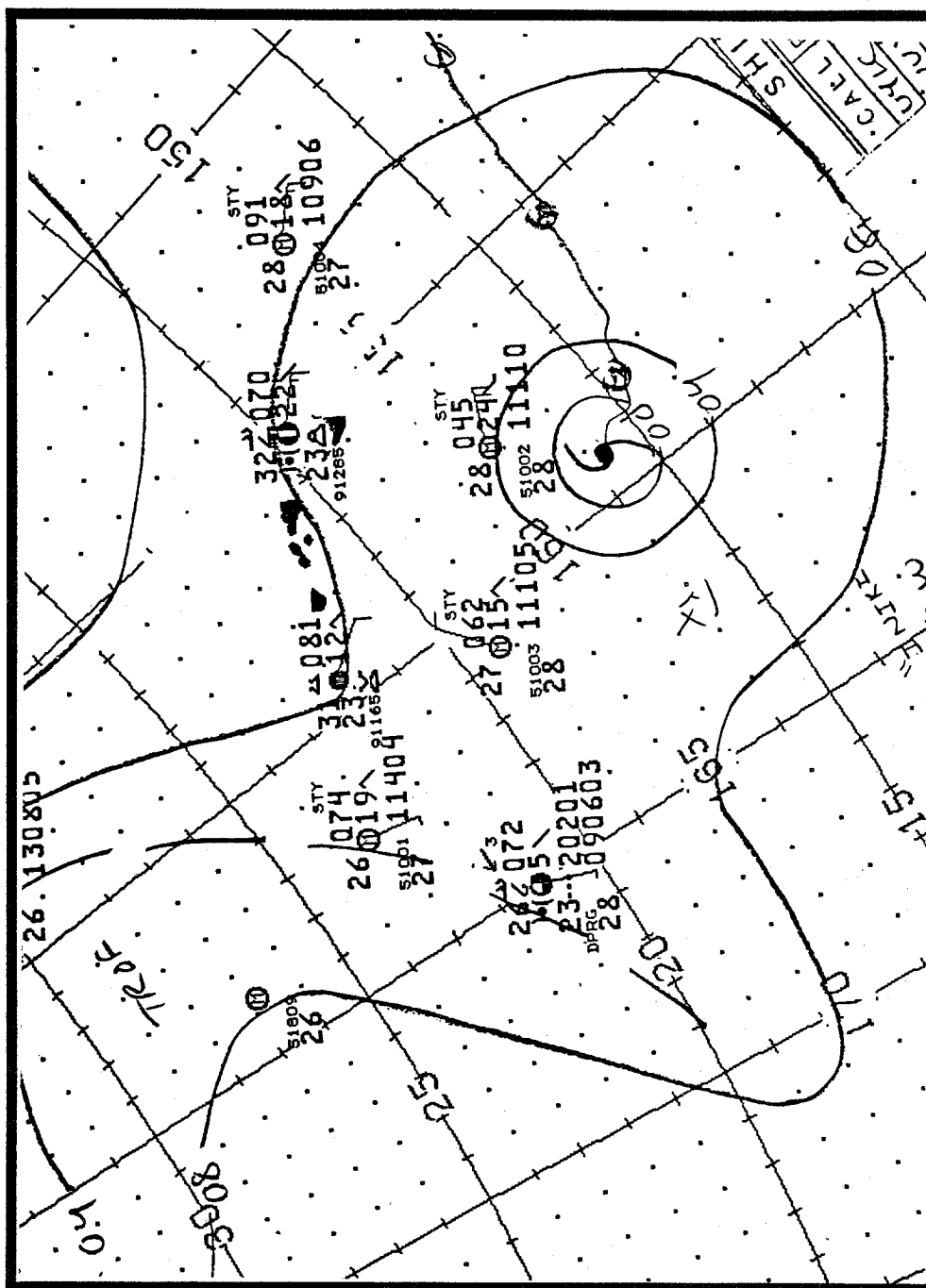


Figure 12. Surface Analysis. 2 AM HST Thu Sep 10, 1992



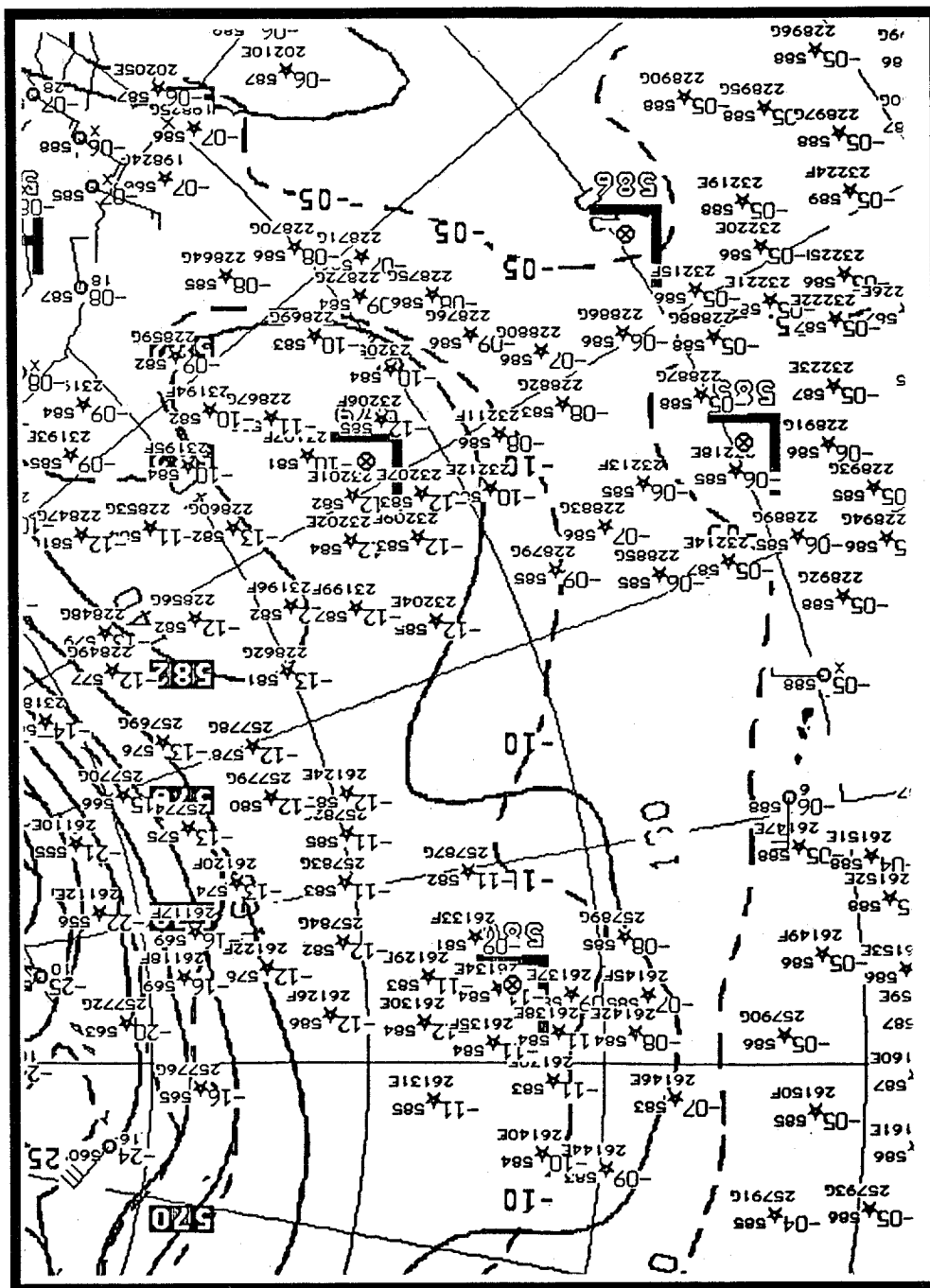
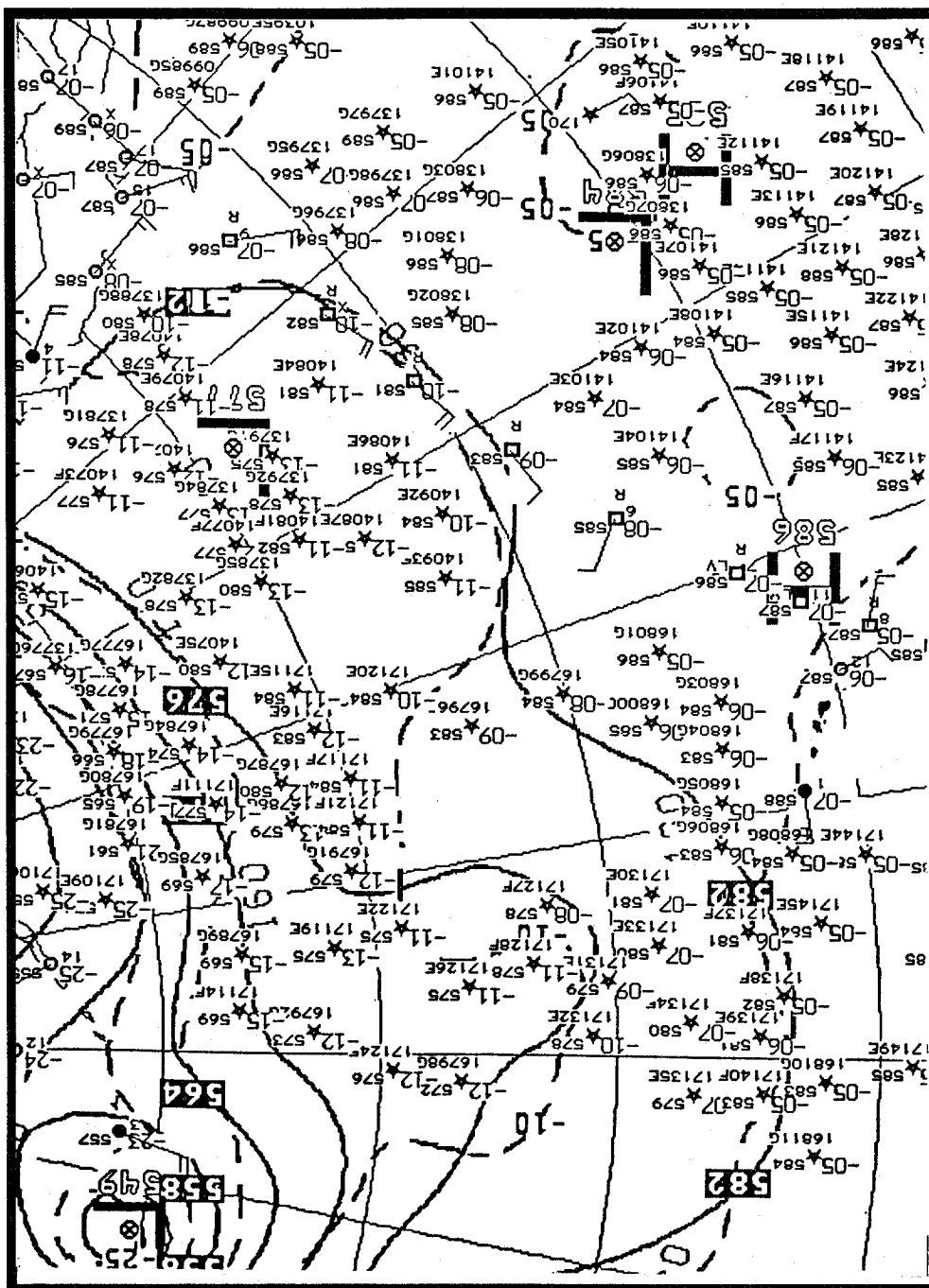


Figure 15. 500 Millibar Height Field. 2 AM HST Wed Sep 9, 1992



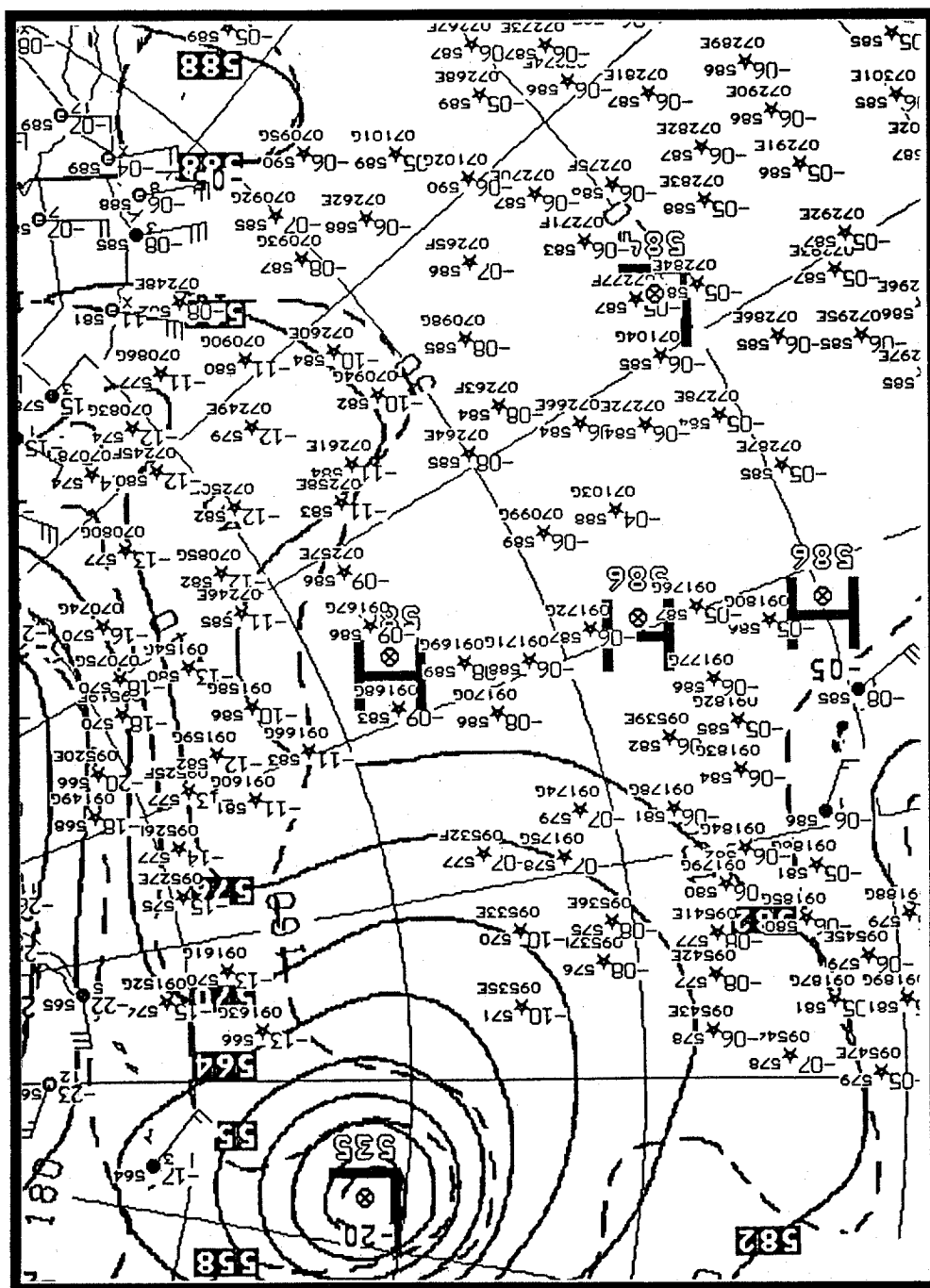


Figure 17. 500 Millibar Height Field. 2 AM HST Fri Sep 11, 1992

Meanwhile, the flow pattern in the western Pacific continued to change as a series of short wave troughs continued to dig the long wave trough southward along the dateline. The subtropical ridge, the feature that normally keeps the hurricane track south of Hawaii, appeared to be weakening west of **160°W** longitude under the onslaught of the troughs. Southwesterly flow was developing which CPHC forecasters worried could eventually turn **Iniki** on a more northward track.

During the morning hours of September 10, 1992, **Iniki** slowed. Located near **15°N, 159°W**, or 460 miles south southwest of Honolulu, and moving westward at 10 MPH, USAF **recon** aircraft reported top winds of over 100 MPH with gusts to over 130 MPH and a central pressure of 951 millibars (MB). By that evening, **Iniki** had further decelerated and turned to the northwest.

During the night, **Iniki** continued northward as it encountered the southwesterly flow ahead of the cold upper level trough. **Iniki** also began to accelerate. By late morning on September 11, 1992, located near **20°N, 160°W**, or 140 miles south-southwest of Lihue, **Iniki** was moving northward at over 15 MPH. Top winds had increased to 140 MPH with gusts to 175 MPH. The central pressure was 938 MB making this the most intense portion of the storm's lifetime. Peak sustained flight level winds were 155 MPH.

Iniki made landfall on the southwest Kauai coast centered in the Waimea area during the middle of the afternoon on September 11, 1992. By then, its central pressure, based on the last recon report and on other low pressure readings in the area, had risen to 945 MB. Lihue Airport recorded a reading of 966.1 MB (28.53 inches). The USN facility at Barking Sands recorded a low pressure reading of 984.8 MB (29.05 inches). An off duty weather observer riding out the storm in Kekaha recorded a reading of 948.2 MB with an uncalibrated, hand held barometer. The National Ocean Service tide station at Port **Allen**, which gives hourly pressure measurements, recorded a low reading of about 960 MB (in Figure 18, the pressure trace has been extrapolated to yield an estimated lowest pressure value of about 952 MB).

Iniki accelerated rapidly northward reaching a forward speed of about 30 MPH after departing the islands. It also began to rapidly weaken. By early morning on September 13, 1992, **Iniki** was no longer a hurricane. By September 15, 1992, it had become a northeasterly moving extra-tropical low.

Guidance

Overview

Many objective aids were available to the CPHC forecasters. During **Iniki**, CPHC forecasters had access to the results of up to twenty non-routine models for position guidance (Table 5). Unlike **NHC**, however, which has direct access to NMC models, CPHC is unable to run any numerical objective forecasting aids on its own. CPHC provides initial cyclone positions to NHC. NHC forecasters, then, input this data to NMC where the models are actually run. Model results are returned to CPHC as alphanumeric products via the established communications link through NWS Telecommunications Gateway to the Pacific Region's PRIME system.

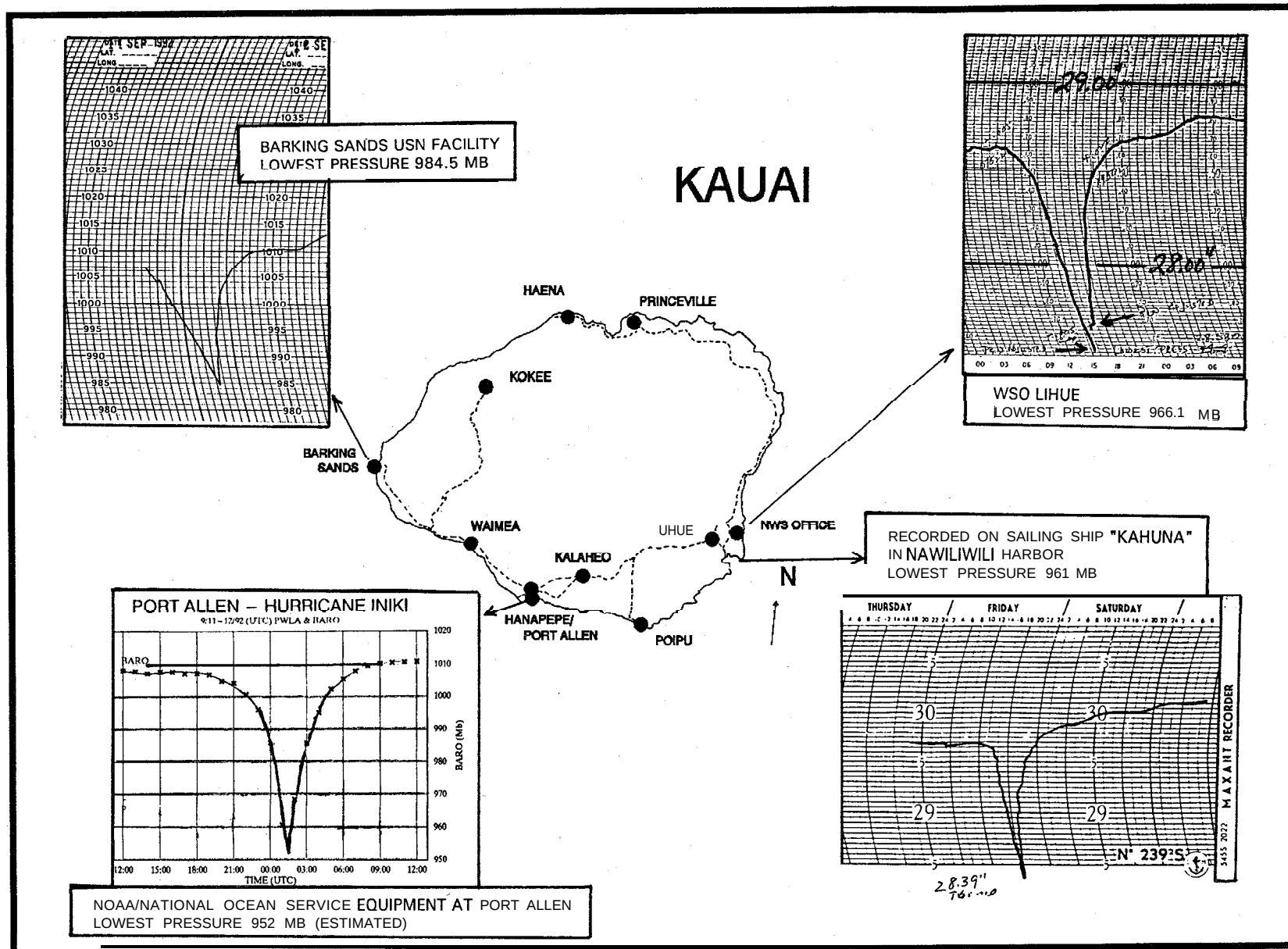


Figure 18. Pressure Traces from Kauai Locations Associated with Hurricane Iniki

HURRICANE MODELS AVAILABLE TO CPHC FORECASTERS

<u>Source</u>	<u>Acronym</u>	<u>Model</u>
NMC	AVNO	AViationN model Output
NHC/NMC	XTRP	eXTRaPolation (a pure extrapolation model)
	HURN	HURricane aNalog
	CLIP	CLimatology and Persistence
	BAMD	Beta-Advection Model Deep layer (the beta-advection model with a mean layer averaged between 850 and 200 millibars)
	BAMM	Beta-Advection Model Medium layer (the beta-advection model with a mean layer averaged between 850 and 400 millibars)
	BAMS	Beta-Advection Model Shallow layer (the beta-advection model with a mean layer averaged between 850 and 700 millibars)
	PSS	Pacific Statistical Synoptic
	PSDE	Pacific Statistical Dynamic Early run
	SHFR	Statistical Hurricane intensity FoRecast
	QLM	Quasi-Lagrangian Model (sent much later than other guidance)
NAVY	HPAC	Half Persistence And half Climatology
	CLIP	CLimatology and Persistence
	CLIM	CLIMatology
	XTRP	eXTRaPolation
	SBAM	Shallow layer Beta-Advection Model
	MBAM	Medium layer Beta-Advection Model
	OTCM	One way Tropical Cyclone Model
	TOTL	TOTaL analog
	FBAM	Fleet numerical oceanographic center Beta Advection Model

Table 5. Numerical Models Available to CPHC Forecasters

In addition to the routine product suite from the Aviation Model (AVN), NHC sent the CPHC forecasters output from nine other models specifically used for forecasting tropical cyclone tracks.

Output from a tenth model was provided by NMC. However, this output was not available until several hours after the normal forecast cycle. These model runs are initiated by CPHC forecasters. They provide input data to the NHC or NMC via telephone. After processing, the guidance information is returned from the mainland as noted above.

Other guidance came through the USN. To begin this process, CPHC telephones input data to NAVWESTOCEANCEN that in turn, forwards it to FNOC at Monterey, California. FNOC products are based on models nearly identical to those run by NHC. However, they use the Navy Operational Global Atmospheric Prediction System (NOGAPS), the USN's general circulation model, rather than the AVN used by the NWS for initialization. The USN further uses position fixes (also available to CPHC) on storm systems from the USAF Global Weather Central taken from Defense Meteorological Satellite Program satellites (polar orbiters). The output from this guidance was sent to CPHC by telephone facsimile (telefax).

Finally, as an added bonus, NOM's Geophysical Fluid Dynamics Laboratory sent telefax transmissions with results from their experimental model. This included forecasts of position, maximum winds, and minimum pressures.

All of the NWS models were run every six hours, as is standard practice. The synoptic forecast from the AVN is updated only every twelve hours, but later storm positions are used in the six hour intervals.

Overall, the communications between CPHC and the offices supplying guidance products appeared cumbersome. **DST Recommendation: The NWS should review the methods by which CPHC forecasters receive guidance products to see if they can be delivered in a more timely and efficient manner.** This would at least apply to the method for providing input data for the various models. As part of this review, the NWS should study enhancing the computer capabilities at the CPHC and allowing direct contact between CPHC and the models at NMC.

The recent introduction of a synthetic vortex to the AVN is one of the more promising additions to the forecasters' array of aids. However, during a large part of the critical forecasting time for **Iniki** (from 2 a.m. HST September 2 until 2 p.m. HST on September 10, 1992), this input data did not make it into the AVN due to programming problems associated with tracking the storm from the eastern to the central Pacific. Although a residual of the previous forecast positions of the vortex remained in the AVN model, as time went on this residual diverged from the actual cyclone position. Since CPHC forecasters would have been able to see evidence of the vortex on the graphical AVN products routinely received, the impact of this deviation on their issuances is unknown.

An impediment to improved forecasting of tropical storm motion is meteorologists' limited knowledge of the synoptic flow in the region around a tropical storm. Improved satellite coverage and technology are not total solutions to this problem. More detailed meteorological information, such as that provided by dropwindsondes from high flying aircraft out to at least 1000 miles from the storm center, would provide data that would greatly help the forecast effort.

Perhaps Unmanned Air Vehicles, often referred to as drones, capable of staying in the air for over a week at a time and releasing the new light weight sondes, could be used.

Local Procedures

Overall, the CPHC forecasters did well in using the guidance and observational tools available. **DST Recommendation: The NWS management should enhance the capabilities of the CPHC staff by a) providing the CPHC with current written descriptions of all available forecast tools (e.g., up to date, complete documentation on the dynamic and analog/climatological models), and b) requiring that model comparisons and forecast error evaluations become a regular part of the CPHC forecast operation.**

The documentation for the forecasting aids at CPHC was between minimal and nonexistent. Even the very short descriptions of the models provided by NHC were not current. There was some cursory awareness among CPHC forecasters of the different error tendencies of the models, but nothing to allow an informed choice between these. For such aids to be of maximum use to the forecasters, this documentation needs to be provided.

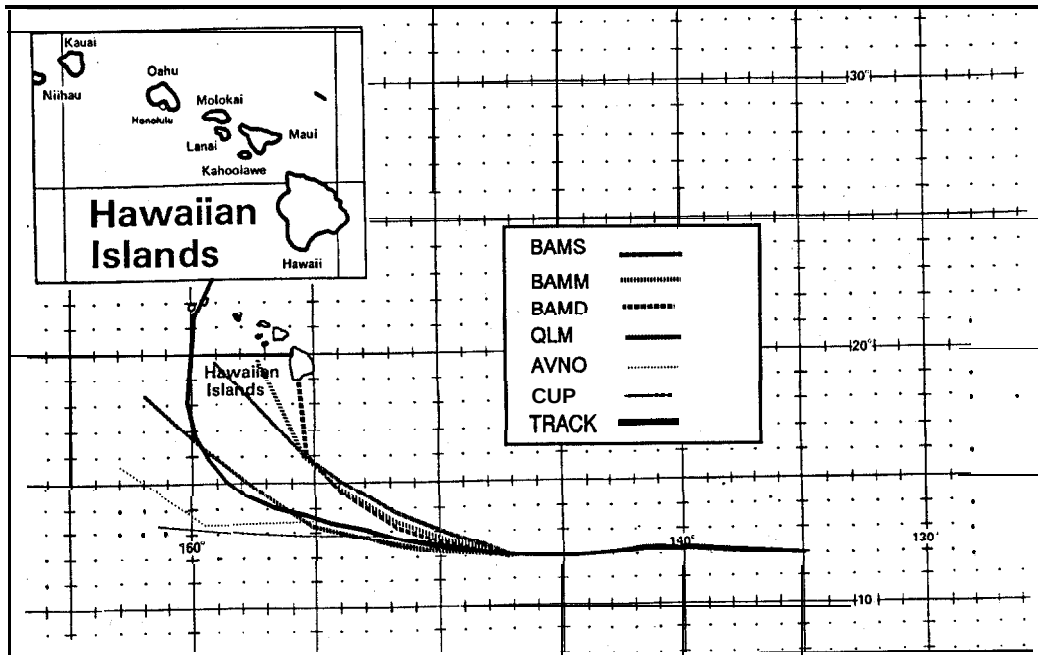
Further, the continual error analysis that is performed at NHC was nowhere in evidence. In fact, it appears that there is no software available at CPHC to perform such analysis. The various model forecasts were plotted on acetate with grease pencil during the storm and erased before each forecasting period. Hence, it was difficult for forecasters to graphically compare the relative successes of the models from one model run to the next. The only hardcopy comparisons of forecast aids were forwarded by NAVWESTOCEANCEN from the USN models. Graphical results were telefaxed from the Geophysical Fluid Dynamics Laboratory, but these did not provide comparisons between models.

Both the USN and NHC have advanced computer software which would greatly enhance the data display and processing capabilities of the CPHC. Plans have been in the works for over a year at CPHC to install such a program, the ATCF system, but it is still not in place. The current procedure requires a time and labor intensive effort that the ATCF system would eliminate. Combining this with a high speed communications network such as **ETHERNET** to deliver model output data would greatly increase the efficiency of the CPHC operation. The **DST** encourages the CPHC to complete the upgrades and enhancements.

One result of this lack of real-time comparisons may have been in which models the CPHC forecasters accepted and followed during the three days before Iniki struck. The forecasters indicated to the **DST** that the objective aids were compatible and consistent through the first 48 hours. Further, it was their impression that the models did not show the slowing and turning of Iniki that brought its path over Kauai. Of the models available, the forecasters, in retrospect, felt that the Beta-advection models (**BAM**) performed best.

An actual comparison of the forecast tracks produced by the various models (Figures 19-20) did not totally **confirm** the forecasters' impressions. Throughout most of the critical forecast period, the solutions produced by statistical and dynamical models differed widely; up to 200 miles apart at the 48 hour forecast period. Post-storm analysis indicates that the **BAM** and the **Quasi-Lagrangian Model** did show the slowing and northward turning of the storm at least a day in advance. Also, the tracks of these do appear to be more accurate than those of the climatological

2 AM HST TUE SEP 8, 1992



2 AM HST WED SEP 9, 1992

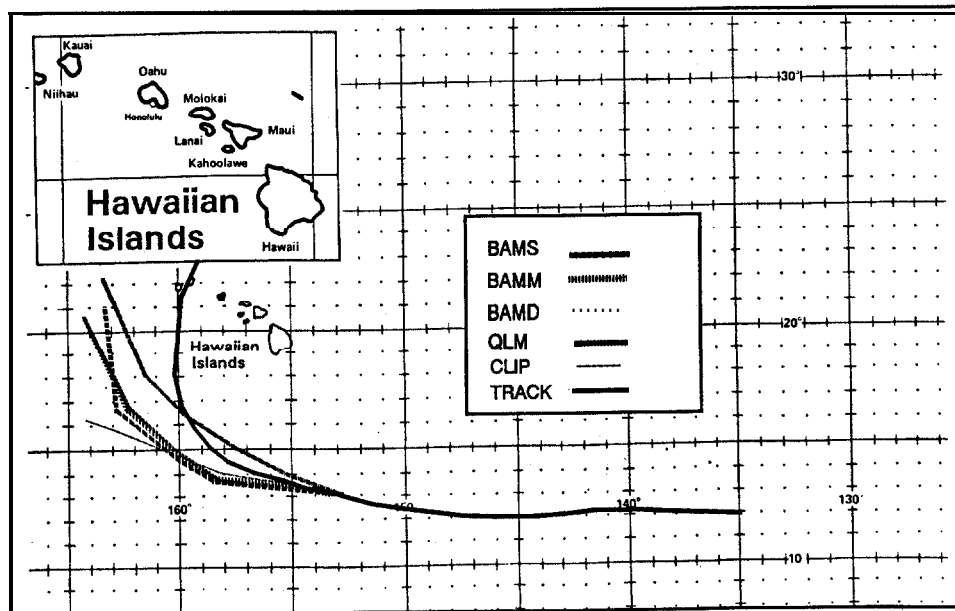
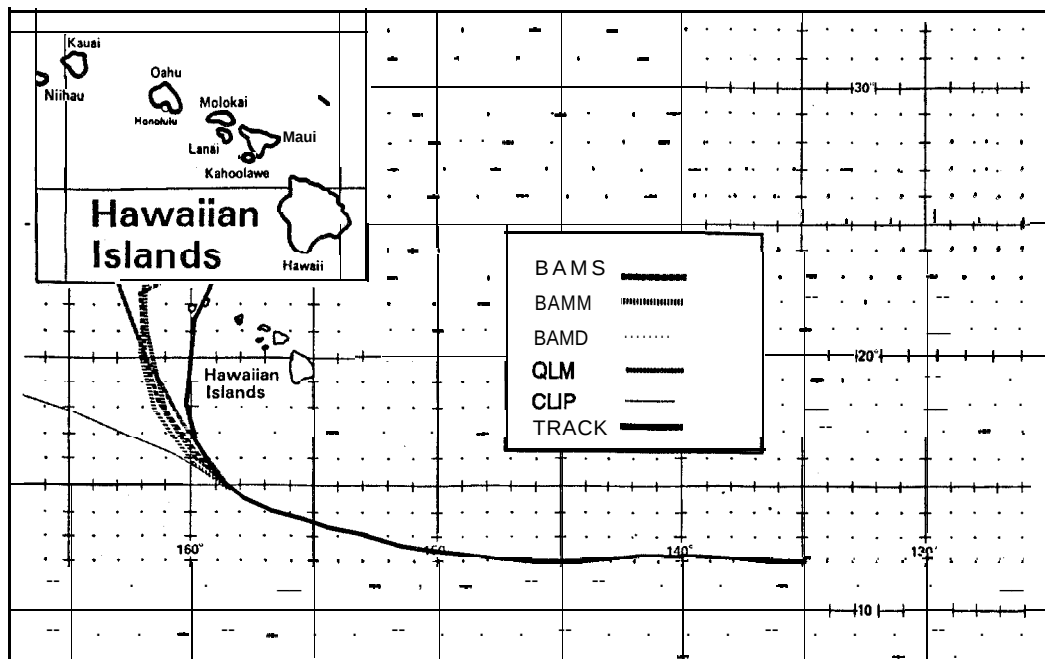


Figure 19. Comparison of Model Guidance and Actual Storm Track
Top - 2 AM HST Tue Sep 8, 1992
Bottom - 2 AM HST Wed Sep 9, 1992

2 AM HST THU SEP 10, 1992



2 AM HST FRI SEP 11, 1992

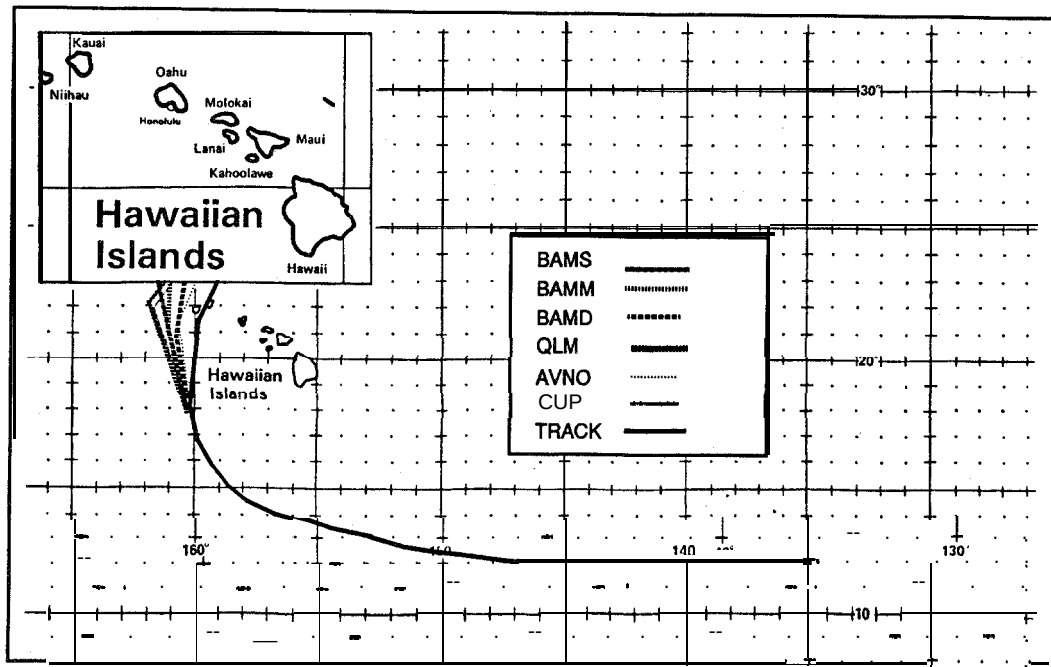


Figure 20. Comparison of Model Guidance and Actual Storm Track
Top - 2 AM HST Thu Sep 10, 1992
Bottom - 2 AM HST Fri Sep 11, 1992

models which were **primarily** accepted by the CPHC forecasters in the time period before Iniki turned north. However, early runs of these models had the storm curving northward too early and positioned it far to the east of its actual track. These results undoubtedly added to the low confidence levels the forecasters placed on the models during later runs.

Inland Flooding/Coastal Flooding

Coastal flooding is a major concern with all tropical cyclones. Although not usually as devastating as that in the eastern United States, storm surge and rough seas do cause damage in Hawaii. However, there is no guidance on this available to the CPHC forecasters. The Sea Lake and Overland Surges from Hurricanes (SLOSH) model, the standard tool for the mainland United States, has not been adapted to this region.

The sea heights included in the warnings issued by CPHC were based mostly on forecaster experience and judgement. (A program for calculating combined surge and wave for Hawaii is under development.) Even though the bathymetry surrounding the islands is not conducive to the development of large surges, objective aids such as SLOSH should be available to help the forecasters in predicting storm surge heights. The DST suggests that such a program be pursued and completed.

Flash flooding due to extremely heavy rains often accompanies tropical cyclones. This is especially true in areas with high relief such as that found on the larger Hawaiian islands. WSFO Honolulu issued statements (Appendix **A**) alerting of the potential for flash flooding on Oahu with rain totals of 5 to 10 inches expected in some locations. CPHC included warnings for likely torrential rains and major flooding on Kauai and Niihau in its hurricane products, while WSO **Lihue** issued flash flood warnings for Kauai. It appeared to the **DST**, however, that these warnings, which were not found to verify, were issued because of the impending presence of a strong hurricane and not on any objective analysis. There is no river flooding forecast model available for Hawaii. The DST suggests that the feasibility of such a model be explored.

Chapter III -- Data Acquisition and Availability

Data are always a problem in the maritime world. Widely separated observing sites require large interpolations and extrapolations when analyses, some of the basic tools used by forecasters, are made. One product that CPHC forecasters used early in the life cycle of Iniki was the Deep Layer Winds and Wind Shear Analysis. The area1 extent of this product, however, does not reach far enough west to include Hawaii. **DST Recommendation: The NMC should extend the Deep Layer Mean Winds and Wind Shear Analysis west to the International Dateline.**

Satellite Data

By far, the most important aides available to the CPHC forecasters were the GOES-7 imagery. These data were received every half hour during the entire period of the storm and consisted of the following:

1. Visual imagery every half hour during daylight hours.
2. Full disc unenhanced infrared every hour.
3. Enhanced infrared imagery every half hour during night time hours.
4. Water vapor imagery every hour.

The NWS has one fully operational geostationary satellite positioned over the equator at 112°W longitude. The configuration planned for NWS operations would normally include two GOES satellites. The lack of the second satellite, which would have been located at about 135°W, resulted in some operational problems for the CPHC forecasters primarily due to the large longitudinal angle between the storm and the satellite. Overall, however, the one satellite configuration provided adequate coverage of Iniki.

To augment the existing satellite, CPHC also receives data from the Japanese GMS. At the present time, it receives four sectors of the low resolution unenhanced infrared imagery every three hours, Hawaii is near the eastern edge of the northeast sector. Accuracy of ~~fixes~~ between 170 and 160°W would be, at best, degraded. Beyond 160°W, where most of the Hawaiian Islands are located, accurate fixes are close to impossible.' Although upstream weather features that influenced **Iniki** were seen by this satellite, GMS coverage did not enable forecasters to see the hurricane.

Determining exact storm positions was the biggest difficulty. CPHC does not have the capability to calculate needed adjustments between apparent location and actual location for storms in its area. The Synoptic Analysis Branch (**SAB**) of the National Environmental Satellite, Data and Information Service was able to provide some compensation estimates during periodic coordination calls. However, SAB estimated that position error estimates were up to 20 NM. Actual usage by CPHC forecasters could not be determined.

In addition to determining position, satellite images are used to determine winds, especially upper level winds. These data are automatically generated at NMC and input into the AVN model. The large angle between the satellite and the area around the storm as it approached Hawaii did not allow winds north and west of Iniki, those that led to its northward turn, to be

determined. Some compensation for this lack of data, however, was achieved by using data from the GMS and from commercial aircraft observations.

The satellite section of the WSFO proved invaluable during this episode. Using techniques developed by Vernon Dvorak, the staff of this section was principally responsible for determining the past track and initial positions used in all of the numerical forecasting tools and for estimating **Iniki's** intensity. Given the limitations imposed by the single GOES and given the problems inherent in finding a disturbance center when the storm is not very intense or is in an environment of relatively large vertical shears, this was sometimes a **difficult** task. **DST Recommendation: NWS management should insure that the satellite section currently in place be retained.**

Further, the increasing possibility that the existing GOES will fail before its replacement is in place is of major concern. Back up systems, such as direct access to polar orbiting satellite data, are not now available. Currently, polar orbiting information is received by **Hickam** AFB and, time and resources permitting, the associated transparencies are transmitted to the CPHC via the back side of its GOES-TAP line. The DST does not believe that this system is sufficient. Without satellite information, it is most likely storms such as **Iniki** will not be detected until they approach land. A HIPS is being procured that will provide this direct access. **DST Recommendation: The NWS should expedite the installation of systems, such as HIPS, to provide the CPHC with direct access to polar orbiting satellite data. Also, the NWS should consider providing the CPHC with capabilities for archiving selected GOES photographs and for directly accessing other data available via satellite. This would include tide gage data currently available from the GOES.**

Surface Observations

During most of its lifetime a tropical cyclone remains over oceans, the most data-sparse sections of the globe. Satellites, which provide imagery for virtually the entire earth, are the prime tool used for detecting and tracking these storms. However, at present they do not provide in situ data for forecasting various storm characteristics (wind speeds, storm movement, etc.). Therefore, surface data sources, although widely separated, must also be available to assist forecasters in issuing accurate warnings.

Buoys

Outside of satellite data, buoys provide the most stable data set for ocean environs. Four weather buoys are sited around Hawaii with three along its southern flank (indicated by stars in Figure 8). Providing information once an hour, these were the main sources of sea height information available to CPHC staff. In general, the buoys are sited far enough apart that a small, intense storm, like **Iniki**, could sneak between without its true nature being detected. The west wall of the eye passed less than 60 miles east of Buoy 51003. However, this puts the buoy in the weaker part of the storm. Wind speeds of about 45 MPH gusting to 55 MPH and seas of about **18 FT** were the highest recorded. The lowest measured pressure was 996.5 MB.

Land-based Observations

Land-based observational data from Pacific Region stations are not sent directly to WSFO Honolulu and CPHC. The recorded information, like almost all other alphanumeric data received on Hawaii, is sent over the Leased Service A and B System (**LABS**), a system using the existing telephone network, to the mainland United States where it must be received by the Weather Service Message Center (**WSMC**) in Kansas City and forwarded to the NWS Telecommunications Gateway. From there it is routed to the PRIME computer system, the Pacific Region's internal communication and processing system. As a backup, observations are returned via the LABS to WSFO Honolulu directly from WSMC. Whenever a communications outage occurs, either within Hawaii, within the critical communications systems on the mainland, or within the WSMC itself, all data to WSFO Honolulu and the CPHC from affected sites are lost.

The only backups to this are regular telephone lines or radio. On other Pacific island **WSOs** backup radio systems have been installed due to the unreliability of local telephone systems. However, the reliability of telephone communications across Hawaii led to the belief that such were unnecessary within the state. This belief was proven wrong by Iniki. This was previously noted in a National Academy of Science report written after Hurricane Iwa in 1982. Downed telephone lines and destroyed telephone relays triggered major communications outages across all of Kauai within four hours of landfall. **DST Recommendation: The NWS should require installation of reliable, independent, backup communications with the WSO in Lihue (and other Hawaiian WSOs).**

As a result of the telephone outages, CPHC lost all observations from Kauai as the storm approached, crossed the island, and departed. Especially critical were losses of wind reports from the MWT at Makahuena Point and from WSO Lihue. The last report from the Point was received at 1 p.m. HST on September 11, 1992. Gusts at this time were as high as 60 MPH. Aside from a peak gust measurement retrieved when communications with the instrument restored over a week after the storm, all other data from this site were lost. The final report from the WSO was received at **1:40** p.m. HST and showed gusts approaching 70 MPH. Direct communications from WSO Lihue were not restored until September 14, 1992. The LABS circuit was not restored until October 7, 1992.

Despite the outages and the fury of the storm, operations at WSO Lihue generally continued uninterrupted. Backup power supplies within the office and from the airport and manual observing instruments allowed surface observations to be taken throughout. The lack of communications, however, prohibited any of the information from being transmitted.

Because of the communications problems, and due to safety considerations, the Official in Charge (**OIC**) decided to not fly several upper air soundings from 00 UTC September 12, 1992, to 12 UTC September 14, 1992. Except for safety, the DST believes that NWS observers should take and record all scheduled observations even if communications problems preclude them from being immediately distributed. **DST Recommendation: The NWS needs to implement a policy that, except when safety considerations prevent, upper air soundings and other observations be taken at NWS facilities even though communications are disrupted.** Even though the data are not available for operational forecast purposes, they still are valuable for research and climatological functions.

Further, the backup power supply for the HO83 system (the system that automatically measures temperature and dew point) is supplied by the airport. Although this was sufficient during the storm, the power was turned off periodically during the cleanup activities requiring the observers to use backup, manual instruments. **DST Recommendation: The NWS should require that all critical observing systems have reliable backup power preferably under NWS control.**

The loss of some electrical equipment in the office and the impact of Iniki on automated observing sites scattered throughout the island highlighted the need for ET support at Lihue. An attempt was made to fly an ET to Lihue the day before the storm struck. Logistic problems and higher priority passengers prohibited this. On the day after the storm, the Area Electronics Supervisor (AES) was able to get to Lihue on one of the military aircraft and made repairs at the WSO. However, transportation elsewhere on the island was impossible, so the AES returned to Oahu and the repairs to the outlying equipment were delayed for more than a week.

DST Recommendation: The NWS needs to improve the arrangement for providing ET services at WSO Lihue. Having an ET available on station would have expedited the recovery effort of the Lihue office. Also, the data retrieval from the various automated observing instruments scattered across Kauai could have been accomplished several days earlier had an ET been present.

Reconnaissance Flights

Aircraft reconnaissance was requested by the CPHC on September 8, 1992, at **1215Z**. This was shortly after Tropical Depression **18-E** was upgraded to Tropical Storm Iniki. These flights are requested and coordinated by the Deputy Director of the CPHC with the Chief, Aerial Reconnaissance Coordination, All Hurricanes located at NHC. The aircraft are based at Keesler Air Force Base (AFB), Mississippi. Because of the distances involved, at least a **48-hour** advance notice is required. The first **recon** report, however, was received at **0432Z**, September 10, 1992. One of the three available aircraft provided a **fix enroute** from the west coast of the mainland to Hawaii.

The CPHC received 12 **fixes** from the storm trackers extending until about 0930 UTC, September 12, 1992. Almost all flights were made at about the 700 MB pressure level (just above 9000 feet). The aircraft recorded flight level winds (from which surface winds were estimated), temperatures, and dewpoints.

These reports provided the most reliable information as to exact storm location, central pressure, and winds. This was especially true because of the acute viewing angle provided by the GOES satellite. NAVWESTOCEANCEN was especially strong in its endorsement of these data and requested, because of the inherent dangers to ships at sea, that such flights also be conducted for storms not threatening land. The DST concurs that these flights should be continued.

Radar Data

CPHC is equipped with displays allowing forecasters to monitor the weather radar unit at **Hickam** AFB and the air traffic radar located at the Federal Aviation Administration facility on Mt. **Kaala**, Oahu. These provided CPHC forecasters with an overview as Iniki approached Hawaii. The location of the **Hickam** radar, the more useful of the two units, is such, however, that mountains west of the site totally obscure all radar returns for storms within about 100 miles south of Kauai.

Another radar belonging to the Hawaii Air National Guard also provided some information to the CPHC. This air control and warning radar station is located on the northwest side of Kauai at Kokee. Although primarily used for directing and controlling aircraft, the radar was able to detect coarse features of Iniki. Until telephones lines were lost, duty controllers at the site telephoned the information in to WSO Lihue or relayed it through the Aeronautical Fixed Telecommunications Network to CPHC.

The eye of Iniki crossed over this site with no damage to the radar. Although not a recommendation from the **DST**, the structure and location of this site might provide useful information for the **NWS'** doppler radar unit to be installed on Kauai.

There were rumors on Kauai that Iniki had "two eyes." These were fueled by two separate pieces of information that found each other. Since Kauai is such a small island, this did not take long. Most people on the island had learned that the eye had passed near Waimea, crossing more to the western part of the island. However, due to topographic effects, winds on some parts of the island became quite weak, though not quite to the level of **calm** associated with an eye, as the winds shifted. This led some people on the eastern part of Kauai to believe that the eye had passed over them. These two impressions eventually met up and reinforced each other. We found no evidence to support a finding of two eyes. We also saw no evidence on Kauai that Iniki exhibited a concentric **eyewall** structure that sometimes develops in very intense hurricanes. After Iniki had mostly passed over Kauai, the radar at Kokee showed a gap in a strong inner **rainband** to the northeast of the center. Although it may have looked like two eyes, we attribute this to disruption of the **rainband** as it passed over the tallest part of Kauai combined with the lack of sensitivity to precipitation of this type of radar.

Chapter IV -- Preparedness

The real measure of a hurricane warning program is in the degree of response to the warning signals by the other federal agencies, Civil Defense (CD) managers, local officials, the media, and the public. In the case of Iniki, the response was outstanding. To the DST, this appears to be due to adequate education and training (i.e., preparedness) provided by all involved.

Credibility, aggressiveness, and a harmonious rapport are key ingredients to this process. This involves the NWS, emergency managers, key civilian officials, and the media. An active public awareness campaign through the media, on NWR, and in office tours and visitations fosters heightened awareness of local weather hazards to the general populace. When all is said and done, however, the scare presented by Iniki and the realization of what was and what might have been, may provide some of the best preparedness training ever available to residents of Hawaii, especially those on Hawaii's most populous island.

Central Pacific Hurricane Center (CPHC)

The CPHC is a subunit of WSFO Honolulu and is activated only when a tropical cyclone enters into or develops within the office's area of responsibility between 140° west longitude and the International Dateline and north of the equator. As used in this report, CPHC is identified for those tasks done by WSFO Honolulu staff that are specifically related to CPHC functions whether or not they are done when the CPHC is activated.

The CPHC is staffed by members of the forecast office. Although senior forecasters are usually selected to staff this desk, there is no set group. The DST believes that this is not conducive to establishing a body of expertise necessary for tropical storm forecasting. **DST Recommendation: NWS management should consider modifying the organization of CPHC to increase the capabilities and expertise of the unit.** One suggestion is to identify selected individuals to be a part of this unit. Along with this, management should consider providing this unit with opportunities for direct contact and specialized training, perhaps done in conjunction with the NHC, to enhance this proficiency.

Four individuals from CPHC are especially involved in the preparedness activities. They are the MIC for the WSFO, who also acts as the Director of the CPHC; the Deputy MIC of the WSFO, who is also Deputy Director of the CPHC; the WSFO warning preparedness program leader; and the WSFO hurricane and scientific services program leader.

It is important to note that the WSFO has only a program leader and not a warning and preparedness focal point. Whereas a focal point is allotted about 50 percent of his/her work time to these activities, a program leader does them while on shift or as time is available. The DST suggests that establishing a focal point position would enhance the awareness program by removing the primary responsibility from a management staff that often has too little time to devote to it.

Despite the lack of a preparedness focal point, some significant actions in this area have recently occurred. Since May, 1992, four meetings have been held with CD personnel from both the local

and state level. Hurricane awareness was the topic at three of the four meetings while two of them dealt with the flash flood program. Additionally, a hurricane drill was held on June 5, 1992, in conjunction with Hurricane Awareness Week. The staffs of the WSFO and the several Hawaiian WSOs (Lihue, Kahului, and Hilo) participated along with the military. Hurricane terminology and safety rules were highlighted on NWR in association with this and at periodic intervals through the summer.

In this same line, the Director of the NWS Pacific Region is a permanent member of the Meteorological Group, United States Pacific Command (MG PACOM). This group is composed of the various military agencies having meteorological detachments in Hawaii. The CPHC Director is an alternate member of this group and participates in its monthly meetings where coordination on operational requirements among member agencies is accomplished.

The overall CD program in Hawaii is a first class operation. The state office, headquartered in the Diamond Head complex east of downtown Honolulu, has oversight of the four local organizations (i.e., Hawaii, Maui, Kauai, and Oahu). The administrative head of each is a Deputy Director of SCD responsible for his/her area. The DST was especially impressed with the Oahu CD program. The Emergency Operation Center (EOC) is superbly organized. They have assembled a well-organized package concerning hurricane awareness and have done an excellent job in training the public to turn to the EBS station in the area for instructions when the sirens sound.

The backup system for the WSFO is a potential problem area. When it appeared that the existing backup operations plan may have to be implemented, significant problems were detected. Offices that were suppose to take over for Honolulu either had inadequate data resources, insufficient expertise, or a lack of manpower to do the job. **DST Recommendation: NWS management should see that the backup program for WSFO Honolulu is reviewed and necessary modifications implemented.**

National Weather Service Office (WSO) at Lihue

Around the United States, WSOs generally have responsibility for local preparedness programs with the MIC/OIC at each office being the program leader. In this regard, WSO Lihue oversees preparedness on Kauai and Niihau.

Niihau requires a short discussion. This is a privately owned island with little contact allowed from the outside world. The DST was concerned about the impacts of the hurricane on its residents and the disaster preparedness program there. However, overflights of Niihau indicated little surface damage, and the DST was not invited to visit the island. Because the NWS does not have routine contact with the populace of Niihau, and because of the location of the island in the weaker northwest quadrant with respect to the hurricane, the DST decided not to pursue investigations into that area.

On Kauai, the OIC has met regularly with local CD officials to develop and plan emergency strategies to be enacted in the event of a hurricane, tsunami, and/or flash flood and has been instrumental in an ongoing awareness program. As a part of this program, hurricane information is broadcast periodically before and during the hurricane season on the station's telephone recording. Also, the OIC has encouraged CD officials to place information concerning

hurricane terminology and emergency actions in the local newspaper, THE GARDEN ISLAND NEWS.

Additionally, the OIC has developed a good rapport with staff of the local cable television company. **Although** most programming comes from Oahu, there is a local news program "KAUAI TONIGHT." The broadcaster is a frequent visitor to the WSO for information.

From the actions of the island's officials and public, it is obvious to the DST that the preparedness program is working.

Chapter V -- Warning Services

The public, along with state and local officials, felt that the NWS had done a **fine** job on Hurricane Iniki with adequate lead time on the watches and warnings. Some quotes received:

“The system worked - they [NWS] did the best they possibly could within their capabilities.” Malcolm Sussel, Director of Oahu Civil Defense.

“Pretty good job - everything worked well - NWS helped make a critical decision.” Frank Fasi, Mayor of Oahu.

“Best job in 15 years forecasting Hurricane **Iniki**.” Tom Batey, Administrative Assistant to the Mayor of Kauai.

“Outstanding support - they [NWS] did a 1st class job - the system worked **fine** - a model.” Donald Gransback, Chief, Training, Education of the State Office of the Director of Civil Defense.

“The advance warnings of the NWS, the preparations and broadcast instructions of Civil Defense, and other government agencies functioned well in this emergency, though later critiques are likely to show areas of improvement.” Editorial from the Honolulu Star-Bulletin.

To ensure that proper procedures are followed, Weather Service Operations Manual (**WSOM**) Chapter C-41 provides instructions for the overall warning process from preparedness activities to the issuance of the various advisories and bulletins. The Station Duty Manual (**SDM**) is prepared from **WSOM C-41** and contains **specific** details that each office must follow.

In the case of the CPHC, the WSFO Honolulu SDM (selections are included in Appendix **B**) is very **specific** in all activities from the staffing of the hurricane desk, the various issuance times of the various advisories/bulletins, local hurricane statements, a designated person to handle the media when the situation becomes critical, civil defense contacts, station supplies, electronic technicians alerted for extra coverage, when reconnaissance surveillance is required, requirements for a pre-season hurricane drill, and the need for a post-storm report. All these procedures were followed with the exception of the Hurricane Drill which was performed in early June (June **5th**), not in early May. However, the DST deemed that this was still well in advance of the peak period of the hurricane season.

WSO Lihue has explicit instructions in their SDM (see selections in Appendix **B**) on how to handle watches and warnings during an impending hurricane event. These instructions, dealing with obtaining wind/radar reports, **staffing**, civil defense/media notification, surface/upper air observations, the safety of the office and employee families, supplies, electronic technician support, the format for local hurricane statements, and post analysis of the event, are very thorough. During the Hurricane Iniki all procedures were followed in proper fashion.

The History of the Hurricane

The tropical depression that was to become Hurricane **Iniki** developed over the East Pacific Ocean near **12°N 135°W** on September 5, 1992. This is somewhat farther west and south than the initial location of most middle season storms. It was initially labeled Tropical Depression Eighteen-E. On the morning of September 6, 1992, the storm crossed **140°** west longitude into the Central Pacific (Figure 8). At 11 a.m. **HST**, CPHC was activated.

Initially, the system did not appear to be too significant and, at 5 p.m. HST on September 6, 1992, CPHC forecasted the system to dissipate within 24 hours. (Appendix A). At 8 a.m. on September 7, 1992, however, the depression reorganized. It was first upgraded to Tropical Storm Iniki at 5 p.m. that afternoon. When winds reached 75 MPH during the evening of September 8, 1992, the storm was further upgraded to Hurricane **Iniki**.

Hurricane Iniki continued on a west northwest course and passed 300 miles south of South Point on the Big Island of Hawaii. Winds near the center of the storm were estimated at 100 MPH. Up to this point, the movement of the Iniki was similar to that of other hurricanes which pass to the south of Hawaii.

However, developing weather patterns west of the Hawaiian Islands indicated that **Iniki** might not take the typical track south of Hawaii. Late on September **9, 1992**, Kauai and Hawaii State CD (**SCD**) were briefed that Iniki could take a northward turn and, if it turned soon enough, could come close to Kauai. They were also advised that, if this happened, CPHC might have to issue a hurricane warning immediately without issuing a watch. The only question was how far west the forward momentum of Iniki would carry the storm before the turn.

At 5 p.m. HST, September 10, 1992, Iniki, which had begun to slow down earlier that day, ominously turned. CPHC issued a hurricane watch for the islands of Kauai and Niihau and for other atolls **along** the Hawaiian chain northwestward to French Frigate Shoals. By **8:30** p.m. HST, Hurricane **Iniki** turned to a more northerly track and the hurricane watch for Kauai and Niihau was upgraded to a hurricane warning. The eye of **Iniki** was expected to cross Kauai late on the afternoon of September 11, 1992. In addition, a tropical storm warning was issued for Oahu and a tropical storm watch was issued for Maui County (including the islands of Maui, Molokai, and Lanai). By 11 p.m. **HST**, the tropical storm warning for Oahu was upgraded to a hurricane warning.

By 8 a.m. on September 11, 1992, when the storm center was about 180 miles south of Kauai, Iniki had reached its peak intensity and was aimed directly at Kauai. A slight turn to the northeast, detected by radar for a few hours during the early morning hours, proved only to be temporary. By 1 p.m. HST on that day, the tropical storm watch for Maui was upgraded to a tropical storm warning.

At 3 p.m. **HST**, the eye of Iniki was just south of Kauai and its forward speed had accelerated to 30 MPH. The eye crossed the western half of the island between **3:20** p.m. and 4 p.m. HST passing again over the water about **4:10** p.m. **HST**. The storm continued to move north, and by 11 p.m. HST, all warnings had been discontinued. **Iniki** was downgraded to a tropical storm at 2 a.m. HST on September 13, 1992, and became extratropical by 11 a.m. HST on that date.

The departure of **Iniki** did cause some confusion for CD officials. Although the hurricane threat had ended, tropical storm force winds generated by **Iniki** were still prevalent. Therefore, as the winds were subsiding, the hurricane warning was downgraded to a tropical storm warning and then a tropical storm watch. This led some CD officials to wonder if another storm was coming. **DST Recommendation: CPHC should re-evaluate the procedures forecasters use when downgrading tropical storm and hurricane warnings.** Perhaps it should consider adopting the policy followed by NHC by which hurricane warnings are cancelled not downgraded as the storm is departing.

The DST also noted another major procedural difference between what is done in the NHC area of responsibility and that in the Central Pacific. No probability values for the hurricane's impact area are provided by the CPHC. Forecasters at NAVWESTOCEANCEN have a requirement for and generate probability cones for their internal use. **Additionally,** CD personnel plotting the forecast tracks do sketch in rough probability cones. **D S T Recommendation: The CPHC should consider including probability cones or ellipses for all tropical cyclone marine and public advisories.**

Chapter VI -- Coordination and Dissemination

Overall, dissemination of information related to Iniki was handled in a timely manner. However, as noted in the paragraphs below, it was very labor intensive. Telephone calls and personal interviews with the media predominated. **DST Recommendation: CPHC management should consider alternatives to the current practice of having the duty CPHC forecaster answer telephone calls from users. DST Recommendation: NWS/CPHC Management should consider enhancing CPHC capabilities by a) reviewing the station's alerting procedures to see if a more efficient initial dissemination process can be developed, and b) establishing a Pacific Coordination Hotline similar to that currently serving the mainland United States.**

One obstacle to efficient dissemination is the old word processing equipment available to the CPHC staff. Numerous product corrections were required because of this equipment. The typographical errors disseminated due to the word processing problems were generally recognized and corrected by the users. **DST Recommendation: The NWS should replace the PRIME/TAB terminals used by CPHC forecasters for message composition with an up-to-date system.**

Coordination activities associated with Iniki were also quite labor intensive and sometimes required contacts with persons thousands of miles away. In general, these activities were satisfactorily accomplished although some problems were noted. Again, these will be discussed in the paragraphs below.

There are many groups involved when tropical cyclones occur in the Pacific Ocean. For the eastern Pacific, the 140° longitude line divides NHC and CPHC responsibility. USAF, USN, and NWS facilities and resources are all involved in the warning process. Because of this, it may be that the current responsibility structure is not as efficient as it could be. **DST Recommendation: The DST suggests that, taking into account the available expertise within the agencies involved, the geography of the Pacific Basin, and the government's changing fiscal climate, a detailed look at the hurricane warning structure in the Pacific, involving the USN, USAF, and NWS, be undertaken. In so doing, the DST affirms its belief in the importance of having a separate hurricane center in the Pacific.**

State Civil Defense

During Hurricane **Iniki**, the SCD coordinated operations of state and federal assets (e.g., the Hawaii National Guard and the Federal Emergency Management Agency [FEMA]) with the CD operations of each island. The SCD had little direct interface with the CPHC relying instead on the Hawaii Warning System (**HAWAS**), the inter-island version of the National Warning System (**NAWAS**) which is used across the mainland United States, and the state CD communications circuit, an inter-island data network that also relays NWS material to emergency managers throughout the islands, for its information. Most of the direct CPHC coordination was with Oahu Civil Defense (**OCD**) officials.

SCD primarily uses dedicated phone lines for information, coordination, and command and control purposes. This is supplemented and backed-up by a radio network of volunteer amateur

radio operators. When Iniki knocked out telephone lines to **SCD** operations, these operators were used until the National Guard set up a closed network of satellite radios. Although SCD has the ability to locate amateur radio operators at the **CPHC**, this was not done during Iniki.

Other communications links between the NWS and SCD operations include the only non-NWS NOM Weather Wire Service (**NWWS**) receiver in the state and the NWR. Neither was perceived by the users as a principal weather information resource, however. The NWR was knocked off the air at a very critical time from **4:35 p.m. HST** on September 11, 1992, until **3:25 p.m. HST** on September **12, 1992**. The failure was caused by a microwave outage from Diamond Head to the receiver at Mt. Kaala. When this occurred, reception statewide was lost.

Oahu Civil Defense

The OCD operational manager assessed the coordination between OCD and CPHC during Iniki as good but not ideal. OCD would like to receive severe weather warnings sooner to better facilitate public evacuation procedures. Over the last year, CPHC and OCD conducted an effective program that had personnel at each office make informational tours of the other's facilities. As a result, the CPHC and OCD staffs were acquainted and knew each other's mission so that there was an accelerated and efficient flow of information during Iniki.

The local CD **office** began tracking the storm with the CPHC almost 72 hours prior to landfall. When the CPHC issued the tropical storm warning, the OCD EOC was ready and immediately began operation. It remained in regular contact with the CPHC via the **EOC's** 50 telephone lines.

Telephone was the primary mode of communication between the EOC staff of emergency managers (mayor, police, fire, transportation, highway), their personnel, and the CPHC throughout the storm. The EOC is also equipped with **NAWAS**, **HAWAS**, and the inter-island CD communications circuit. Volunteer amateur radio operators again are used as a back-up communications system. The OCD operational manager expressed concern as to the **EOC's over-**reliance on the telephone communication network. As was shown during Iniki, it could be rendered useless during severe weather.

CD sirens that reach over 85 percent of the population of Oahu did an effective job of informing the public of the approaching storm. CD officials did not sound the sirens when the warning was first issued. They decided that it would be more effective to do so early on September 11, 1992, just before the morning rush hour. However, there was some public confusion over what to do when the sirens sounded. The standard operating procedure, advertised in many places throughout the state, calls for people to turn on their radio and listen for instructions. Some people, however, especially those in outlying areas, took the siren as a signal to move to the evacuation shelters.

Another concern is that the siren system cannot be turned on selectively to separate parts of the island. All persons are warned at the same time even though the timing or magnitude of the threat may be quite diverse. OCD is looking into procuring a selective siren system.

Honolulu Media

The media hub of Hawaii is located in the city of Honolulu, Oahu. There are **32** radio stations, six television stations and two daily newspapers serving the island of Oahu. Many of the Honolulu-based media serve as the primary source of news and weather information for the people of Kauai as well. **Lihue**, the main city of Kauai, is about 100 miles northwest of Honolulu.

Unlike most of the United States mainland, weather on the Hawaiian Islands varies only slightly from day to day. As such, weather reports generally receive low priority. As one newscaster put it, "Weather is only a story if it is the headline story."

In general, coordination with the CPHC was described by the media as "timely and accurate" and "cooperative in a time of increased burden." Most media felt the CPHC provided adequate warnings that allowed them to "gear up" for the storm. However, initial dissemination procedures for warnings issued by the CPHC need to be reviewed. The DST was amazed at the long telephone call list (included in Appendix **B**) used by the staff.

Throughout the area, the media generally rely on the Associated Press (**AP**) wire service as the primary source of weather information. The staff at one of Honolulu's daily newspapers, though, admitted to picking up **Iniki's** initial weather advisories through their police radio scanner. Neither the NWWS nor the NWR is used by any of the media. For NWWS, cost is a major factor. However, many were surprised to learn of the **NWR's** low cost and plan to invest in a receiver.

Although staff at one newspaper stated that they consider some of the weather data hard to interpret, most were content with the wire information they were receiving until their **AP** receivers were lost due to high winds. This occurred early Friday afternoon as the fury of the storm was approaching. Subsequently, the media relied solely on their only other conduit of information from NWS--the telephone. Several media personnel asked that a key word be placed on the **AP** wire that triggers the lights and alarm on the printer to better draw attention to the latest incoming weather bulletin.

The WSFO had given area media and emergency managers several unlisted telephone numbers to use for contact and coordination. The media used the unlisted numbers but, in some instances, complained that they had a hard time getting through the busy lines. The DST suggests that designating one line as a media hotline, restricted only to the media, be contemplated.

During normal operations, the WSFO receives several media queries a day. During **Iniki**, CPHC personnel fielded constant calls from media and emergency managers around the clock. This substantially took them away from their normally assigned duties. The office does not have the manpower to dedicate a person to answering these calls. As a result, calls were answered by anyone who had a free moment. Although consistent information appeared to have been given out in this situation, a single point of contact would produce a much greater surety of this. The DST suggests that CPHC be staffed during such circumstances so that, similar to what is now done at the NHC, a single spokesperson can field media and CD questions. Perhaps staff members from Pacific Region headquarters can be used.

The main NWR transmitter for Oahu is on Mt. Kaala. A relay damaged by high winds put the transmitter off the air during the afternoon of September 11, 1992. Because this transmitter also drives transmitters on Kauai, Maui, and Hawaii, this damage effectively eliminated all NWR coverage during the height of the storm, and for about 48 hours following, over all of the impacted area. **DST Recommendation: The NWS should review the current NWR system to see if an alternative can be arranged whereby all NWR transmitters in Hawaii function independently.**

None of Honolulu's three affiliate television stations employs a meteorologist. One station has a full length weather report given by a "weather specialist." He provided full coverage during the storm build up. The other stations rely on an anchor person to read the weather forecast. Station managers implied that the hiring of a full-time meteorologist would not be cost effective considering that the weather is relatively stable. When the storm became the major news item, these stations used in-house reporters for coverage. Again, the telephone was the major vehicle for keeping informed of CPHC issuances and information.

Two of the stations have each recently acquired a WSI Corporation weather satellite imaging system. One station was having the equipment installed the week Iniki hit and had a WSI technician on site during the storm to help inexperienced staff members interpret the data and images. Both stations stated that they call the WSFO at least daily for help in deciphering the WSI maps they receive. The weather specialist from one television station said he was "trained" by the WSFO staff over a period of several years to be able to interpret the NWS and WSI data and charts. That station plans to have their new weather personality "trained" in the same manner.

One of Honolulu's radio stations sent a member of their staff equipped with a cellular telephone to the CPHC during the storm. This gave that station instant telephone contact between the CPHC and the radio news room while other media remained frustrated by busy lines. If other media had done the same, the forecast section of the CPHC would have been grossly overcrowded. The DST suggests that CPHC management consider establishing a media briefing room and providing frequent (e.g., hourly), regularly scheduled briefings during future storms. Further, the media needs to be educated concerning the capabilities and time schedules of the CPHC so they are aware of its limitations.

Several of the media expressed concern over the loss of the Pacific GOES weather satellite and the subsequent repositioning of the other GOES. They wonder whether that "quick fix" serves the interests of the Hawaiian public.

Naval Western Oceanography Center (NAVWESTOCEANCEN)

NAVWESTOCEANCEN provides forecasts for the USN's Pacific Region and is responsible to the Pacific Fleet Commander for the safety of all ships located in Pearl Harbor. As does the CPHC, NAVWESTOCEANCEN receives unclassified weather information from the NWS, data from weather recon flights, and data from the Hickam AFB, Hawaii, radar. It also obtains classified weather data from ships at sea not available to the CPHC and polar satellite data forwarded from FNOC. Using this information, NAVWESTOCEANCEN tracks tropical storms on its own.

Because of its capabilities and mission requirements, the USN has need for long warning lead times. For example, unique to the USN port in Pearl Harbor, there is one channel of access in and out flanked by shallow areas. This creates extreme navigating difficulties for ships. Cross winds of 35 MPH (30 KT) or more play havoc with in-channel steerage. Winds of 58 MPH (50 KT) or more directly onshore can create 20 to 25 foot waves at the shallows near the harbor's entrance which can swamp inhabited parts of the Pearl Harbor complex. Therefore, NAVWESTOCEANCEN needs a longer lead time for taking action so that they can sortie ships out of the harbor. NAVWESTOCEANCEN says that it requires 48-hours to safely secure Navy assets at Pearl Harbor. **DST Recommendation: The CPHC should elicit from users critical wind and sea height values and should highlight these in appropriate tropical cyclone products.**

The only communication link between NAVWESTOCEANCEN and CPHC is land line telephone. NAVWESTOCEANCEN is not hooked to the state CD communications circuit and sees no need to be. During Iniki, NAVWESTOCEANCEN knew of only one unlisted number over which to contact the CPHC. Staff said it took about a half hour to reach CPHC on it. NAVWESTOCEANCEN requested that a hotline be established between the two offices.

The DST believes that a more comprehensive communications system, something like the hurricane hotline in place along the Atlantic Coast, would add significantly to the interagency coordination and recommends that this be considered. The DST also notes that when, due to communication's failures in Honolulu, NAVWESTOCEANCEN turned its duties over to the JTWC in Guam, coordination links between that agency and CPHC were even more tenuous.

Although both agencies were aware of the storm earlier in the week, coordination between NAVWESTOCEANCEN and CPHC first started on September 9, 1992. By 5 p.m. HST on September 10, 1992, NAVWESTOCEANCEN had passed the critical **48-hour** point and recommended that the USN sortie all ships out of Pearl Harbor. Prior to this recommendation, NAVWESTOCEANCEN and CPHC had agreed that a watch would be issued by CPHC at the next scheduled update. It is the usual practice that NAVWESTOCEANCEN will follow the CPHC lead on tropical storm products. This is done because CPHC has the responsibility for issuing tropical cyclone warnings within the central Pacific and to minimize any confusion due to the large military population in Oahu. However, the time criticality of the situation to the USN led them to sortie the ships, an action that increased phone calls from the civilian population to the CPHC.

NAVWESTOCEANCEN staff expressed frustration about two WSFO forecast amendments that occurred on September 11, 1992 relative to the course of the storm. The ramifications of one of these amendments was significant in that the USN had to decide about evacuation of certain coastal areas within its Pearl Harbor complex.

Situations, such as those occurring in Iniki, require close coordination and cooperation between the two groups - CPHC and NAVWESTOCEANCEN. **DST Recommendation: Better rapport needs to be developed between CPHC and NAVWESTOCEANCEN.** Using the existing mechanisms (e.g., the monthly MG PACOM meetings), the DST believes that efforts to strengthen the coordination schemes already in place should continue. A review of communications between the two groups during Iniki and possible areas for closer collaboration should be undertaken.

Coast Guard

There are two principal methods used in Hawaii for alerting mariners at sea of approaching storms. The first is the NWR. To quote one of the state CD officials, "All boaters in Hawaii have NWR receivers and use them." The NWR broadcasts included all appropriate marine products and, until the transmitter went down, kept mariners informed.

The second method is accomplished by the USCG COMSTA located in north central Oahu. The COMSTA is essentially a pass-through station whereby various marine oriented products are received and broadcast to mariners across the entire Pacific Ocean. High seas, offshore, and coastal waters forecasts issued by WSFO Honolulu are broadcast on a scheduled basis over several radio frequencies.

One problem was noted here. The NWS and the USCG have established a list of products that the COMSTA will broadcast. The tropical cyclone marine advisory is not one of these. According to NAVWESTOCEANCEN, however, this is the most important product they receive from the CPHC. Because of the value of the product to this and other users, the DST believes that it ought to be included in the USCG COMSTA schedule. **DST Recommendation: The NWS should review the list of products broadcast by the USCG COMSTA in Hawaii. Tropical cyclone marine advisories should be added to the list.**

As with their land-based counterparts, there is every indication to the DST that all mariners were aware of the approaching storm well in advance of its arrival.

Kauai Media

The WSO in Lihue deals directly with the media on Kauai either via the telephone or by site visits to the WSO office itself. Kauai is served by several AM and FM radio stations spread throughout the island. Two cable television operations split service to about **one-half** of the island's residents. Residents receive daily news and weather from Kauai radio stations or the Honolulu-based television stations fed through the two cable companies. In addition, the Kauai public has available both a daily and a weekly newspaper.

On the leeward (south and west) sides of Kauai, an hour long public access cable program includes a local Kauai weather forecast. This airs on weekdays three times a day. The on-air personality visits WSO Lihue each day an hour before the show goes on the air to collect the forecast. The WSO alerted him as early as September 7, 1992, of the storm's track toward the islands. He remained in contact with the WSO via the telephone and, at 10 p.m. HST on September 10, 1992, programming was interrupted to inform the public of the hurricane warning issuance. The cable TV station went off the air the afternoon of September 11, 1992, with no power and with wind damage to their antenna. Although he visits the WSO each day and owns a **NWR**, the on-air personality said he heard unofficial word that a hurricane warning would be issued on his police radio before the WSO actually did.

Kauai Civil Defense

WSO Lihue maintains close ties with Kauai's CD organization. CD authorities have installed radio equipment in the WSO that is generally capable of allowing contact even if telephone lines go down. Unfortunately, Iniki destroyed the antenna on the Kauai CD EOC so that this link was unusable during most of the storm and its aftermath.

On September 7, 1992, the OIC of the WSO alerted CD officials and radio station KONG, the Emergency Broadcast System radio station for Kauai, of the impending storm. KONG does not have a NWR nor a NWWS drop and normally receives weather information over the AP wire. They rely on land line telephone communications with WSO. As an aside, the DST found it interesting that the NWWS receiver located at the WSO was the only communications system that remained operational at that station throughout the storm.

The CD organization also has a drop on the **HAWAS** and the CD communications circuit. This direct voice contact with CPHC is not available to WSO Lihue. Thus, the CD knew about the hurricane warning and began dissemination procedures even before the WSO did.

Information updates were provided over these various systems and through personal contacts until the storm hit. When that occurred, **all** links, including the radio links with the Kauai EOC, were severed.

Between CPHC and WSO Lihue

Telephone communications provide the only coordination link between the CPHC and any of the Hawaiian **WSOs**. Besides telephones, this includes the CD communications circuit and the LABS circuit by which weather products and observations are transmitted and received. NWWS drops do allow **WSOs** to receive satellite relayed products, but do not allow local transmissions.

Routine communications between Lihue and CPHC remained intact until **Iniki** hit. Once the telephone system was destroyed, the CPHC had no direct contact with Lihue for over 3 days. A HAM radio message was forwarded on the morning of September **12, 1992**, 12 hours after the storm, informing CPHC and the NWS Pacific Region headquarters as to the status of facilities and personnel at Lihue.

Between CPHC and the NWS Pacific Region Headquarters

The NWS Pacific Region opened and staffed a hurricane watch office coincident with the issuance of the hurricane watch. This was located in the regional headquarters building in downtown Honolulu. The communications and backup power capabilities of this facility allowed the regional representative to monitor ongoing activities and provide important coordination between the **CPHC**, the Pacific Region, and the NWS headquarters, and with the Commander of the 14th Coast Guard District, **colocated** with the Regional facility.

Chapter VII -- User Response

In the words of an official from the Hawaii office of the Director of Civil Defense, the response of everyone to Hurricane **Iniki** was 'textbook.' From the view of the DST, this statement was quite accurate. As shown in Figure 21, the spirit of the people continued to be high even during the cleanup.

There are generally four primary users for CPHC products. These include the media, the state and local CD agencies, the public (including mariners), and the military.

The Media

When it became obvious that **Iniki** would hit Hawaii, the media, especially that on Oahu and Kauai, turned its full attention to the storm. In response to early statements from the NWS, the radio and television alerts were being given on Wednesday evening, 48 hours before the storm hit. On Thursday evening, when the western islands were placed under a hurricane watch, some of these stations began 24 hour coverage dedicated solely to the storm.

When the sirens were sounded on Friday morning, the radio stations, using NWS statements and direct telephone contact with NWS staff, provided a steady stream of information by which the public was alerted to the location, movement, and intensity of the storm. The media also disseminated safety information from the state and local CD authorities.

The AP network, the major conduit for providing NWS products to the media, was interrupted early Friday afternoon. When this occurred, the telephone contacts became the only source of information to the media. The radio stations and the local television station on Kauai were off the air soon thereafter, the result of lost power and antenna damage. However, Oahu media continued providing Kauai residents with the latest information available.

The response of the media to the storm was excellent. The reliance on telephone contacts, however, should be reviewed. During times of intense workload, these contacts may become **difficult** and may actually become a detriment to the overall dissemination of vital information. It may be that the NWS should more aggressively encourage the local media to install and use the NWR and NWWS. Currently, these are not important sources for distributing weather information in Hawaii to the broadcasters.

Civil Defense

Early (September 8, 1992) discussions between the NWS and state and local CD authorities allowed an extremely well organized system to get ahead and stay ahead of the approaching hazard. Emergency service operations were initiated well ahead of time. The onset of sustained winds of 40 MPH, the defined lower limit of gale force winds, are a milestone for CD officials. They plan to have all evacuations completed by that time. By noon on Friday, about the time this speed was reached, most evacuation plans had been completed.



Figure 21. Aftermath of Hurricane Iniki in Princeville. (Photograph Courtesy of William Alder)

The state CD circuit distributed the latest weather information to all officials. The breakdown of this circuit, when communications links were interrupted, came after most preparations had already been made. However, a more secure system, not relying on telephone communications, needs to be investigated.

The only disparaging comments heard were on northern Kauai where residents wished that the sirens could have been sounded when the warning was issued on Thursday night, the night before Iniki hit. They believed that this may have given residents more time to prepare for the storm.

The sirens are a definite key to alerting the public. Throughout the survey area, the DST heard time and again of the importance the general populace places on this alert method. When the sirens sound, the public believes that something bad is soon to hit. The sirens were sounded at about 5:30 a.m. HST September 11, 1992, on both Oahu and Kauai. This was done after coordination between state, local, and Federal officials on the islands. It was done at that time to ensure that the populace would be alerted as they were getting up and preparing for the day; before people left home for work and school. The sirens were again sounded about 4 hours later to reinforce the warning.

Public

In many past surveys, the reaction of the public to severe weather episodes has been less than desirable. However, in the case of Iniki, this was not the case. The DST was overwhelmingly impressed by the way the populace responded. In many cases, we had a difficult time in determining what had occurred (e.g., time and duration of eye passage and weather conditions during the eye passage) because everyone had evacuated an area and gone to designated shelters. The low number of deaths and injuries attributable to Iniki can be directly related to the outstanding preparation by the NWS in Hawaii, the Hawaiian CD system, and by the response of the media and the public.

Regarding shelters, the DST saw several examples of these that were damaged. The skylight in one hotel ballroom was ripped off the roof. The roof of a gym was blown off. **DST Recommendation: The NWS should encourage the State of Hawaii to review its criteria for disaster shelters to make them more appropriate for hurricanes. Expanded criteria may exclude facilities where the room ceiling is also a roof and rooms with windows from being a shelter.** For such storms, small interior rooms or hallways where people are not concentrated generally offer more protection.

The responsiveness seems to have been greatly helped by the recent experiences of people in Florida and Louisiana associated with Hurricane Andrew. The Hawaiian public had the facts of just how destructive a Category 3 or Category 4 hurricane can be through video tapes of Andrew's path through Dade County in south Florida about three weeks prior to **Iniki**. The comparisons between Iniki and Andrew were very effective.

Also, Hurricane Iwa, that caused widespread destruction on both Kauai and Oahu 10 years ago (November 1982), was still clearly remembered. The winds with Hurricane Iniki were much stronger than Hurricane Iwa, but with Iwa, the radius of strong winds was much greater. In this regard, the overwhelming consensus was that the NWS learned a great deal from Iwa and performed much better during **Iniki**.

Kauai

When the sirens were sounded, most of the people on Kauai did exactly as they were supposed to do. They began gathering supplies or heading for designated shelters. **Although** sirens do not cover the entire island, neighbors and local emergency officials made sure that others were aware of the storm. The DST heard tales of condominium and apartment managers going from door to door to ensure their people were making preparations. One manager worked so long in getting his people out that, when the storm hit, it was too late for him to evacuate. He rode it out in his interior bathroom watching the roof and walls of his home blow away.

There were also stories about motorists honking their horns to spread the warning in places where the sirens could not be heard. The DST could find no one who had not heard about the storm; everyone knew what actions they should have taken. The town of Lihue, the largest community on the island, was described as a ghost town by 11:30 a.m., about 4 hours before the eye of the storm reached land. A few people in Kauai did refuse to leave their homes. However, in every case they knew about the storm and were aware of the dangers involved.

The sirens hold great importance especially to those on Kauai. The impression given to the DST was that warnings are largely ignored until the sirens are sounded. In this case, even though the warning was issued the previous evening for Kauai (8:30 p.m. HST), actions were not generally taken by the public until the CD people sounded the sirens at about 5:30 a.m. HST on September 11, 1992. This may be a cause of concern for local officials. **DST Recommendation: The NWS, in coordination with Hawaiian CD officials and with the help of the media, should conduct a public awareness campaign to educate the public on the importance of watches and warnings not accompanied by sirens.**

Oahu

On Oahu, the public response was also excellent with evacuation shelters beginning to fill up during the morning hours of September 11, 1992. Local officials delayed sounding the sirens the night before reasoning that they would give the alarm as people were getting up in the morning before they could leave. Coordination between local and other officials ensured that only the most critical employees reported to work. Schools and most businesses were closed.

The state CD should investigate differences in perception held by residents in various parts of Hawaii as to what is meant when the sirens are activated. In Oahu, residents generally seem to understand that it means to turn on the local radio station. In Kauai, however, it generally is understood to mean evacuate.

Navy (USN).

As noted above, the mission of the USN requires somewhat longer lead times than is required of the other users. Usually, the coordination discussions between NAVWESTOCEANCEN and the CPHC allows these requirements to be taken into account. However, the DST believes that it is very important for the NWS to be aware of these requirements, and those of other users, and, when appropriate, highlight them in CPHC issuances. This would focus attention on the critical values and assist decision makers during such hectic times.

Discussions with the NAVWESTOCEANCEN staff indicated to the DST one area where knowledge of such requirements could apply. During the afternoon hours of Wednesday, September 9, 1992, the possibility that Iniki would turn north and adversely impact the USN fleet docked at Pearl Harbor was of great concern to the commander of NAVWESTOCEANCEN. NAVWESTOCEANCEN personnel and CPHC forecasters seemed to agree that Friday afternoon was the most likely time of impact if the storm did turn north. Therefore, Wednesday afternoon, 48 hours before the projected time of the storm, was a critical decision point for the USN. NAVWESTOCEANCEN recommended that preparatory actions be taken. On Thursday, September 10, 1992, the USN again reached a critical decision point, 24 hours before projected storm time, and NAVWESTOCEANCEN recommended that warning related activities be initiated. Both recommendations were made after consultations with the CPHC. Because of the large number of Navy people involved and their visibility to the local community, these preparations and activities, preceding a watch or warning issuance, could have caused some public confusion. In the case of Iniki, the increase in public telephone calls to the CPHC indicates that this indeed may have happened.

The nighttime update accomplished early Friday morning scared the NAVWESTOCEANCEN officials. Apparently, this change was made with minimal coordination between CPHC and the USN. It resulted in actions taken by the USN that caused some evacuations of USN facilities on Governors Point and caused discussions about evacuating Ford Island. Although the storm stayed well to the west and USN facilities in Oahu were only minimally impacted, the problems highlighted by **Iniki** between the NWS and the USN need to be examined and rectified.

APPENDIX A

SAMPLES OF ADVISORIES AND STATEMENTS ISSUED IN CONJUNCTION WITH HURRICANE INIKI

A-I CPHC ADVISORIES

WTPA33 PHNL 062100

BULLETIN

TROPICAL DEPRESSION **18-E** ADVISORY NUMBER 5

NATIONAL WEATHER SERVICE HONOLULU HI

11 AM HST SUN SEP 06 1992

...**TROPICAL** DEPRESSION **18-E** ENTERS THE CENTRAL
PACIFIC FROM THE EASTERN PACIFIC...

AT **11AM HST**...**THE** CENTER OF TROPICAL
DEPRESSION **18-E** WAS ESTIMATED TO BE 1060 MILES
SOUTH SOUTHEAST OF **HILO** NEAR LATITUDE 12.3
NORTH LONGITUDE 140.7 WEST AND MOVING TOWARD
THE WEST NORTHWEST AT 16 MPH.

STRONGEST SUSTAINED WINDS ARE ESTIMATED TO
BE 35 MPH NEAR THE CENTER.

IT IS TOO EARLY TO BE CERTAIN AT THIS TIME.
HOWEVER...**THE** TROPICAL DEPRESSION IS EXPECTED
TO CONTINUE WEST NORTHWEST AND WEAKEN
DURING THE NEXT 24 HOURS.

REPEATING THE **11PM** POSITION 12.3 NORTH 140.7
WEST.

THE NEXT REGULAR ADVISORY ON TROPICAL STORM
MADELINE WILL BE ISSUED BY THE CENTRAL PACIFIC
HURRICANE CENTER AT 5 PM HST.

HABLUTZEL NATIONAL WEATHER SERVICE
HONOLULU

.....
WTPA33 PHNL 070300

BULLETIN

TROPICAL DEPRESSION **18-E** ADVISORY NUMBER 6

NATIONAL WEATHER SERVICE HONOLULU HI

5 PM HST SUN SEP 06 1992

...**TROPICAL** DEPRESSION **18-E** DISSIPATING...

AT 5 PM **HST**...**THE** CENTER OF TROPICAL DEPRESSION
18-E WAS ESTIMATED TO BE 1040 MILES EAST
SOUTHEAST OF **HILO** NEAR LATITUDE 12.7 NORTH
LONGITUDE 141.7 WEST AND MOVING TOWARD THE
WEST NORTHWEST AT 14 MPH.

STRONGEST SUSTAINED WINDS ARE ESTIMATED TO
BE 30 MPH NEAR THE CENTER.

THE TROPICAL DEPRESSION IS EXPECTED TO
CONTINUE WEST NORTHWEST AND DISSIPATE DURING
THE NEXT 24 HOURS.

REPEATING THE 5 PM POSITION 12.7 NORTH 141.7
WEST.

THIS WILL BE THE FINAL ADVISORY ON TROPICAL
DEPRESSION **18-E** UNLESS REGENERATION OCCURS.

HABLUTZEL NATIONAL WEATHER SERVICE
HONOLULU

.....
WTPA33 PHNL 072100

BULLETIN

TROPICAL DEPRESSION **18-E** ADVISORY NUMBER 7

NATIONAL WEATHER SERVICE HONOLULU HI

11 AM HST MON SEP 07 1992

...**TROPICAL** DEPRESSION **18-E** REGENERATING...

AT 1 **1AM HST**...**THE** CENTER OF TROPICAL
DEPRESSION **18-E** WAS ESTIMATED TO BE 970
STATUTE MILES EAST SOUTHEAST OF **HILO** NEAR
LATITUDE **11.4** NORTH LONGITUDE 143.4 WEST AND
MOVING TOWARD THE WEST AT 9 MPH.

STRONGEST SUSTAINED WINDS ARE ESTIMATED TO
BE 35 MPH NEAR THE CENTER.

THE TROPICAL DEPRESSION IS EXPECTED TO
CONTINUE TO MOVE TOWARDS THE **WEST THEN** TURN
TOWARDS THE WEST NORTHWEST AND SLOWLY
INTENSIFY.

REPEATING THE **11AM** POSITION 11.4 NORTH 143.4
WEST.

THE NEXT REGULAR ADVISORY ON TROPICAL
DEPRESSION **18-E** WILL BE ISSUED BY THE CENTRAL
PACIFIC HURRICANE CENTER AT 5 PM HST.

SASAKI NATIONAL WEATHER SERVICE HONOLULU

WTPA33 PHNL 080300
BULLETIN
TROPICAL STORM INIKI ADVISORY NUMBER 8
NATIONAL WEATHER SERVICE HONOLULU HI
5 PM HST MON SEP 07 1992

...**TROPICAL** STORM INIKI UPGRADED FROM TROPICAL
DEPRESSION EIGHTEEN-E...

AT 5 PM HST...THE CENTER OF TROPICAL STORM INIKI
WAS ESTIMATED TO BE 840 STATUTE MILES
SOUTHEAST OF HILO NEAR LATITUDE 12.1 NORTH
LONGITUDE 145.0 WEST AND MOVING TOWARD THE
WEST AT 10 MPH.

STRONGEST SUSTAINED WINDS ARE ESTIMATED TO
BE 40 MPH NEAR THE CENTER.

TROPICAL STORM INIKI IS EXPECTED TO CONTINUE TO
MOVE TOWARDS THE WEST THEN TURN TOWARDS
THE WESTNORTHWEST AND SLOWLY INTENSIFY. INIKI
IS TOO FAR AWAY AT THIS TIME TO BE AN IMMEDIATE
THREAT TO THE HAWAIIAN ISLANDS.

REPEATING THE 5 PM HST POSITION 12.1 NORTH 145.0
WEST.

THE NEXT REGULAR ADVISORY ON TROPICAL STORM
INIKI WILL BE ISSUED BY THE CENTRAL PACIFIC
HURRICANE CENTER AT 11 PM HST.

SASAKI NATIONAL WEATHER SERVICE HONOLULU

WTPA33 PHNL 089900
BULLETIN
TROPICAL STORM INIKI ADVISORY NUMBER 9
NATIONAL WEATHER SERVICE HONOLULU HI
11 PM HST MON SEP 07 1992

...**TROPICAL** STORM MOVING WESTWARD AND
CONTINUES TO INTENSIFY...

AT 11 PM HST...THE CENTER OF TROPICAL STORM
INIKI WAS ESTIMATED TO BE 745 MILES SOUTHEAST
OF HILO NEAR LATITUDE 12.3 NORTH LONGITUDE 148.5
WEST AND MOVING TOWARD THE WEST AT 14 MPH.

STRONGEST SUSTAINED WINDS ARE ESTIMATED TO
BE 45 MPH NEAR THE CENTER.

TROPICAL STORM INIKI...**AS** OBSERVED BY
SATELLITE...IS BECOMING MORE ORGANIZED AND
CONTINUES TO INTENSIFY. INIKI IS FORECAST TO
MOVE TOWARD THE WEST NORTHWEST AND
INTENSIFY SLOWLY.

THE STORM IS PRESENTLY TOO FAR AWAY TO BE AN

IMMEDIATE **THREAT** TO THE HAWAIIAN ISLANDS...**BUT**
WILL BE CLOSELY MONITORED FOR SUDDEN
CHANGES IN SPEED AND DIRECTION OF MOVEMENT
AND INTENSIFICATION.

REPEATING THE 11 PM HST POSITION 12.3 NORTH
148.5 WEST.

THE NEXT REGULAR ADVISORY ON TROPICAL STORM
INIKI WILL BE ISSUED BY THE CENTRAL PACIFIC
HURRICANE CENTER AT 5 AM HST.

CHUN NATIONAL WEATHER SERVICE HONOLULU

WTPA33 PHNL 081500
BULLETIN
TROPICAL STORM INIKI ADVISORY NUMBER 10
NATIONAL WEATHER SERVICE HONOLULU HI
5 AM HST TUE SEP 08 1992

...**TROPICAL** STORM INIKI CONTINUES MOVING
TOWARD THE WEST...

AT 5 AM HST...THE CENTER OF TROPICAL STORM INIKI
WAS ESTIMATED TO BE 665 MILES SOUTHEAST OF
HILO NEAR LATITUDE 12.3 NORTH LONGITUDE 148.4
WEST AND MOVING TOWARD THE WEST AT 17 MPH.

STRONGEST SUSTAINED WINDS ARE ESTIMATED TO
BE 45 MPH NEAR THE CENTER.

TROPICAL STORM INIKI IS FORECAST TO MOVE
TOWARD THE WEST NORTHWEST AND SLOWLY
INTENSIFY DURING THE NEXT 24 HOURS.

THE STORM IS PRESENTLY TOO FAR AWAY TO BE AN
IMMEDIATE **THREAT** TO THE HAWAIIAN ISLANDS...**BUT**
IT WILL BE CLOSELY MONITORED FOR SUDDEN
CHANGES IN SPEED AND DIRECTION OF MOVEMENT
AND INTENSIFICATION. ON
ITS PRESENT **COURSE**...THE CENTER OF THE SYSTEM
WILL PASS 300 MILES SOUTH OF THE BIG ISLAND
WITHIN 48 HOURS.

REPEATING THE 5 AM HST POSITION 12.3 NORTH
148.4 WEST.

THE NEXT REGULAR ADVISORY ON TROPICAL STORM
INIKI WILL BE ISSUED BY THE CENTRAL PACIFIC
HURRICANE CENTER AT 11 AM HST.

HABLUTZEL NATIONAL WEATHER SERVICE
HONOLULU

WTPA33 PHNL 082100
BULLETIN
TROPICAL STORM INIKI ADVISORY NUMBER
11
NATIONAL WEATHER SERVICE HONOLULU HI
11 AM HST TUE SEP 08 1992

...**TROPICAL** STORM INIKI CONTINUES
MOVING TOWARD THE WEST AND
INTENSIFIES...

AT 11 AM HST...THE CENTER OF TROPICAL
STORM INIKI WAS ESTIMATED TO BE 600
MILES SOUTHEAST OF HILO NEAR LATITUDE
12.4 NORTH LONGITUDE 149.9 WEST AND
MOVING TOWARD THE WEST AT 17 MPH.

STRONGEST SUSTAINED WINDS ARE
ESTIMATED TO BE 60 MPH WITH GUSTS AS
HIGH AS 75 MPH NEAR THE CENTER.

TROPICAL STORM INIKI IS FORECAST TO
MOVE TOWARD THE WEST NORTHWEST
AND SLOWLY INTENSIFY DURING THE NEXT
24 HOURS.

THE STORM IS PRESENTLY TOO FAR AWAY
TO BE AN IMMEDIATE THREAT TO THE
HAWAIIAN **ISLANDS...BUT** IT WILL BE
CLOSELY MONITORED FOR SUDDEN
CHANGES IN SPEED... DIRECTION OF
MOVEMENT...AND INTENSIFICATION. ON ITS
PRESENT **COURSE...THE** CENTER OF THE
SYSTEM WILL PASS 350 MILES SOUTH OF
THE BIG ISLAND WITHIN 48 HOURS.

REPEATING THE 11 AM HST POSITION 12.4
NORTH 149.9 WEST.

THE NEXT REGULAR ADVISORY ON
TROPICAL STORM INIKI WILL BE ISSUED BY
THE CENTRAL PACIFIC HURRICANE CENTER
AT 5 PM HST.

HABLUTZEL NATIONAL WEATHER SERVICE
HONOLULU

WTPA33 PHNL 090300
BULLETIN
TROPICAL STORM INIKI ADVISORY NUMBER
12
NATIONAL WEATHER SERVICE HONOLULU HI
5 PM HST TUE SEP 08 1992

...**TROPICAL** STORM INIKI CONTINUES TO
STRENGTHEN AS IT MOVES TO THE WEST...

AT 5 PM HST...**THE** CENTER OF TROPICAL
STORM INIKI WAS ESTIMATED TO BE 570
MILES **SOUTHEAST OF HILO** NEAR LATITUDE
12.4 NORTH LONGITUDE **150.8** WEST AND
MOVING TOWARD THE WEST AT 16 MPH.

STRONGEST SUSTAINED WINDS ARE
ESTIMATED TO BE 70 MPH WITH GUSTS AS
HIGH AS 85 MPH NEAR THE CENTER.

TROPICAL STORM INIKI IS FORECAST TO
MOVE TOWARD THE WEST NORTHWEST
AND INTENSIFY DURING THE NEXT 24
HOURS.

THE STORM IS PRESENTLY TOO FAR AWAY
TO BE AN IMMEDIATE THREAT TO THE
HAWAIIAN **ISLANDS...BUT** IT WILL BE
CLOSELY MONITORED FOR SUDDEN
CHANGES IN **SPEED...DIRECTION** OF
MOVEMENT...AND INTENSIFICATION. ON ITS
PRESENT **COURSE...THE** CENTER OF INIKI
WILL PASS 400 MILES SOUTH OF THE BIG
ISLAND IN ABOUT 24 HOURS.

REPEATING THE 5 PM HST POSITION 12.4
NORTH 150.8 WEST.

THE NEXT REGULAR ADVISORY ON
TROPICAL STORM INIKI WILL BE ISSUED BY
THE CENTRAL PACIFIC HURRICANE CENTER
AT 11 PM HST.

CRAIG NATIONAL WEATHER SERVICE
HONOLULU

WTPA33 PHNL 090900
BULLETIN
HURRICANE **INIKI** ADVISORY NUMBER **13**
NATIONAL WEATHER SERVICE HONOLULU HI
11 PM HST TUE SEP **08** 1992

...**HURRICANE** INIKI UPGRADED FROM TROPICAL STORM...

AT 11 PM **HST...THE** CENTER OF HURRICANE INIKI WAS ESTIMATED TO BE 470 MILES SOUTH SOUTHEAST OF **HILO** NEAR LATITUDE 13.2 NORTH LONGITUDE 152.1 WEST AND MOVING TOWARD THE WEST NORTHWEST AT 14 MPH.

STRONGEST SUSTAINED WINDS ARE ESTIMATED TO BE 75 MPH WITH GUSTS AS HIGH AS 90 MPH NEAR THE CENTER.

INIKI IS A MINIMAL HURRICANE BUT IS FORECAST TO INTENSIFY FURTHER DURING THE NEXT 24 HOURS AND MOVE ON A WEST NORTHWEST COURSE.

ON ITS **PRESENT TRACK...INIKI** THE CLOSEST POINT OF APPROACH IS FORECAST TO BE 240 MILES SOUTH OF SOUTH POINT ON THE BIG **ISLAND** OF HAWAII ABOUT MIDNIGHT WEDNESDAY. **REMEMBER...THE** EFFECTS OF HURRICANES CAN BE FAR **REACHING...SO** DO NOT CONCENTRATE ON THE POSITION OF THE CENTER ALONE.

HURRICANE INIKI WILL BE CLOSELY MONITORED FOR SUDDEN CHANGES IN SPEED... DIRECTION OF **MOVEMENT...AND** INTENSIFICATION. INTERMEDIATE ADVISORIES WILL BE ISSUED IF SIGNIFICANT CHANGES OCCUR.

REPEATING THE 11 PM HST POSITION 13.2 NORTH 152.1 WEST.

THE NEXT REGULAR ADVISORY ON TROPICAL STORM INIKI WILL BE ISSUED BY THE CENTRAL PACIFIC HURRICANE CENTER AT **5** AM HST WEDNESDAY.

CHUN NATIONAL WEATHER SERVICE HONOLULU

WTPA33 PHNL 091500
BULLETIN
HURRICANE INIKI ADVISORY NUMBER **14**
NATIONAL WEATHER SERVICE HONOLULU HI
5 AM HST WED SEP 09 1992

...**HURRICANE** INIKI CONTINUES MOVING TOWARD THE WEST NORTHWEST...

...A HIGH SURF ADVISORY IS EFFECTIVE AT 6 AM HST FOR SOUTH FACING SHORES OF THE BIG ISLAND OF HAWAII...

AT **5** AM **HST...THE** CENTER OF HURRICANE INIKI WAS ESTIMATED TO BE 390 MILES SOUTH SOUTHEAST OF **HILO** NEAR LATITUDE 13.4 NORTH LONGITUDE 153.6 WEST AND MOVING TOWARD THE WEST NORTHWEST AT 16 MPH.

STRONGEST SUSTAINED WINDS ARE ESTIMATED TO BE 75 MPH WITH GUSTS AS HIGH AS 90 MPH NEAR THE CENTER.

INIKI IS A MINIMAL HURRICANE BUT IS FORECAST TO INTENSIFY FURTHER DURING THE NEXT 24 HOURS AND MOVE ON A WEST NORTHWEST COURSE.

ON ITS PRESENT **TRACK...INIKI** IS FORECAST TO BE APPROXIMATELY 350 MILES SOUTH OF SOUTH POINT ON THE BIG ISLAND OF HAWAII THIS AFTERNOON OR TONIGHT. **REMEMBER...THE** EFFECTS OF HURRICANES CAN BE FAR REACHING. **THEREFORE...DO** NOT CONCENTRATE ON THE POSITION OF THE CENTER ALONE.

SURF ALONG SOUTH FACING SHORES OF THE BIG ISLAND IS EXPECTED TO RANGE BETWEEN 4 AND 8 FEET THROUGH TODAY AND SPREAD TO SOUTH FACING SHORES OF OTHER ISLANDS TONIGHT AND THURSDAY.

HURRICANE INIKI WILL BE CLOSELY MONITORED FOR SUDDEN CHANGES IN SPEED... DIRECTION OF **MOVEMENT...AND** INTENSIFICATION. INTERMEDIATE ADVISORIES WILL BE ISSUED IF SIGNIFICANT CHANGES OCCUR.

REPEATING THE 5 AM HST POSITION 13.4 NORTH 153.6 WEST.

THE NEXT REGULAR ADVISORY ON HURRICANE INIKI WILL BE ISSUED BY THE CENTRAL PACIFIC HURRICANE CENTER AT 11 AM HST THIS MORNING.

HABLUTZEL NATIONAL WEATHER SERVICE
HONOLULU

WTPA33 PHNL 092100
BULLETIN
HURRICANE INIKI ADVISORY NUMBER 15
NATIONAL WEATHER SERVICE HONOLULU HI
11 AM HST WED SEP 09 1992

...HURRICANE INIKI STRENGTHENS...

...A HIGH SURF ADVISORY REMAINS IN EFFECT FOR SOUTH FACING SHORES OF THE BIG ISLAND OF HAWAII...

AT 11 AM HST...THE CENTER OF HURRICANE INIKI WAS ESTIMATED TO BE 420 MILES SOUTH OF HILO NEAR **LATITUDE** 13.6 NORTH LONGITUDE 154.7 WEST AND MOVING TOWARD THE WEST NORTHWEST AT 14 MPH.

STRONGEST SUSTAINED WINDS ARE ESTIMATED TO BE 90 MPH WITH GUSTS AS HIGH AS 115 MPH NEAR THE CENTER.

INIKI HAS INCREASED IN STRENGTH **OVER THE** LAST 12 HOURS AND WILL LIKELY TO STRENGTHEN A LITTLE MORE OVER THE NEXT 24 HOURS. INIKI IS EXPECTED TO MAINTAIN A WEST NORTHWEST COURSE.

ON ITS PRESENT **TRACK...**INIKI IS FORECAST TO BE APPROXIMATELY 400 MILES SOUTH OF HONOLULU AT MIDDAY THURSDAY. **REMEMBER...**THE EFFECTS OF HURRICANES CAN BE FAR REACHING. **THEREFORE...**DO NOT CONCENTRATE ON THE POSITION OF THE CENTER ALONE.

SURF ALONG SOUTH FACING SHORES OF THE BIG ISLAND IS EXPECTED TO RANGE BETWEEN 4 AND 8 FEET THROUGH TONIGHT. SURF ALONG SOUTH FACING SHORES OF THE OTHER ISLANDS IS EXPECTED TO INCREASE TO 4 TO 6 FEET THURSDAY.

HURRICANE INIKI WILL BE CLOSELY MONITORED FOR SUDDEN CHANGES IN SPEED... DIRECTION OF **MOVEMENT...**AND INTENSIFICATION. INTERMEDIATE ADVISORIES WILL BE ISSUED IF SIGNIFICANT CHANGES OCCUR.

REPEATING THE 11 AM HST POSITION 13.6 NORTH 154.7 WEST.

THE NEXT REGULAR ADVISORY ON HURRICANE INIKI WILL BE ISSUED BY THE CENTRAL PACIFIC HURRICANE CENTER AT 5 PM HST THIS EVENING.

CRAIG NATIONAL WEATHER SERVICE
HONOLULU

WTPA33 PHNL 100300
BULLETIN
HURRICANE INIKI ADVISORY NUMBER 16
NATIONAL WEATHER SERVICE HONOLULU HI
5 PM HST WED SEP 09 1992

...HURRICANE INIKI STRENGTHENS...

...A HIGH SURF ADVISORY REMAINS IN EFFECT FOR SOUTH FACING SHORES OF THE BIG ISLAND OF HAWAII...

...A HIGH SURF ADVISORY IS EFFECTIVE AT 5 PM HST FOR SOUTH FACING SHORES OF THE REMAINING HAWAIIAN ISLANDS...

AT 5 PM HST...THE CENTER OF HURRICANE INIKI WAS ESTIMATED TO BE 385 MILES SOUTH SOUTHWEST OF HILO NEAR LATITUDE 14.2 NORTH LONGITUDE 156.2 WEST AND MOVING TOWARD THE WEST NORTHWEST AT 14 MPH.

STRONGEST SUSTAINED WINDS ARE ESTIMATED TO BE 100 MPH WITH GUSTS AS HIGH AS 120 MPH NEAR THE CENTER.

INIKI HAS INCREASED IN STRENGTH OVER THE LAST 12 HOURS AND IS EXPECTED TO STRENGTHEN A LITTLE MORE. THE HURRICANE IS FORECAST TO MAINTAIN A WEST NORTHWEST COURSE OVER THE NEXT 24 HOURS STAYING ABOUT 400 MILES SOUTH OF ALL ISLANDS. ON ITS PRESENT **TRACK...**INIKI WILL BE 400 MILES SOUTH OF HONOLULU AT AROUND NOON THURSDAY.

OPEN OCEAN SWELL GENERATED BY INIKI HAVE ARRIVED ALONG SOUTH FACING SHORES OF THE BIG ISLAND RESULTING IN SURF OF 8 TO 12 FEET. THE SURF WILL CONTINUE HIGH THROUGH TONIGHT. SURF ALONG SOUTH FACING SHORES OF THE OTHER ISLANDS IS EXPECTED TO INCREASE TO 4 TO 8 FEET THURSDAY.

HURRICANE INIKI WILL BE CLOSELY MONITORED FOR SUDDEN CHANGES IN SPEED... DIRECTION OF MOVEMENT...AND INTENSIFICATION. INTERMEDIATE ADVISORIES WILL BE ISSUED IF SIGNIFICANT CHANGES OCCUR.

REPEATING THE 5 PM HST POSITION 14.2 NORTH 156.2 WEST.

THE NEXT REGULAR ADVISORY ON HURRICANE INIKI WILL BE ISSUED BY THE CENTRAL PACIFIC HURRICANE CENTER AT 11 PM HST TONIGHT.

CRAIG NATIONAL WEATHER SERVICE
HONOLULU

WTPA33 PHNL 100900
BULLETIN
HURRICANE INIKI ADVISORY NUMBER 17
NATIONAL WEATHER SERVICE HONOLULU HI
11 PM HST WED SEP 09 1992

...**HAWAIIAN** ISLANDS REMAIN VULNERABLE AS DANGEROUS HURRICANE INIKI MOVES TOWARDS THE WEST NORTHWEST 445 MILES SOUTH OF HONOLULU...

...A HIGH SURF ADVISORY REMAINS IN EFFECT FOR SOUTH FACING SHORES OF **ALL THE** HAWAIIAN ISLANDS...

AT 11 PM **HST**...**THE** CENTER OF HURRICANE INIKI WAS ESTIMATED TO BE 445 MILES SOUTH OF HONOLULU NEAR LATITUDE 14.8 NORTH LONGITUDE 157.6 WEST AND MOVING TOWARD THE WEST NORTHWEST AT 17 MPH.

STRONGEST SUSTAINED WINDS ARE ESTIMATED TO BE 105 MPH WITH GUSTS AS HIGH AS 125 MPH NEAR THE CENTER.

INIKI HAS INTENSIFIED STEADILY OVER THE PAST 24 HOURS AND HAS A WELL **DEFINED** EYE. EARLIER THIS **EVENING...HURRICANE** HUNTERS FROM MISSISSIPPI VERIFIED PREVIOUSLY ESTIMATED POSITIONS BY FLYING THROUGH THE CENTER OF INIKI. **WHAT THEY** FOUND WAS A SMALL AND VERY INTENSE HURRICANE WITH GALE FORCE **WINDS** EXTENDING OUT **150** MILES IN THE NORTH SEMICIRCLE.

THE HURRICANE IS FORECAST TO CONTINUE ON A WEST NORTHWEST COURSE AT 17 MPH AND PEAK IN INTENSITY IN THE NEXT 12 HOURS.

SURF OF 8 TO 10 FEET FORCED THE CLOSURE OF SEVERAL BEACHES ALONG THE SOUTHEAST COAST OF THE **BIG ISLAND** AND WASHEO OVER SOME BEACH FRONT ROADS IN THE BLACK SANDS BEACH AREA. SURF OF 8 TO 12 FEET IS EXPECTED TO CONTINUE THROUGH TONIGHT THEN SLOWLY SUBSIDE. SURF ALONG THE SOUTH SHORES OF THE REMAINING ISLANDS CAN EXPECT SURF WITH HEIGHTS OF 4 TO 8 FEET THURSDAY MORNING.

HURRICANE INIKI WILL BE CLOSELY MONITORED FOR SUDDEN CHANGES IN SPEED... DIRECTION OF **MOVEMENT...AND** INTENSIFICATION. **INTERMEDIATE** ADVISORIES WILL BE ISSUED IF SIGNIFICANT CHANGES OCCUR.

REPEATING THE 11 PM HST POSITION 14.8 NORTH 157.6 WEST.

THE NEXT REGULAR ADVISORY ON HURRICANE INIKI WILL BE ISSUED BY THE CENTRAL **PACIFIC** HURRICANE CENTER AT **5** AM THURSDAY.

CHUN NATIONAL WEATHER SERVICE HONOLULU

WTPA33 PHNL **100900** COR
BULLETIN
HURRICANE INIKI **ADVISORY** NUMBER **17...CORRECTED**
NATIONAL WEATHER SERVICE HONOLULU HI
11 PM HST WED SEP 09 1992

...**CORRECTED** PARAGRAPH **5**...

...**HAWAIIAN ISLANDS** REMAIN VULNERABLE AS DANGEROUS HURRICANE INIKI MOVES TOWARDS THE WEST NORTHWEST 445 MILES SOUTH OF HONOLULU...

...A HIGH SURF ADVISORY REMAINS IN EFFECT FOR SOUTH FACING SHORES OF **FALL THE** HAWAIIAN ISLANDS...

AT 11 PM **HST**...**THE** CENTER OF HURRICANE INIKI WAS ESTIMATED TO BE 445 MILES SOUTH OF HONOLULU NEAR LATITUDE 14.8 NORTH LONGITUDE 157.8 WEST AND MOVING TOWARD THE WEST NORTHWEST AT 17 MPH.

STRONGEST SUSTAINED WINDS ARE ESTIMATED TO BE 105 MPH WITH GUSTS AS HIGH AS 125 MPH NEAR THE CENTER.

INIKI HAS INTENSIFIED STEADILY OVER THE PAST 24 HOURS AND HAS A WELL DEFINED EYE. EARLIER THIS **EVENING...HURRICANE** HUNTERS FROM MISSISSIPPI **VERIFIED** PREVIOUSLY ESTIMATED POSITIONS BY FLYING THROUGH THE CENTER OF INIKI. **WHAT THEY** FOUND WAS A SMALL AND VERY INTENSE HURRICANE WITH GALE FORCE WINDS EXTENDING OUT 150 MILES IN THE NORTH SEMICIRCLE.

THE HURRICANE IS FORECAST TO CONTINUE ON A WEST NORTHWEST COURSE AT 17 MPH AND PEAK IN INTENSITY IN THE NEXT 12 HOURS.

COR...

SURF OF 8 TO 10 FEET FORCED THE CLOSURE OF SEVERAL BEACHES ALONG THE SOUTHEAST COAST OF THE BIG ISLAND AND WASHED OVER SOME BEACH FRONT ROADS IN THE BLACK SANDS BEACH AREA. SURF OF 8 TO 12 FEET IS EXPECTED TO CONTINUE THROUGH TONIGHT THEN SLOWLY SUBSIDE. THE SOUTH SHORES OF THE REMAINING ISLANDS CAN EXPECT SURF **WITH** HEIGHTS OF 4 TO 8 FEET THURSDAY MORNING.

HURRICANE INIKI WILL BE CLOSELY **MONITORED** FOR SUDDEN CHANGES IN SPEED... DIRECTION OF **MOVEMENT...AND** INTENSIFICATION. **INTERMEDIATE ADVISORIES** WILL BE ISSUED IF SIGNIFICANT CHANGES OCCUR.

REPEATING THE 11 PM HST POSITION 14.8 NORTH 157.8 WEST.

THE NEXT REGULAR ADVISORY ON HURRICANE INIKI WILL BE ISSUED BY THE CENTRAL PACIFIC HURRICANE CENTER AT 5 AM THURSDAY.

CHUN NATIONAL WEATHER SERVICE HONOLULU

WTPA33 PHNL 101500
BULLETIN
HURRICANE INIKI ADVISORY NUMBER 18
NATIONAL WEATHER SERVICE HONOLULU HI
5 AM HST THU SEP 10 1992

...HAWAIIAN ISLANDS REMAIN VULNERABLE AS DANGEROUS HURRICANE INIKI MOVES TOWARDS THE WEST NORTHWEST...

...A HIGH SURF ADVISORY REMAINS IN EFFECT FOR SOUTH FACING SHORES OF ALL THE HAWAIIAN ISLANDS...

AT 5 AM HST...THE CENTER OF HURRICANE INIKI WAS ESTIMATED TO BE 425 MILES SOUTH OF HONOLULU NEAR LATITUDE 15.1 NORTH LONGITUDE 158.7 WEST AND MOVING TOWARD THE WEST NORTHWEST AT 15 MPH.

STRONGEST SUSTAINED WINDS ARE ESTIMATED TO BE 115 MPH WITH GUSTS AS HIGH AS 145 MPH NEAR THE CENTER.

INIKI HAS INTENSIFIED STEADILY OVER THE PAST 24 HOURS. LAST NIGHT-STORM TRACKERS FROM AIR FORCE RESERVES VERIFIED PREVIOUSLY ESTIMATED POSITIONS BY FLYING THROUGH THE CENTER OF HURRICANE INIKI. THEY FOUND A SMALL AND VERY INTENSE HURRICANE WITH GALE FORCE WINDS OUT 150 MILES IN THE NORTH SEMICIRCLE.

THE HURRICANE IS FORECAST TO CONTINUE ON A WEST NORTHWEST COURSE AT 17 MPH WITH LITTLE CHANGE IN INTENSITY FOR THE NEXT 24 HOURS.

SURF OF 8 TO 12 FEET IS EXPECTED TO SUBSIDE ALONG SOUTHEAST SHORES ON THE BIG ISLAND. SOUTH SHORES OF THE REMAINING ISLANDS CAN EXPECT SURF WITH HEIGHTS RANGING BETWEEN 8 AND 12 FEET THROUGH TODAY.

HURRICANE INIKI WILL BE CLOSELY MONITORED FOR SUDDEN CHANGES IN SPEED...DIRECTION OF MOVEMENT...AND INTENSIFICATION. INTERMEDIATE ADVISORIES WILL BE ISSUED IF SIGNIFICANT CHANGES OCCUR.

REPEATING THE 5 AM HST POSITION 15.1 NORTH 158.7 WEST.

THE NEXT REGULAR ADVISORY ON HURRICANE INIKI WILL BE ISSUED BY THE CENTRAL PACIFIC HURRICANE CENTER AT 11 AM THIS MORNING.

HABLUTZEL NATIONAL WEATHER SERVICE HONOLULU

WTPA33 PHNL 102100
BULLETIN
HURRICANE INIKI ADVISORY NUMBER 19
NATIONAL WEATHER SERVICE HONOLULU HI
11 AM HST THU SEP 10 1992

...HAWAIIAN ISLANDS REMAIN VULNERABLE AS DANGEROUS HURRICANE INIKI MOVES TOWARDS THE WEST NORTHWEST...

...A HIGH SURF ADVISORY REMAINS IN EFFECT FOR SOUTH FACING SHORES OF ALL THE HAWAIIAN ISLANDS...

AT 11 AM HST...THE CENTER OF HURRICANE INIKI WAS ESTIMATED TO BE 420 MILES SOUTH SOUTHWEST OF HONOLULU NEAR LATITUDE 15.3 NORTH LONGITUDE 159.2 WEST AND MOVING TOWARD THE WEST NORTHWEST AT 11 MPH.

STRONGEST SUSTAINED WINDS ARE ESTIMATED TO BE 115 MPH WITH GUSTS AS HIGH AS 145 MPH NEAR THE CENTER.

DATA GATHERED BY AIR FORCE RESERVES STORM TRACKERS AND FROM SATELLITE PICTURES INDICATE THAT INIKI HAS NOT INTENSIFIED ANY OVER THE LAST 6 HOURS. THERE ARE IN FACT A FEW SIGNS THAT INIKI HAS WEAKENED SLIGHTLY AND THAT IT HAS SLOWED ITS FOREWARD MOTION. INIKI REMAINS A VERY INTENSE STORM WITH HURRICANE FORCE WINDS EXTENDING OUT 35 MILES FROM THE CENTER AND GALE FORCE WINDS OUT 170 MILES.

THE HURRICANE IS FORECAST TO CONTINUE ON A WEST NORTHWEST COURSE AT 8 TO 10 MPH WITH LITTLE CHANGE IN INTENSITY FOR THE NEXT 12 HOURS THEN BEGIN TO SLOWLY WEAKEN.

SURF OF 8 TO 12 FEET IS SUBSIDING ALONG SOUTHEAST SHORES OF THE BIG ISLAND AND WILL BEGIN TO SUBSIDE ON THE SOUTHWEST SHORES THIS AFTERNOON. SOUTH SHORES OF THE REMAINING ISLANDS CAN EXPECT SURF HEIGHTS RANGING BETWEEN 8 AND 12 FEET THROUGH THIS AFTERNOON THEN GRADUALLY SUBSIDING TONIGHT.

HURRICANE INIKI WILL BE CLOSELY MONITORED FOR SUDDEN CHANGES IN SPEED...DIRECTION OF MOVEMENT...AND INTENSIFICATION. INTERMEDIATE ADVISORIES WILL BE ISSUED IF SIGNIFICANT CHANGES OCCUR.

REPEATING THE 11 AM HST POSITION 15.3 NORTH 159.2 WEST.

THE NEXT REGULAR ADVISORY ON HURRICANE INIKI WILL BE ISSUED BY THE CENTRAL PACIFIC HURRICANE CENTER AT 5 PM THIS EVENING.

CRAIG NATIONAL WEATHER SERVICE HONOLULU

WTPA33 PHNL 110300
BULLETIN
HURRICANE INIKI ADVISORY NUMBER 20
NATIONAL WEATHER SERVICE HONOLULU HI
5PMHSTTHU SEP 10 1992

...A HURRICANE WATCH IS EFFECTIVE AT 5 PM HST FOR PERSONS ON KAUAI AND NIIHAU AND FOR THE MINOR LEEWARD ISLANDS AND SHOALS WEST OF KAUAI TO THE FRENCH FRIGATE SHOALS...

...A HIGH SURF ADVISORY REMAINS IN EFFECT FOR SOUTH FACING SHORES OF ALL THE HAWAIIAN ISLANDS...

A HURRICANE WATCH MEANS THAT THERE IS A CHANCE THAT HURRICANE CONDITIONS MAY DEVELOP OVER KAUAI AND NIIHAU AND POINTS WEST WITHIN 36 HOURS.

HURRICANE INIKI HAS STARTED A MORE NORTHWESTERLY PATH THAT MAY BRING IT CLOSER TO THE WESTERN END OF THE HAWAIIAN CHAIN THAN EARLIER ANTICIPATED.

AT 5 PM HST...THE CENTER OF HURRICANE INIKI WAS ESTIMATED TO BE 400 MILES SOUTH OF LIHUE NEAR LATITUDE 16.1 NORTH 159.7 WEST AND MOVING TOWARD THE NORTHWEST AT 9 MPH.

STRONGEST SUSTAINED WINDS ARE ESTIMATED TO BE 125 MPH WITH GUSTS AS HIGH AS 155 MPH NEAR THE CENTER.

DATA GATHERED BY AIR FORCE RESERVES STORM TRACKERS AND FROM SATELLITE PICTURES INDICATE THAT INIKI HAS STRENGTHENED SLIGHTLY. INIKI IS A VERY INTENSE STORM WITH HURRICANE FORCE WINDS EXTENDING OUT 35 MILES FROM THE CENTER AND GALE FORCE WINDS OUT 170 MILES.

THE HURRICANE IS FORECAST TO CONTINUE ON A NORTHWEST COURSE AT 6 TO 10 MPH WITH LITTLE CHANGE IN INTENSITY FOR THE NEXT 12 HOURS AND THEN BEGIN TO SLOWLY WEAKEN AS IT TURNS ON A MORE NORTHERLY TRACK. ON THE PROJECTED PATH INIKI IS FORECAST TO PASS ABOUT 200 MILES WEST OF KAUAI IN 46 HOURS.

SURF OF 6 TO 12 FEET IS SUBSIDING ALONG SOUTHEAST SHORES OF THE BIG ISLAND BUT IS NOW BUILDING ALONG THE SOUTH SHORES OF THE OTHER ISLANDS. THE SURF ALONG THE SOUTH SHORES OF KAUAI FROM NAWILIWILI TO POIPU TO PORT ALLEN TO BARKING SANDS WILL BE PARTICULARLY ROUGH AND MAY BECOME DESTRUCTIVE TO IMMEDIATE SHORELINE PROPERTY ON FRIDAY.

HURRICANE INIKI WILL BE CLOSELY MONITORED FOR SUDDEN CHANGES IN SPEED...DIRECTION OF MOVEMENT...AND INTENSIFICATION. INTERMEDIATE ADVISORIES WILL BE ISSUED IF SIGNIFICANT CHANGES OCCUR.

REPEATING THE 5 PM HST POSITION 16.1 NORTH 159.7 WEST.

THE NEXT REGULAR ADVISORY ON HURRICANE INIKI WILL BE ISSUED BY THE CENTRAL PACIFIC HURRICANE CENTER AT 11 PM THIS EVENING.

CRAIG/ROSENDAL NATIONAL WEATHER SERVICE HONOLULU

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WTPA33 PHNL 110630
BULLETIN
HURRICANE INIKI INTERMEDIATE ADVISORY NUMBER 21
NATIONAL WEATHER SERVICE HONOLULU HI
630 PM HST THU SEP 10 1992

...A HURRICANE WARNING IS EFFECTIVE AT 6 PM HST FOR PERSONS ON KAUAI AND NIIHAU...

...A HURRICANE WATCH REMAINS IN EFFECT FOR PERSONS ON THE MINOR LEEWARD ISLANDS AND SHOALS WEST OF KAUAI TO THE

FRENCH FRIGATE SHOALS...

...A TROPICAL STORM WARNING IS EFFECTIVE AT 6 PM HST FOR PERSONS ON OAHU...

...A TROPICAL STORM WATCH IS EFFECTIVE AT 6 PM HST FOR PERSONS ON THE ISLANDS OF MAUI MOLOKAI AND LANAI...

...A HIGH SURF ADVISORY REMAINS IN EFFECT FOR SOUTH FACING SHORES OF ALL THE HAWAIIAN ISLANDS...

A HURRICANE WARNING MEANS THAT HURRICANE FORCE WINDS OF 74 MPH OR MORE WILL DEVELOP WITHIN THE NEXT 24 HOURS.

A HURRICANE WATCH MEANS THAT THERE IS A CHANCE THAT HURRICANE CONDITIONS MAY DEVELOP WITHIN THE NEXT 36 HOURS...

A TROPICAL STORM WARNING MEANS THAT TROPICAL STORM WINDS OF 39 MPH OR MORE ARE LIKELY WITHIN THE NEXT 24 HOURS.

A TROPICAL STORM WATCH MEANS THAT TROPICAL STORM FORCE WINDS MAY OCCUR WITHIN THE NEXT 36 HOURS.

HURRICANE INIKI HAS TURNED ON A MORE NORTHERLY TRACK THAT WILL LIKELY BRING THE EYE CLOSE TO THE ISLAND OF KAUAI FRIDAY EVENING ALONG WITH STRONG DESTRUCTIVE WINDS AND SEAS. INIKI IS A VERY DANGEROUS HURRICANE AND ITS EFFECTS ARE FAR REACHING AND EXTEND OUT 200 MILES OR MORE FROM THE CENTER. THEREFORE THE ISLAND OF OAHU WILL LIKELY EXPERIENCE TROPICAL STORM FORCE WINDS OF 39 MPH OR MORE BY FRIDAY EVENING. ON ITS PRESENT TRACK THE ISLANDS OF MAUI COUNTY...MAUI MOLOKAI AND LANAI...WILL BE ON THE FRINGE OF STORM.

AT 630 PM HST...THE CENTER OF HURRICANE INIKI WAS ESTIMATED TO BE 350 MILES SOUTH OF LIHUE NEAR LATITUDE 16.6 NORTH 159.5 WEST AND MOVING TOWARD THE NORTH NORTHWEST AT 14 MPH.

STRONGEST SUSTAINED WINDS REMAIN UNCHANGED AND ARE ESTIMATED TO BE 125 MPH WITH GUSTS HIGH AS 155 MPH NEAR THE CENTER. THE AIR FORCE RESERVE STORM TRACKER MADE A FIX ON THE EYE AT 727 PM HST AND THIS COINCIDES WITH RECENT SATELLITE PICTURES

SAFETY PRECAUTIONS SHOULD REMAIN IN FORCE AND SHOULD BE CONTINUED FOR THE DURATION. FOR DETAILS ON SPECIFIC RECOMMENDATIONS LISTEN FOR LOCAL STATEMENTS ISSUED BY CIVIL DEFENSE OFFICIALS AND WEATHER SERVICE OFFICES IN KAUAI...OAHU...AND MAUI.

DANGEROUS STORM TIDES OF 4 TO 6 FEET WITH LIFE THREATENING SURF OF 30 FEET OR MORE WILL LIKELY AFFECT THE ISLAND OF KAUAI BY FRIDAY EVENING. BUILDING SURF AND WAVES WILL SPREAD INTO THE SOUTHERN BEACHES OF KAUAI FRIDAY AFTERNOON. BUILDING SURF OF 10 TO 15 FEET ARE LIKELY TO SPREAD INTO THE SOUTHERN BEACHES OF OAHU BY FRIDAY EVENING.

HURRICANE INIKI WILL BE CLOSELY MONITORED FOR SUDDEN CHANGES IN SPEED...DIRECTION OF MOVEMENT...AND INTENSIFICATION. INTERMEDIATE ADVISORIES WILL BE ISSUED IF SIGNIFICANT CHANGES OCCUR.

REPEATING THE 730 PM HST POSITION 16.6 NORTH 159.5 WEST.

THE NEXT REGULAR ADVISORY ON HURRICANE INIKI WILL BE ISSUED BY THE CENTRAL PACIFIC HURRICANE CENTER AT 11 PM THIS EVENING.

LAY/TRAPP NATIONAL WEATHER SERVICE HONOLULU

WTPA33PHNL 110630 COR
BULLETIN
HURRICANE INIKI INTERMEDIATE ADVISORY NUMBER 21...CORRECTED
NATIONAL WEATHER SERVICE HONOLULU HI
630 PM HST THU SEP 10 1992

...CORRECTED TIME OF HURRICANE INIKI POSITION FROM 530 PM HST TO 730 PM HST...

. ...A HURRICANE WARNING IS EFFECTIVE AT 6 PM HST FOR PERSONS ON KAUAI AND NIIHAU...

...A HURRICANE WATCH REMAINS IN EFFECT FOR PERSONS ON THE MINOR LEEWARD ISLANDS AND SHOALS WEST OF KAUAI TO THE FRENCH FRIGATE SHOALS...

. ...A TROPICAL STORM WARNING IS EFFECTIVE AT 8 PM HST FOR PERSONS ON OAHU...

. ...A TROPICAL STORM WATCH IS EFFECTIVE AT 8 PM HST FOR PERSONS ON THE ISLANDS OF MAUI MOLOKAI AND LANAI...

. ...A HIGH SURF ADVISORY REMAINS IN EFFECT FOR SOUTH FACING SHORES OF ALL THE HAWAIIAN ISLANDS...

A HURRICANE WARNING MEANS THAT HURRICANE FORCE WINDS OF 74 MPH OR MORE WILL DEVELOP WITHIN THE NEXT 24 HOURS.

A HURRICANE WATCH MEANS THAT THERE IS A CHANCE THAT HURRICANE CONDITIONS MAY DEVELOP WITHIN THE NEXT 36 HOURS...

A TROPICAL STORM WARNING MEANS THAT TROPICAL STORM WINDS OF 39 MPH OR MORE ARE LIKELY WITHIN THE NEXT 24 HOURS.

A TROPICAL STORM WATCH MEANS THAT TROPICAL STORM FORCE WINDS MAY OCCUR WITHIN THE NEXT 36 HOURS.

HURRICANE INIKI HAS TURNED ON A MORE NORTHERLY TRACK THAT WILL LIKELY BRING THE EYE CLOSE TO THE ISLAND OF KAUAI FRIDAY EVENING ALONG WITH STRONG DESTRUCTIVE WINDS AND SEAS. INIKI IS A VERY DANGEROUS HURRICANE AND ITS EFFECTS ARE FAR REACHING AND EXTEND OUT 200 MILES OR MORE FROM THE CENTER THEREFORE THE ISLAND OF OAHU WILL LIKELY EXPERIENCE TROPICAL STORM FORCE WINDS OF 39 MPH OR MORE BY FRIDAY EVENING. ON ITS PRESENT TRACK THE ISLANDS OF MAUI COUNTY...MAUI MOLOKAI AND LANAI...WILL BE ON THE FRINGE OF STORM.

AT 530 PM HST...THE CENTER OF HURRICANE INIKI WAS ESTIMATED TO SE 350 MILES SOUTH OF LIHUE NEAR LATITUDE 16.6 NORTH 159.5 WEST AND MOVING TOWARD THE NORTH NORTHWEST AT 14 MPH.

STRONGEST SUSTAINED WINDS REMAIN UNCHANGED AND ARE ESTIMATED TO SE 125 MPH WITH GUSTS HIGH AS 155 MPH NEAR THE CENTER. THE AIR FORCE RESERVE STORM TRACKER MADE A FIX ON THE EYE AT 727 PM HST AND THIS COINCIDES WITH RECENT SATELLITE PICTURES.

SAFETY PRECAUTIONS SHOULD REMAIN IN FORCE AND SHOULD BE CONTINUED FOR THE DURATION. FOR DETAILS ON SPECIFIC RECOMMENDATIONS LISTEN FOR LOCAL STATEMENTS ISSUED BY CIVIL DEFENSE OFFICIALS AND WEATHER SERVICE OFFICES IN KAUAI...OAHU...AND MAUI.

DANGEROUS STORM TIDES OF 4 TO 6 FEET WITH LIFE THREATENING SURF OF 30 FEET OR MORE WILL LIKELY AFFECT THE ISLAND OF KAUAI BY FRIDAY EVENING. BUILDING SURF AND WAVES WILL SPREAD INTO THE SOUTHERN BEACHES OF KAUAI FRIDAY AFTERNOON. BUILDING SURF OF 10 TO 15 FEET ARE LIKELY TO SPREAD INTO THE SOUTHERN BEACHES OF OAHU BY FRIDAY EVENING.

HURRICANE INIKI WILL BE CLOSELY MONITORED FOR SUDDEN CHANGES IN SPEED...DIRECTION OF MOVEMENT...AND INTENSIFICATION. INTERMEDIATE ADVISORIES WILL BE ISSUED IF SIGNIFICANT CHANGES OCCUR.

REPEATING THE 730 PM HST POSITION 16.6 NORTH 150.5 WEST.

THE NEXT REGULAR ADVISORY ON HURRICANE INIKI WILL BE ISSUED BY THE CENTRAL PACIFIC HURRICANE CENTER AT 11 PM THIS EVENING.

LAY/TRAPP NATIONAL WEATHER SERVICE HONOLULU

WTPA33 PHNL 110000
BULLETIN
HURRICANE INIKI ADVISORY NUMBER 22
NATIONAL WEATHER SERVICE HONOLULU HI
11 PM HST THU SEP 10 1992

. ...A HURRICANE WARNING REMAINS IN EFFECT FOR PERSONS ON KAUAI AND NIIHAU...

...A HURRICANE WATCH REMAINS IN EFFECT FOR PERSONS ON THE MINOR LEEWARD ISLANDS AND SHOALS WEST OF KAUAI TO THE FRENCH FRIGATE SHOALS...

. ...A HURRICANE WARNING IS IN EFFECT FOR THE ISLAND OF OAHU AT 11 PM HST...

. ...A TROPICAL STORM WATCH REMAINS IN EFFECT FOR PERSONS ON THE ISLANDS OF MAUI MOLOKAI AND LANAI...

. ...A HIGH SURF ADVISORY REMAINS IN EFFECT FOR SOUTH FACING SHORES OF ALL THE HAWAIIAN ISLANDS...

A HURRICANE WARNING MEANS THAT HURRICANE FORCE WINDS OF 74 MPH OR MORE WILL DEVELOP WITHIN THE NEXT 24 HOURS.

A HURRICANE WATCH MEANS THAT THERE IS A CHANCE THAT HURRICANE CONDITIONS MAY DEVELOP WITHIN THE NEXT 36 HOURS...

A TROPICAL STORM WATCH MEANS THAT TROPICAL STORM FORCE WINDS MAY OCCUR WITHIN THE NEXT 36 HOURS.

HURRICANE INIKI CONTINUES TURN MORE NORTHERLY AND IS NORTH MOVING DUE NORTH AT 15 MPH. THIS TRACK WILL BRING THE CENTER OR EYE OF THE STORM VERY CLOSE TO THE ISLANDS OF KAUAI AND NIIHAU FRIDAY EVENING ALONG WITH STRONG DESTRUCTIVE WINDS AND SEAS. INIKI IS A VERY DANGEROUS HURRICANE AND ITS EFFECTS ARE FAR REACHING AND EXTEND OUT 200 MILES OR MORE FROM THE CENTER THE ISLAND OF OAHU HAS BEEN INCLUDED IN THE HURRICANE WARNING AS OF 11 PM HST AS SATELLITE PICTURES ARE NOW SHOWING STRONG FEEDER BANDS EXTENDING FARTHER OUTWARD TO EAST OF THE STORM CENTER. ON ITS PRESENT TRACK THE ISLANDS OF MAUI COUNTY...MAUI MOLOKAI AND LANAI...WILL BE ON THE FRINGE OF THE STORM.

AT 11 PM HST...THE CENTER OF HURRICANE INIKI WAS ESTIMATED TO SE 310 MILES SOUTH OF LIHUE NEAR LATITUDE 17.5 NORTH 160.0 WEST AND MOVING TOWARD THE NORTH AT 15 MPH.

STRONGEST SUSTAINED WINDS REMAIN UNCHANGED AND ARE ESTIMATED TO SE 125 MPH WITH GUSTS HIGH AS 155 MPH NEAR THE CENTER. THE AIR FORCE RESERVE STORM TRACKER IS EXPECTED TO MAKE A FIX ON THE STORM CENTER AT 2 AM HST.

SAFETY PRECAUTIONS SHOULD REMAIN IN FORCE AND SHOULD BE CONTINUED FOR THE DURATION. FOR DETAILS ON SPECIFIC RECOMMENDATIONS LISTEN FOR LOCAL STATEMENTS ISSUED BY CIVIL DEFENSE OFFICIALS AND WEATHER SERVICE OFFICES IN KAUAI...OAHU...AND MAUI.

DANGEROUS STORM TIDES OF 4 TO 6 FEET WITH LIFE THREATENING SURF OF 30 FEET OR MORE WILL LIKELY AFFECT THE ISLANDS OF KAUAI AND NIIHAU BY FRIDAY EVENING. BUILDING SURF AND WAVES OF 10 TO 20 FEET WILL LIKELY SPREAD INTO THE SOUTH FACING SHORES OF OAHU FRIDAY AFTERNOON AND NIGHT. TORRENTIAL RAINS AND MAJOR FLOODING WILL LIKELY AFFECT THE ISLANDS OF KAUAI AND NIIHAU.

HURRICANE INIKI WILL BE CLOSELY MONITORED FOR SUDDEN CHANGES IN SPEED...DIRECTION OF MOVEMENT...AND INTENSIFICATION. INTERMEDIATE ADVISORIES WILL BE ISSUED IF SIGNIFICANT CHANGES OCCUR.

REPEATING THE 11 PM HST POSITION 17.5 NORTH 160.0 WEST.

THE NEXT REGULAR ADVISORY ON HURRICANE INIKI WILL BE ISSUED BY THE CENTRAL PACIFIC HURRICANE CENTER AT 5 AM HST FRIDAY.

LAY/TRAPP NATIONAL WEATHER SERVICE HONOLULU

WTPA33 PHNL 110000 COR
BULLETIN
HURRICANE INIKI ADVISORY NUMBER 22...CORRECTED
NATIONAL WEATHER SERVICE HONOLULU HI
11 PM HST THU SEP 10 1992

...CORRECTED FOR THE ADDITION OF WEST FACING SHORES ON THE HIGH SURF ADVISORY...AND ALSO SOME MINOR WORDING...

...A HURRICANE WARNING REMAINS IN EFFECT FOR PERSONS ON KAUAI AND NIIHAU...

...A HURRICANE WATCH REMAINS IN EFFECT FOR PERSONS ON THE MINOR LEEWARD ISLANDS AND SHOALS WEST OF KAUAI TO THE FRENCH FRIGATE SHOALS...

...A HURRICANE WARNING IS IN EFFECT FOR FOR THE ISLAND OF OAHU AT 11 PM HST...

...A TROPICAL STORM WATCH REMAINS IN EFFECT FOR PERSONS ON THE ISLANDS OF MAUI MOLOKAI AND LANAI...

...A HIGH SURF ADVISORY REMAINS IN EFFECT FOR SOUTH AND WEST FACING SHORES OF ALL THE HAWAIIAN ISLANDS...

A HURRICANE WARNING MEANS THAT HURRICANE FORCE WINDS OF 74 MPH OR MORE WILL DEVELOP WITHIN THE NEXT 24 HOURS.

A HURRICANE WATCH MEANS THAT THERE IS A CHANCE THAT HURRICANE CONDITIONS MAY DEVELOP WITHIN THE NEXT 36 HOURS...

A TROPICAL STORM WATCH MEANS THAT TROPICAL STORM FORCE WINDS MAY OCCUR WITHIN THE NEXT 36 HOURS.

HURRICANE INIKI CONTINUES TURN MORE NORTHERLY AND IS MOVING DUE NORTH AT 15 MPH. THIS TRACK WILL BRING THE CENTER OR EYE OF THE STORM VERY CLOSE TO THE ISLANDS OF KAUAI AND NIIHAU FRIDAY EVENING ALONG WITH STRONG DESTRUCTIVE WINDS AND SEAS. INIKI IS A VERY DANGEROUS HURRICANE AND ITS EFFECTS ARE FAR REACHING AND EXTEND OUT 20 MILES OR MORE FROM THE CENTER. THE ISLAND OF OAHU HAS BEEN INCLUDED IN THE HURRICANE WARNING AS OF 11 PM HST AS SATELLITE PICTURES ARE NOW SHOWING STRONG FEEDER BANDS EXTENDING FARTHER OUTWARD TO EAST OF THE STORM CENTER. ON ITS PRESENT TRACK THE ISLANDS OF MAUI, MAUI MOLOKAI AND LANAI WILL BE ON THE FRINGE OF THE STORM.

AT 11 PM HST...THE CENTER OF HURRICANE INIKI WAS ESTIMATED TO BE 310 MILES SOUTH OF LIHUE NEAR LATITUDE 17.5 NORTH 160.0 WEST AND MOVING TOWARD THE NORTH AT 15 MPH.

STRONGEST SUSTAINED WINDS REMAIN UNCHANGED AND ARE ESTIMATED TO BE 125 MPH WITH GUSTS AS HIGH AS 155 MPH NEAR THE CENTER. THE AIR FORCE RESERVE STORM TRACKER IS EXPECTED TO MAKE A FIX ON THE STORM CENTER AT 2 AM HST.

SAFETY PRECAUTIONS SHOULD REMAIN IN FORCE AND SHOULD BE CONTINUED FOR THE DURATION. FOR DETAILS ON SPECIFIC RECOMMENDATIONS LISTEN FOR LOCAL STATEMENTS ISSUED BY CIVIL DEFENSE OFFICIALS AND WEATHER SERVICE OFFICES IN KAUAI...OAHU...AND MAUI.

DANGEROUS STORM TIDES OF 4 TO 6 FEET WITH LIFE THREATENING SURF OF 30 FEET OR MORE WILL LIKELY AFFECT THE ISLANDS OF KAUAI AND NIIHAU BY FRIDAY EVENING. BUILDING SURF AND WAVES OF 10 TO 20 FEET WILL LIKELY SPREAD INTO THE SOUTH FACING SHORES OF OAHU FRIDAY AFTERNOON AND NIGHT. TORRENTIAL RAINS AND MAJOR FLOODING WILL LIKELY AFFECT THE ISLANDS OF KAUAI AND NIIHAU.

HURRICANE INIKI WILL BE CLOSELY MONITORED FOR SUDDEN CHANGES IN SPEED...DIRECTION OF MOVEMENT...AND INTENSIFICATION. INTERMEDIATE ADVISORIES WILL BE ISSUED IF SIGNIFICANT CHANGES OCCUR.

REPEATING THE 11 PM HST POSITION 17.5 NORTH 160.0 WEST.

THE NEXT REGULAR ADVISORY ON HURRICANE INIKI WILL BE ISSUED BY THE CENTRAL PACIFIC HURRICANE CENTER AT 5 AM HST FRIDAY,

LAYTRAPP NATIONAL WEATHER SERVICE HONOLULU

WTPA33 PHNL 111200
BULLETIN
HURRICANE INIKI INTERMEDIATE ADVISORY NUMBER 22
NATIONAL WEATHER SERVICE HONOLULU HI
02 AM HST THU SEP 10 1992

...A HURRICANE WARNING REMAINS IN EFFECT FOR PERSONS ON KAUAI... NIIHAU...AND OAHU...

...A HURRICANE WATCH REMAINS IN EFFECT FOR PERSONS ON THE MINOR LEEWARD ISLANDS AND SHOALS WEST OF KAUAI TO THE FRENCH FRIGATE SHOALS...

...A TROPICAL STORM WATCH REMAINS IN EFFECT FOR PERSONS ON THE ISLANDS OF MAUI MOLOKAI AND LANAI...

...A HIGH SURF ADVISORY REMAINS IN EFFECT FOR SOUTH AND WEST FACING SHORES OF ALL THE HAWAIIAN ISLANDS...

A HURRICANE WARNING MEANS THAT HURRICANE FORCE WINDS OF 74 MPH OR MORE WILL DEVELOP WITHIN THE NEXT 24 HOURS.

A HURRICANE WATCH MEANS THAT THERE IS A CHANCE THAT HURRICANE CONDITIONS MAY DEVELOP WITHIN THE NEXT 36 HOURS...

A TROPICAL STORM WATCH MEANS THAT TROPICAL STORM FORCE WINDS MAY OCCUR WITHIN THE NEXT 36 HOURS.

HURRICANE INIKI CONTINUES TURN MORE NORTHERLY AND IS MOVING DUE NORTH AT 15 MPH. THIS TRACK WILL BRING THE CENTER OR EYE OF THE STORM VERY CLOSE TO THE ISLANDS OF KAUAI AND NIIHAU FRIDAY EVENING ALONG WITH STRONG DESTRUCTIVE WINDS AND SEAS. INIKI IS A VERY DANGEROUS HURRICANE AND ITS EFFECTS ARE FAR REACHING AND EXTEND OUT 200 MILES OR MORE FROM THE CENTER. SATELLITE PICTURES SHOW STRONG FEEDER BANDS EXTENDING FARTHER OUTWARD TO EAST OF THE STORM CENTER. ON ITS PRESENT TRACK THE ISLANDS OF MAUI, COUNTY 21LL BE ON THE FRINGE OF THE STORM.

AT 2 AM HST...THE CENTER OF HURRICANE INIKI WAS ESTIMATED TO BE 270 MILES SOUTH OF LIHUE NEAR LATITUDE 16.2 NORTH 160.2 WEST AND MOVING TOWARD THE NORTH AT 14 MPH.

STRONGEST SUSTAINED WINDS REMAIN UNCHANGED AND ARE ESTIMATED TO BE 145 MPH WITH GUSTS AS HIGH AS 175 MPH NEAR THE CENTER BASED ON RECONNAISSANCE FROM AIR FORCE RESERVE STORM TRACKERS.

SAFETY PRECAUTIONS SHOULD REMAIN IN FORCE AND SHOULD BE CONTINUED FOR THE DURATION. FOR DETAILS ON SPECIFIC RECOMMENDATIONS LISTEN FOR LOCAL STATEMENTS ISSUED BY CIVIL DEFENSE OFFICIALS AND WEATHER SERVICE OFFICES IN KAUAI...OAHU...AND MAUI.

DANGEROUS STORM TIDES OF 4 TO 6 FEET WITH LIFE THREATENING SURF OF 30 FEET OR MORE WILL LIKELY AFFECT THE ISLANDS OF KAUAI AND NIIHAU BY FRIDAY EVENING. BUILDING SURF AND WAVES OF 10 TO 20 FEET WILL LIKELY SPREAD INTO THE SOUTH AND WEST FACING SHORES OF OAHU FRIDAY AFTERNOON AND NIGHT. TORRENTIAL RAINS AND MAJOR FLOODING WILL LIKELY AFFECT THE ISLANDS OF KAUAI AND NIIHAU.

HURRICANE INIKI WILL BE CLOSELY MONITORED FOR SUDDEN CHANGES IN SPEED...DIRECTION OF MOVEMENT...AND INTENSIFICATION. INTERMEDIATE ADVISORIES WILL BE ISSUED IF SIGNIFICANT CHANGES OCCUR.

REPEATING THE 2 AM HST POSITION 16.2 NORTH 160.2 WEST.

THE NEXT REGULAR ADVISORY ON HURRICANE INIKI WILL BE ISSUED BY THE CENTRAL PACIFIC HURRICANE CENTER AT 5 AM HST FRIDAY.

HABLAUTZEL NATIONAL WEATHER SERVICE HONOLULU

WTPA33PHNL 111500

BULLETIN

HURRICANE INIKI INTERMEDIATE ADVISORY NUMBER 23

NATIONAL WEATHER SERVICE HONOLULU HI

5 AM HST FRI SEP 11 1992

...A HURRICANE WARNING REMAINS IN EFFECT FOR PERSONS ON KAUAI... NIIHAU... AND OAHU...

...A HURRICANE WATCH REMAINS IN EFFECT FOR PERSONS ON THE MINOR LEEWARD ISLANDS AND SHOALS WEST OF KAUAI TO THE FRENCH FRIGATE SHOALS...

...A TROPICAL STORM WATCH REMAINS IN EFFECT FOR PERSONS ON THE ISLANDS OF MAUI MOLOKAI AND LANAI...

...A HIGH SURF ADVISORY REMAINS IN EFFECT FOR SOUTH AND WEST FACING SHORES OF ALL THE HAWAIIAN ISLANDS...

A HURRICANE WARNING MEANS THAT HURRICANE FORCE WINDS OF 74 MPH OR MORE IS LIKELY WITHIN THE NEXT 24 HOURS.

A HURRICANE WATCH MEANS THAT THERE IS A CHANCE THAT HURRICANE CONDITIONS MAY OCCUR WITHIN THE NEXT 36 HOURS...

A TROPICAL STORM WATCH MEANS THAT TROPICAL STORM FORCE WINDS MAY OCCUR WITHIN THE NEXT 36 HOURS.

HURRICANE INIKI CONTINUES MOVING TOWARD THE NORTH NORTHWEST AT 13 MPH. THIS TRACK WILL BRING THE CENTER OR EYE OF THE STORM VERY CLOSE TO THE ISLANDS OF KAUAI AND NIIHAU THIS EVENING ALONG WITH STRONG AND DESTRUCTIVE WINDS AND SEAS. INIKI IS A VERY DANGEROUS HURRICANE AND ITS EFFECTS ARE FAR REACHING AND EXTEND OUT 200 MILES OR MORE FROM THE CENTER, ON ITS PRESENT TRACK... MAUI COUNTY WILL BE ON THE FRINGE OF THE STORM.

AT 5 AM HST... THE CENTER OF HURRICANE INIKI WAS ESTIMATED TO BE 220 MILES SOUTH SOUTHWEST OF LIHUE AT LATITUDE 19.0 NORTH LONGITUDE 160.5 WEST AND MOVING TOWARD THE NORTH NORTHWEST AT 13 MPH.

STRONGEST SUSTAINED WINDS ARE ESTIMATED TO BE 140 MPH WITH GUSTS AS HIGH AS 165 MPH NEAR THE CENTER BASED ON RECONNAISSANCE FROM AIR FORCE RESERVE STORM TRACKERS.

SAFETY PRECAUTIONS SHOULD REMAIN IN FORCE AND SHOULD BE CONTINUED FOR THE DURATION. FOR DETAILS ON SPECIFIC RECOMMENDATIONS LISTEN FOR LOCAL STATEMENTS ISSUED BY CIVIL DEFENSE OFFICIALS AND WEATHER SERVICE OFFICES IN KAUAI... OAHU... AND MAUI.

DANGEROUS STORM TIDES OF 4 TO 6 FEET WITH LIFE THREATENING SURF OF 30 FEET OR MORE WILL LIKELY AFFECT THE ISLANDS OF KAUAI AND NIIHAU BY TONIGHT. BUILDING SURF AND WAVES OF 10 TO 20 FEET WILL LIKELY SPREAD INTO THE SOUTH AND WEST FACING SHORES OF OAHU THIS AFTERNOON AND TONIGHT. TORRENTIAL RAINS AND MAJOR FLOODING WILL LIKELY AFFECT THE ISLANDS OF KAUAI AND NIIHAU.

HURRICANE INIKI WILL BE CLOSELY MONITORED FOR SUDDEN CHANGES IN SPEED... DIRECTION OF MOVEMENT... AND INTENSIFICATION.

REPEATING THE 5 AM HST POSITION 19.0 NORTH 160.3 WEST.

THE NEXT REGULAR ADVISORY ON HURRICANE INIKI WILL BE ISSUED BY THE CENTRAL PACIFIC HURRICANE CENTER AT 11AM THIS MORNING.

HABLUTZEL NATIONAL WEATHER SERVICE HONOLULU

WTPA33 PHNL 111500 COR

BULLETIN

HURRICANE INIKI ADVISORY NUMBER 23... CORRECTED

NATIONAL WEATHER SERVICE HONOLULU HI

5 AM HST FRI SEP 11 1992

...CORRECTIONS ARE FOR ADVISORY TITLE AND 5AM LONGITUDE...

...A HURRICANE WARNING REMAINS IN EFFECT FOR PERSONS ON KAUAI... NIIHAU... AND OAHU...

...A HURRICANE WATCH REMAINS IN EFFECT FOR PERSONS ON THE MINOR LEEWARD ISLANDS AND SHOALS WEST OF KAUAI TO THE FRENCH FRIGATE SHOALS...

...A TROPICAL STORM WATCH REMAINS IN EFFECT FOR PERSONS ON THE ISLANDS OF MAUI MOLOKAI AND LANAI...

...A HIGH SURF ADVISORY REMAINS IN EFFECT FOR SOUTH AND WEST FACING SHORES OF ALL THE HAWAIIAN ISLANDS...

A HURRICANE WARNING MEANS THAT HURRICANE FORCE WINDS OF 74 MPH OR MORE IS LIKELY WITHIN THE NEXT 24 HOURS.

A HURRICANE WATCH MEANS THAT THERE IS A CHANCE THAT HURRICANE CONDITIONS MAY OCCUR WITHIN THE NEXT 36 HOURS...

A TROPICAL STORM WATCH MEANS THAT TROPICAL STORM FORCE WINDS MAY OCCUR WITHIN THE NEXT 36 HOURS.

HURRICANE INIKI CONTINUES MOVING TOWARD THE NORTH NORTHWEST AT 13 MPH. THIS TRACK WILL BRING THE CENTER OR EYE OF THE STORM VERY CLOSE TO THE ISLANDS OF KAUAI AND NIIHAU THIS EVENING ALONG WITH STRONG AND DESTRUCTIVE WINDS AND SEAS. INIKI IS A VERY DANGEROUS HURRICANE AND ITS EFFECTS ARE FAR REACHING AND EXTEND OUT 200 MILES OR MORE FROM THE CENTER, ON ITS PRESENT TRACK... MAUI COUNTY WILL BE ON THE FRINGE OF THE STORM.

AT 5 AM HST... THE CENTER OF HURRICANE INIKI WAS ESTIMATED TO BE 220 MILES SOUTH SOUTHWEST OF LIHUE AT LATITUDE 19.0 NORTH LONGITUDE 160.3 WEST AND MOVING TOWARD THE NORTH NORTHWEST AT 13 MPH.

STRONGEST SUSTAINED WINDS ARE ESTIMATED TO BE 140 MPH WITH GUSTS AS HIGH AS 165 MPH NEAR THE CENTER BASED ON RECONNAISSANCE FROM AIR FORCE RESERVE STORM TRACKERS.

SAFETY PRECAUTIONS SHOULD REMAIN IN FORCE AND SHOULD BE CONTINUED FOR THE DURATION. FOR DETAILS ON SPECIFIC RECOMMENDATIONS LISTEN FOR LOCAL STATEMENTS ISSUED BY CIVIL DEFENSE OFFICIALS AND WEATHER SERVICE OFFICES IN KAUAI... OAHU... AND MAUI.

DANGEROUS STORM TIDES OF 4 TO 6 FEET WITH LIFE THREATENING SURF OF 30 FEET OR MORE WILL LIKELY AFFECT THE ISLANDS OF KAUAI AND NIIHAU BY TONIGHT. BUILDING SURF AND WAVES OF 10 TO 20 FEET WILL LIKELY SPREAD INTO THE SOUTH AND WEST FACING SHORES OF OAHU THIS AFTERNOON AND TONIGHT. TORRENTIAL RAINS AND MAJOR FLOODING WILL LIKELY AFFECT THE ISLANDS OF KAUAI AND NIIHAU.

HURRICANE INIKI WILL BE CLOSELY MONITORED FOR SUDDEN CHANGES IN SPEED... DIRECTION OF MOVEMENT... AND INTENSIFICATION,

REPEATING THE 5 AM HST POSITION 19.0 NORTH 160.3 WEST.

THE NEXT REGULAR ADVISORY ON HURRICANE INIKI WILL BE ISSUED BY THE CENTRAL PACIFIC HURRICANE CENTER AT 11AM THIS MORNING.

HABLUTZEL NATIONAL WEATHER SERVICE HONOLULU

WTPA33 PHNL 112100
BULLETIN
HURRICANE INIKI PUBLIC ADVISORY NUMBER 24
NATIONAL WEATHER SERVICE HONOLULU HI
11 AM HST FRI SEP 11 1992

...A HURRICANE WARNING REMAINS IN EFFECT FOR PERSONS ON
KAUAI...NIIHAU...AND OAHU...

...A HURRICANE WATCH REMAINS IN EFFECT FOR PERSONS ON
THE MINOR LEEWARD ISLANDS AND SHOALS WEST OF KAUAI TO
THE FRENCH FRIGATE SHOALS...

...A TROPICAL STORM WATCH REMAINS IN EFFECT FOR PERSONS
ON MAUI...MOLOKAI...AND LANAI...

...A HIGH SURF ADVISORY REMAINS IN EFFECT FOR SOUTH AND
WEST FACING SHORES OF ALL THE HAWAIIAN ISLANDS...

HURRICANE INIKI IS NOW MOVING TOWARD THE NORTH AT 17
MPH. THIS TRACK WILL BRING THE CENTER OR EYE OF THE
STORM VERY CLOSE TO THE ISLANDS OF KAUAI AND NIIHAU THIS
EVENING ALONG WITH STRONG AND DESTRUCTIVE WINDS AND
SEAS. INIKI IS A VERY DANGEROUS HURRICANE AND ITS EFFECTS
ARE FAR REACHING AND EXTEND OUT 200 MILES OR MORE FROM
THE CENTER. ON ITS PRESENT TRACK...MOLOKAI...MAUI...AND
LANAI WILL BE ON THE FRINGE OF THE STORM.

AT 11 AM HST...THE CENTER OF HURRICANE INIKI WAS ESTIMATED
TO BE 130 MILES SOUTH SOUTHWEST OF LIHUE AT LATITUDE 20.2
NORTH LONGITUDE 159.6 WEST AND MOVING TOWARD THE
NORTH AT 17 MPH.

STRONGEST SUSTAINED WINDS ARE ESTIMATED TO BE 165 MPH
WITH GUSTS AS HIGH AS 160 MPH NEAR THE CENTER BASED ON
RECONNAISSANCE FROM AIR FORCE RESERVE STORM
TRACKERS.

SAFETY PRECAUTIONS SHOULD REMAIN IN FORCE AND SHOULD
BE CONTINUED FOR THE DURATION. FOR DETAILS ON SPECIFIC
RECOMMENDATIONS LISTEN FOR LOCAL STATEMENTS ISSUED BY
CIVIL DEFENSE OFFICIALS AND WEATHER SERVICE OFFICES IN
KAUAI...OAHU...AND MAUI.

DANGEROUS STORM TIDES OF 4 TO 8 FEET WITH LIFE
THREATENING SURF OF 30 FEET OR MORE WILL LIKELY AFFECT
THE ISLANDS OF KAUAI AND NIIHAU BY TONIGHT. BUILDING SURF
AND WAVES OF 10 TO 20 FEET WILL LIKELY SPREAD INTO THE
SOUTH AND WEST FACING SHORES OF KAUAI AND OAHU THIS
AFTERNOON AND TONIGHT. TORRENTIAL RAINS AND MAJOR
FLOODING WILL LIKELY AFFECT THE ISLANDS OF KAUAI AND
NIIHAU. KAUAI CIVIL DEFENSE REPORTS WAVES CROSSING THE
HIGHWAYS IN KEKAHA...AND BRENNCKES BEACH IN POIPU.

REPEATING THE 11 AM HST POSITION 20.2 NORTH 159.8 WEST.

THE NEXT REGULAR ADVISORY ON HURRICANE INIKI WILL BE
ISSUED BY THE CENTRAL PACIFIC HURRICANE CENTER AT 5 PM
THIS AFTERNOON.

CHUN/HABLUTZEL NATIONAL WEATHER SERVICE HONOLULU

WTPA33 PHNL 112100 COR
BULLETIN
HURRICANE INIKI PUBLIC ADVISORY NUMBER 24...CORRECTED
NATIONAL WEATHER SERVICE HONOLULU HI
11 AM HST FRI SEP 11 1992

...CORRECTION IS FOR SUSTAINED WINDS AND GUSTS...

...A HURRICANE WARNING REMAINS IN EFFECT FOR PERSONS ON
KAUAI...NIIHAU...AND OAHU...

...A HURRICANE WATCH REMAINS IN EFFECT FOR PERSONS ON
THE MINOR LEEWARD ISLANDS AND SHOALS WEST OF KAUAI TO
THE FRENCH FRIGATE SHOALS...

...A TROPICAL STORM WATCH REMAINS IN EFFECT FOR PERSONS
ON MAUI...MOLOKAI...AND LANAI...

...A HIGH SURF ADVISORY REMAINS IN EFFECT FOR SOUTH AND
WEST FACING SHORES OF ALL THE HAWAIIAN ISLANDS...

HURRICANE INIKI IS NOW MOVING TOWARD THE NORTH AT 17
MPH. THIS TRACK WILL BRING THE CENTER OR EYE OF THE
STORM VERY CLOSE TO THE ISLANDS OF KAUAI AND NIIHAU THIS
EVENING ALONG WITH STRONG AND DESTRUCTIVE WINDS AND
SEAS. INIKI IS A VERY DANGEROUS HURRICANE AND ITS EFFECTS
ARE FAR REACHING AND EXTEND OUT 200 MILES OR MORE FROM
THE CENTER. ON ITS PRESENT TRACK...MOLOKAI...MAUI...AND
LANAI WILL BE ON THE FRINGE OF THE STORM.

AT 11 AM HST...THE CENTER OF HURRICANE INIKI WAS ESTIMATED
TO BE 130 MILES SOUTH SOUTHWEST OF LIHUE AT LATITUDE 20.2
NORTH LONGITUDE 159.8 WEST AND MOVING TOWARD THE
NORTH AT 17 MPH.

COR
STRONGEST SUSTAINED WINDS ARE ESTIMATED TO BE 145 MPH
WITH GUSTS AS HIGH AS 175 MPH NEAR THE CENTER BASED ON
RECONNAISSANCE FROM AIR FORCE RESERVE STORM
TRACKERS.

SAFETY PRECAUTIONS SHOULD REMAIN IN FORCE AND SHOULD
BE CONTINUED FOR THE DURATION. FOR DETAILS ON SPECIFIC
RECOMMENDATIONS LISTEN FOR LOCAL STATEMENTS ISSUED BY
CIVIL DEFENSE OFFICIALS AND WEATHER SERVICE OFFICES IN
KAUAI...OAHU...AND MAUI.

DANGEROUS STORM TIDES OF 4 TO 8 FEET WITH LIFE
THREATENING SURF OF 30 FEET OR MORE WILL LIKELY AFFECT
THE ISLANDS OF KAUAI AND NIIHAU BY TONIGHT. BUILDING SURF
AND WAVES OF 10 TO 20 FEET WILL LIKELY SPREAD INTO THE
SOUTH AND WEST FACING SHORES OF KAUAI AND OAHU THIS
AFTERNOON AND TONIGHT. TORRENTIAL RAINS AND MAJOR
FLOODING WILL LIKELY AFFECT THE ISLANDS OF KAUAI AND
NIIHAU. KAUAI CIVIL DEFENSE REPORTS WAVES CROSSING THE
HIGHWAYS IN KEKAHA...AND BRENNCKES BEACH IN POIPU.

REPEATING THE 11 AM HST POSITION 20.2 NORTH 159.8 WEST.

THE NEXT REGULAR ADVISORY ON HURRICANE INIKI WILL BE
ISSUED BY THE CENTRAL PACIFIC HURRICANE CENTER AT 5 PM
THIS AFTERNOON.

CHUN/HABLUTZEL NATIONAL WEATHER SERVICE HONOLULU

WTPA33 PHNL 112300

BULLETIN

HURRICANE **INIKI** INTERMEDIATE ADVISORY NUMBER 24A

NATIONAL WEATHER SERVICE HONOLULU HI

1 PM HST **FRI** SEP 11 1992

...A TROPICAL STORM WARNING IS **EFFECTIVE** AT 1 PM HST FOR MAUI COUNTY...

...A HIGH **WIND** WARNING IS EFFECTIVE AT 1 PM FOR THE SUMMITS AND UPPER SLOPES OF MAUNA KEA AND MAUNA **LOA**...

...A HURRICANE WARNING **REMAINS** IN EFFECT FOR PERSONS ON **KAUAI...NIIHAU...AND OAHU**...

...A HURRICANE WATCH REMAINS IN EFFECT FOR PERSONS ON THE MINOR LEEWARD ISLANDS AND SHOALS WEST OF KAUAI TO THE FRENCH FRIGATE SHOALS...

...A HIGH SURF ADVISORY REMAINS IN EFFECT FOR SOUTH AND WEST FACING SHORES OF ALL THE HAWAIIAN ISLANDS...

HURRICANE INIKI **CONTINUES** TO MOVE NORTH AT 20 MPH. THIS TRACK WILL BRING THE CENTER OR EYE OF THE STORM VERY CLOSE TO THE ISLAND OF KAUAI AT **ABOUT 5** PM THIS AFTERNOON. THE EYE OF THE HURRICANE WILL BE PRECEDED BY **STRONG...DESTRUCTIVE WINDS** AND GIANT SURF. INIKI EFFECTS ARE FAR REACHING AND EXTEND OUT 200 MILES OR MORE FROM THE CENTER. ON **ITS** PRESENT TRACK THE ISLANDS OF MAUI COUNTY WILL BE **ON** THE FRINGE OF THE STORM AND **WILL** EXPERIENCE WINDS OF TROPICAL STORM STRENGTH...39 MPH TO 74 MPH **WITH** STRONGER GUSTS.

AT 1 PM HST...THE CENTER OF HURRICANE INIKI WAS ESTIMATED TO BE 72 MILES SOUTHWEST OF LIHUE AND **128** MILES WEST OF **HONOLULU** NEAR **LATITUDE** 21.1 NORTH LONGITUDE 159.9 WEST AND MOVING TOWARD THE NORTH AT 17 MPH.

STRONGEST SUSTAINED WINDS ARE **ESTIMATED** TO BE 145 MPH WITH GUSTS AS HIGH AS 175 MPH NEAR THE CENTER BASED ON **RECONNAISSANCE** FROM AIR FORCE RESERVE STORM TRACKERS.

SAFETY **PRECAUTIONS** SHOULD REMAIN IN FORCE AND SHOULD BE CONTINUED FOR THE **DURATION**. FOR DETAILS ON SPECIFIC **RECOMMENDATIONS** LISTEN FOR LOCAL STATEMENTS ISSUED BY **CIVIL** DEFENSE OFFICIALS AND WEATHER SERVICE OFFICES **IN KAUAI...OAHU...AND MAUI**.

DANGEROUS STORM **TIDES** OF 4 TO 8 FEET WITH LIFE THREATENING SURF OF 30 FEET OR MORE WILL LIKELY AFFECT THE ISLANDS OF KAUAI AND NIIHAU BY TONIGHT. SURF AND WAVES OF 10 TO 20 FEET OR MORE CAN BE EXPECTED ON THE SOUTH AND WEST FACING SHORES OF KAUAI AND OAHU THIS AFTERNOON AND TONIGHT. SURF OF 20 **FEET** HAS ALREADY BEEN REPORTED ON THE SOUTH SHORES OF KAUAI WITH WAVES CRASHING OVER SOME BEACH **FRONT** ROADS AND HIGHWAYS.

TORRENTIAL **RAINS** AND **FLOODING** IS **EXPECTED** TO OCCUR ON THE ISLANDS OF **KAUAI...NIIHAU...OAHU** AND PORTIONS OF MAUI **COUNTY**. SEVERAL WATERSPOUT AND FUNNEL CLOUD SIGHTINGS HAVE BEEN REPORTED. **CONDITIONS** ARE SUCH THAT THERE IS DISTINCT POSSIBILITY OF TORNADOES DEVELOPING THIS **AFTERNOON** AND WATERSPOUTS MOVING ONSHORE.

REPEATING THE 1 PM HST POSITION 21.1 NORTH 159.9 WEST.

THE NEXT REGULAR ADVISORY ON HURRICANE INIKI WILL BE ISSUED BY **THE** CENTRAL PACIFIC HURRICANE CENTER AT 5 PM THIS AFTERNOON **WITH AN** INTERMEDIATE ADVISORY AT **3PM**.

CHUN NATIONAL WEATHER SERVICE HONOLULU

WTPA33 PHNL 120100

BULLETIN

HURRICANE INIKI INTERMEDIATE ADVISORY NUMBER 24B

NATIONAL WEATHER SERVICE HONOLULU HI

3 PM HST **FRI** SEP 11 1992

...A HURRICANE WARNING REMAINS IN EFFECT FOR PERSONS ON **KAUAI...NIIHAU...AND OAHU**...

...A HURRICANE WATCH REMAINS IN EFFECT FOR PERSONS ON THE MINOR LEEWARD ISLANDS AND SHOALS WEST OF KAUAI TO THE FRENCH FRIGATE SHOALS...

...A HIGH SURF ADVISORY REMAINS IN EFFECT FOR **SOUTH** AND WEST FACING SHORES OF ALL THE HAWAIIAN ISLANDS...

...A TROPICAL STORM WARNING REMAINS IN EFFECT FOR MAUI **COUNTY**...

...**A** HIGH WIND WARNING REMAINS IN EFFECT FOR THE SUMMITS AND UPPER SLOPES OF MAUNA KEA AND MAUNA **LOA**...

HURRICANE INIKI SPEEDING UP AND MOVING **NORTH** AT 21 MPH. THIS **TRACK** WILL BRING THE CENTER OR EYE OF THE STORM VERY CLOSE OR OVER THE ISLAND OF KAUAI WITH THE FULL FORCE OF **INIKI'S DESTRUCTIVE** POWERS FELT IN THE NEXT HOUR OR TWO.

COMMERCIAL POWER ON THE ISLAND OF KAUAI FAILED AT **ABOUT** 120 PM THIS AFTERNOON. COMMUNICATIONS WITH THE ISLAND IS **INTERMITTANT** AND MOSTLY THROUGH A HAM RADIO NETWORK,

AT 3 PM HST...THE CENTER OF HURRICANE INIKI WAS ESTIMATED TO BE 37 MILES SOUTHWEST OF LIHUE AND 115 MILES WEST OF HONOLULU NEAR LATITUDE 21.6 NORTH LONGITUDE 159.7 WEST AND MOVING TOWARD THE NORTH AT **21** MPH.

STRONGEST SUSTAINED **WINDS** ARE ESTIMATED TO BE 130 MPH WITH GUSTS AS HIGH AS 160 MPH NEAR THE CENTER BASED ON RECONNAISSANCE FROM AIR FORCE RESERVE STORM **TRACKERS**.

SAFETY **PRECAUTIONS** REMAIN IN FORCE AND SHOULD BE CONTINUED FOR THE **DURATION**. FOR DETAILS ON SPECIFIC **RECOMMENDATIONS** LISTEN FOR LOCAL STATEMENTS ISSUED BY **CIVIL** DEFENSE OFFICIALS AND WEATHER SERVICE OFFICES IN **KAUAI...OAHU...AND MAUI**.

DANGEROUS STORM TIDES OF 4 TO 8 FEET WITH LIFE THREATENING SURF OF 30 FEET OR MORE WILL LIKELY AFFECT THE ISLANDS OF KAUAI AND NIIHAU BY TONIGHT. SURF AND WAVES OF 10 TO 20 FEET OR MORE CAN BE EXPECTED ON THE SOUTH AND WEST FACING SHORES OF KAUAI AND OAHU THIS **AFTERNOON** AND TONIGHT. SURF OF 20 FEET HAS ALREADY BEEN REPORTED ON THE SOUTH SHORES OF KAUAI **WITH** WAVES CRASHING OVER SOME BEACH FRONT ROADS AND HIGHWAYS. ON THE ISLAND OF **OAHU...SURF** HEIGHTS OF 15 TO 20 FEET WAS REPORTED WITHIN THE LAST HOUR.

TORRENTIAL RAINS AND FLOODING ARE EXPECTED TO OCCUR ON THE ISLANDS OF **KAUAI...NIIHAU...OAHU** AND PORTIONS OF MAUI **COUNTY**. SEVERAL WATERSPOUT AND FUNNEL CLOUD **SIGHTINGS** HAVE BEEN REPORTED. **CONDITIONS** ARE SUCH THAT THERE IS DISTINCT POSSIBILITY OF TORNADOES DEVELOPING THIS AFTERNOON AND **WATERSPOUTS** MOVING ONSHORE.

REPEATING THE 3 PM HST POSITION 21.6 NORTH 159.7 WEST

THE NEXT REGULAR ADVISORY ON HURRICANE INIKI WILL BE ISSUED BY **THE** CENTRAL PACIFIC HURRICANE CENTER AT 5 PM THIS AFTERNOON **WITH AN** INTERMEDIATE ADVISORY AT **8PM**.

CHUN NATIONAL WEATHER SERVICE HONOLULU

WTPA33 PHNL 120300

BULLETIN

HURRICANE **INIKI** INTERMEDIATE ADVISORY NUMBER 25
NATIONAL **WEATHER** SERVICE HONOLULU HI
5 PM HST FRI SEP 11 1992

...A HURRICANE WARNING REMAINS IN EFFECT FOR PERSONS ON
KAUAI AND **NIHAU**...

...**THE** HURRICANE **WARNING** FOR OAHU HAS BEEN DOWNGRADED
TO A TROPICAL STORM WARNING AS OF **5PMHST**...

...A HURRICANE WATCH REMAINS IN EFFECT FOR PERSONS ON THE
MINOR LEEWARD ISLANDS WEST OF KAUAI TO FRENCH FRIGATE
SHOALS...

...A HIGH SURF ADVISORY REMAINS IN EFFECT FOR SOUTH AND
WEST FACING SHORES OF ALL THE HAWAIIAN ISLANDS...

...**A TROPICAL** STORM WARNING REMAINS IN EFFECT FOR
MAUI...MOLOKAI...AND LANAI...

...A HIGH WIND WARNING REMAINS IN EFFECT FOR THE SUMMITS
AND UPPER SLOPES OF MAUNA KEA AND MAUNA **LOA**...

COMMERCIAL POWER ON THE ISLAND OF KAUAI **FAILED** AT ABOUT
120 PM THIS AFTERNOON. COMMUNICATIONS WITH THE ISLAND IS
INTERMITTANT AND MOSTLY THROUGH A HAM RADIO NETWORK.

AT 5 PM **HST**...**THE** CENTER OF HURRICANE INIKI WAS
APPROXIMATELY 50 MILES NORTH OF KAUAI NEAR **LATITUDE** 22.7
NORTH 159.3 WEST AND NORTH AT 30 MPH.

STRONGEST SUSTAINED WINDS ARE ESTIMATED TO BE 130 MPH
WITH GUSTS AS HIGH AS 160 MPH NEAR THE CENTER **BASED** ON
RECONNAISSANCE FROM AIR FORCE RESERVE STORM **TRACKERS**.

SAFETY **PRECAUTIONS** REMAIN IN FORCE AND SHOULD BE
CONTINUED FOR THE **DURATION**. FOR DETAILS ON SPECIFIC
RECOMMENDATIONS LISTEN FOR LOCAL STATEMENTS ISSUED BY
CIVIL DEFENSE OFFICIALS AND WEATHER SERVICE OFFICES IN
KAUAI...OAHU...AND MAUI.

DANGEROUS STORM TIDES OF 4 TO **8** FEET WITH LIFE
THREATENING SURF OF 30 FEET OR MORE WILL LIKELY AFFECT
THE ISLANDS OF KAUAI AND NIHAU BY TONIGHT. SURF AND WAVES
OF 10 TO 20 FEET OR MORE CAN BE EXPECTED ON THE SOUTH
AND WEST FACING SHORES OF KAUAI AND OAHU THIS **AFTERNOON**
AND TONIGHT. SURF OF 20 FEET HAS ALREADY BEEN REPORTED
ON THE SOUTH SHORES OF KAUAI **WITH** WAVES CRASHING OVER
SOME BEACH FRONT ROADS AND HIGHWAYS. THERE HAVE ALSO
BEEN REPORTS OF STRUCTURAL DAMAGE ON KAUAI.

TORRENTIAL **RAINS** AND FLOODING ARE OCCURRING ON KAUAI AND
NIHAU. CONDITIONS ARE SUCH THAT THERE IS A POSSIBILITY OF
TORNADOES AND WATERSPOUTS MOVING ONSHORE.

REPEATING THE 5 PM HST **POSITION** 22.7 NORTH 159.3 WEST.

THE NEXT REGULAR ADVISORY ON **HURRICANE** INIKI WILL BE
ISSUED BY THE CENTRAL PACIFIC HURRICANE CENTER AT 11 PM
TONIGHT WITH AN INTERMEDIATE ADVISORY AT **8PM**.

HABLUTZEL NATIONAL WEATHER SERVICE HONOLULU

WTPA33 PHNL 120300 COR

BULLETIN

HURRICANE INIKI ADVISORY NUMBER 25...**CORRECTED**
NATIONAL WEATHER SERVICE HONOLULU HI
5 PM HST FRI SEP 11 1992

...**CORRECTION** IS FOR INCLUSION OF **HALEAKALA** IN THE HIGH
WIND WARNING AND THE MOVEMENT OF THE STORM...

...A HURRICANE WARNING REMAINS IN EFFECT FOR PERSONS ON
KAUAI AND **NIHAU**...

...**THE** HURRICANE WARNING FOR OAHU HAS BEEN **DOWNGRADED**
TO A TROPICAL STORM WARNING AS OF **5PMHST**...

...A HURRICANE WATCH REMAINS IN EFFECT FOR PERSONS ON THE
MINOR LEEWARD ISLANDS WEST OF KAUAI TO FRENCH FRIGATE
SHOALS...

...A HIGH SURF ADVISORY REMAINS IN EFFECT FOR SOUTH AND
WEST FACING SHORES OF ALL THE HAWAIIAN **ISLANDS**...

...**A TROPICAL** STORM WARNING REMAINS IN EFFECT FOR
MAUI...MOLOKAI...AND LANAI...

COR

...A HIGH WIND WARNING REMAINS IN EFFECT FOR THE SUMMITS
AND UPPER SLOPES OF MAUNA KEA AND MAUNA LOA ON THE BIG
ISLAND AND HALEAKALA ON MAUI...

COMMERCIAL POWER ON THE ISLAND OF KAUAI **FAILED** AT ABOUT
120 PM THIS **AFTERNOON**. **COMMUNICATIONS** WITH THE ISLAND IS
INTERMITTANT AND MOSTLY THROUGH A HAM RADIO **NETWORK**.

COR

AT 5 PM **HST**...**THE** CENTER OF HURRICANE INIKI WAS
APPROXIMATELY 50 MILES NORTH OF KAUAI NEAR LATITUDE 22.7
NORTH 159.3 WEST AND MOVING TOWARD THE NORTH AT **30** MPH.

STRONGEST SUSTAINED WINDS ARE ESTIMATED TO BE 130 MPH
WITH GUSTS AS HIGH AS 160 MPH NEAR THE CENTER BASED ON
RECONNAISSANCE FROM AIR FORCE RESERVE STORM **TRACKERS**.

SAFETY **PRECAUTIONS** REMAIN IN FORCE AND SHOULD BE
CONTINUED FOR **THE** **DURATION**. FOR DETAILS ON SPECIFIC
RECOMMENDATIONS LISTEN FOR LOCAL **STATEMENTS** ISSUED BY
CIVIL DEFENSE OFFICIALS AND WEATHER SERVICE OFFICES IN
KAUAI...OAHU...AND MAUI.

DANGEROUS STORM **TIDES** OF 4 TO **8** FEET WITH LIFE
THREATENING SURF OF 30 FEET OR MORE WILL LIKELY AFFECT
THE ISLANDS OF KAUAI AND NIHAU BY TONIGHT. SURF AND WAVES
OF 10 TO 20 FEET OR MORE CAN BE **EXPECTED** ON THE SOUTH
AND WEST **FACING** SHORES OF KAUAI AND OAHU THROUGH
TONIGHT. SURF OF 20 FEET HAS ALREADY BEEN REPORTED ON
THE SOUTH SHORES OF KAUAI WITH WAVES CRASHING OVER
SOME BEACH FRONT ROADS AND HIGHWAYS. THERE HAVE ALSO
BEEN REPORTS OF STRUCTURAL DAMAGE ON KAUAI.

TORRENTIAL RAINS AND FLOODING ARE OCCURRING ON KAUAI AND
NIHAU. **CONDITIONS** ARE SUCH THAT THERE IS A POSSIBILITY OF
TORNADOES AND WATERSPOUTS MOVING ONSHORE.

REPEATING THE 5 PM HST **POSITION** 22.7 NORTH 159.3 WEST,

THE **NEXT** REGULAR ADVISORY ON **HURRICANE** INIKI WILL BE
ISSUED BY THE CENTRAL PACIFIC HURRICANE CENTER AT 11 PM
TONIGHT WITH AN INTERMEDIATE ADVISORY AT **8PM**.

HABLUTZEL NATIONAL WEATHER SERVICE HONOLULU

WTPA33 PHNL 120600

BULLETIN

HURRICANE INIKI INTERMEDIATE ADVISORY NUMBER 25A
NATIONAL WEATHER SERVICE HONOLULU HI
8 PM HST FRI SEP 11 1992

...A HURRICANE WARNING REMAINS IN EFFECT FOR PERSONS
ON KAUAI AND NIIHAU...

...A HIGH SURF ADVISORY REMAINS IN EFFECT FOR SOUTH
AND WEST FACING SHORES OF ALL ISLANDS...

...THE TROPICAL STORM WARNING FOR OAHU AND MAUI
COUNTIES IS CANCELLED AT 6 PM HST...

...THE HURRICANE WATCH FOR PERSONS ON THE MINOR
LEEWARD ISLANDS WEST OF KAUAI TO FRENCH FRIGATE
SHOALS IS CANCELLED AT 8 PM HST...

...THE HIGH WIND WARNING FOR THE SUMMITS AND UPPER
SLOPES OF MAUNA KEA AND MAUNA LOA ON THE BIG ISLAND
AND HALEAKALA ON MAUI IS CANCELLED AT 8 PM HST...

AT 8 PM HST...THE CENTER OF HURRICANE INIKI WAS
APPROXIMATELY 120 MILES NORTH OF KAUAI NEAR LATITUDE
23.8 NORTH 159.5 WEST AND MOVING TOWARD THE NORTH
AT 30 MPH.

STRONGEST SUSTAINED WINDS ARE ESTIMATED TO BE 115
MPH WITH GUSTS AS HIGH AS 145 MPH NEAR THE CENTER
BASED ON RECONNAISSANCE FROM AIR FORCE RESERVE
STORM TRACKERS.

SAFETY PRECAUTIONS REMAIN IN FORCE FOR KAUAI
COUNTY. FOR DETAILS ON SPECIFIC
RECOMMENDATIONS...LISTEN FOR LOCAL STATEMENTS
ISSUED BY CIVIL DEFENSE OFFICIALS AND THE LIHUE
WEATHER SERVICE OFFICE.

ON SOUTH AND WEST FACING SHORES...SURF AS HIGH AS 15
FEET IS EXPECTED THROUGH TONIGHT AND SLOWLY
SUBSIDE ON SATURDAY.

TORRENTIAL RAINS AND FLOODING ARE OCCURRING ON
KAUAI AND NIIHAU. CONDITIONS ARE STILL FAVORABLE FOR
TORNADOES AND WATERSPOUTS MOVING ONSHORE.

REPEATING THE 8 PM HST POSITION 23.8 NORTH 159.5 WEST.

THE NEXT REGULAR ADVISORY ON HURRICANE INIKI WILL BE
ISSUED BY THE CENTRAL PACIFIC HURRICANE CENTER AT 11
PM.

HABLUTZEL NATIONAL WEATHER SERVICE HONOLULU

.....

WTPA33 PHNL 120900

BULLETIN

HURRICANE INIKI ADVISORY NUMBER 26
NATIONAL WEATHER SERVICE HONOLULU HI
11PM HST FRI SEP 11 1992

...THE HURRICANE WARNING FOR KAUAI AND NIIHAU HAS
BEEN DOWNGRADED TO A TROPICAL STORM WATCH

EFFECTIVE 11PM HST...

...A HIGH SURF ADVISORY REMAINS IN EFFECT FOR SOUTH
AND WEST FACING SHORES OF ALL ISLANDS...

AT 11PM HST...THE CENTER OF HURRICANE INIKI WAS
APPROXIMATELY 180 MILES NORTH OF KAUAI NEAR LATITUDE
24.7 NORTH LONGITUDE 159.1 WEST AND MOVING TOWARD
THE NORTH AT 25 MPH.

STRONGEST SUSTAINED WINDS ARE ESTIMATED TO BE 115
MPH WITH GUSTS AS HIGH AS 145 MPH NEAR THE CENTER
BASED ON RECONNAISSANCE FROM AIR FORCE RESERVE
STORM TRACKERS.

ON SOUTH AND WEST FACING SHORES...SURF AS HIGH AS 15
FEET IS EXPECTED THROUGH OVERNIGHT AND SLOWLY
SUBSIDE ON SATURDAY.

REPEATING THE 11 PM HST POSITION 24.7 NORTH 159.1
WEST.

THE NEXT REGULAR ADVISORY ON HURRICANE INIKI WILL BE
ISSUED BY THE CENTRAL PACIFIC HURRICANE CENTER AT 5
AM HST WITH AN INTERMEDIATE ADVISORY AT 2AM HST.

HABLUTZEL NATIONAL WEATHER SERVICE HONOLULU

.....

WTPA33 PHNL 121200

BULLETIN

HURRICANE INIKI INTERMEDIATE ADVISORY NUMBER 26A
NATIONAL WEATHER SERVICE HONOLULU HI
2 AM HST SAT SEP 12 1992

...THE TROPICAL STORM WATCH FOR KAUAI AND NIIHAU IS
CANCELLED EFFECTIVE AT 2 AM HST...

...A HIGH SURF ADVISORY REMAINS IN EFFECT FOR SOUTH
AND WEST FACING SHORES OF ALL ISLANDS...

AT 2 AM HST...THE CENTER OF HURRICANE INIKI WAS
APPROXIMATELY 230 MILES NORTH OF KAUAI NEAR LATITUDE
25.3 NORTH LONGITUDE 159.1 WEST AND MOVING TOWARD
THE NORTH AT 25 MPH.

STRONGEST SUSTAINED WINDS ARE ESTIMATED TO BE 105
MPH WITH GUSTS AS HIGH AS 125 MPH NEAR THE CENTER.

ON SOUTH AND WEST FACING SHORES...SURF RANGING
BETWEEN 6 AND 12 FEET IS EXPECTED TO SLOWLY SUBSIDE.

REPEATING THE 2 AM HST POSITION 25.3 NORTH 159.1 WEST.

THE NEXT REGULAR ADVISORY ON HURRICANE INIKI WILL BE
ISSUED BY THE CENTRAL PACIFIC HURRICANE CENTER AT 5
AM HST THIS MORNING.

HABLUTZEL NATIONAL WEATHER SERVICE HONOLULU



Natural Disaster Survey Report

Hurricane Iniki September 6 - 13, 1992



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Weather Service, Silver Spring, Maryland

WTPA33PHNL121560
BULLETIN
HURRICANE INIKI ADVISORY NUMBER 27
NATIONAL WEATHER SERVICE HONOLULU HI
5 AM HST SAT SEP 12 1992

...A HIGH SURF ADVISORY REMAINS IN EFFECT FOR SOUTH
AND WEST FACING SHORES OF ALL ISLANDS...

AT 5 AM HST...THE CENTER OF HURRICANE INIKI WAS
APPROXIMATELY 330 MILES NORTH OF KAUAI NEAR LATITUDE
26.6 NORTH LONGITUDE 156.9 WEST AND MOVING TOWARD
THE NORTH AT 25 MPH.

STRONGEST SUSTAINED WINDS ARE ESTIMATED TO BE 90
MPH WITH GUSTS AS HIGH AS 115 MPH NEAR THE CENTER.

HURRICANE INIKI IS FORECAST TO CONTINUE MOVING
TOWARD THE NORTH AND RAPIDLY WEAKEN DURING THE
NEXT 24 HOURS.

ON SOUTH AND WEST FACING SHORES...SURF RANGING
BETWEEN 6 AND 12 FEET IS EXPECTED TO SLOWLY SUBSIDE.

REPEATING THE 5 AM HST POSITION 26.6 NORTH 156.9 WEST.

THE NEXT REGULAR ADVISORY ON HURRICANE INIKI WILL BE
ISSUED BY THE CENTRAL PACIFIC HURRICANE CENTER AT 11
AM HST THIS MORNING.

HABUTZEL NATIONAL WEATHER SERVICE HONOLULU

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WTPA33 PHNL SEP 12 1992 20:30:07Z 09
WTPA33PHNL122100
BULLETIN
HURRICANE INIKI ADVISORY NUMBER 26
NATIONAL WEATHER SERVICE HONOLULU HI
11 AM HST SAT SEP 12 1992

...THE HIGH SURF ADVISORY IS CANCELLED AT 11 AM FOR
THE SOUTH AND WEST FACING SHORES OF ALL ISLANDS...

AT 11 AM HST...THE CENTER OF HURRICANE INIKI WAS
APPROXIMATELY 500 MILES NORTH OF KAUAI NEAR LATITUDE
29.3 NORTH LONGITUDE 156.6 WEST AND MOVING TOWARD
THE NORTH AT 27 MPH.

STRONGEST SUSTAINED WINDS ARE ESTIMATED TO BE 90
MPH WITH GUSTS AS HIGH AS 115 MPH NEAR THE CENTER.

HURRICANE INIKI IS FORECAST TO CONTINUE MOVING
TOWARD THE NORTH AND RAPIDLY WEAKEN DURING THE
NEXT 24 HOURS.

REPEATING THE 11 AM HST POSITION 29.3 NORTH 159.8
WEST.

THE NEXT REGULAR ADVISORY ON HURRICANE INIKI WILL BE
ISSUED BY THE CENTRAL PACIFIC HURRICANE CENTER AT 5
PM THIS EVENING.

CHUN NATIONAL WEATHER SERVICE HONOLULU

WTPA33PHNL130300
BULLETIN
HURRICANE INIKI ADVISORY NUMBER 29
NATIONAL WEATHER SERVICE HONOLULU HI
5 PM HST SAT SEP 12 1992

...INIKI WEAKENING RAPIDLY FAR TO THE NORTH OF THE
HAWAIIAN ISLANDS...

AT 5 PM HST...THE CENTER OF HURRICANE INIKI WAS
APPROXIMATELY 655 MILES NORTH OF KAUAI NEAR LATITUDE
31.5 NORTH LONGITUDE 156.7 WEST AND MOVING TOWARD
THE NORTH AT 25 MPH.

STRONGEST SUSTAINED WINDS ARE ESTIMATED TO BE 75
MPH WITH GUSTS AS HIGH AS 90 MPH NEAR THE CENTER.

INIKI IS WEAKENING RAPIDLY AND WILL CONTINUE TO MOVE
TO THE NORTH.

REPEATING THE 5 PM HST POSITION 31.5 NORTH 156.7 WEST.

THE NEXT REGULAR ADVISORY ON HURRICANE INIKI WILL BE
ISSUED BY THE CENTRAL PACIFIC HURRICANE CENTER AT 11
PM THIS EVENING.

CHUN NATIONAL WEATHER SERVICE HONOLULU

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WTPA33PHNL130990
BULLETIN
HURRICANE INIKI ADVISORY NUMBER 30
NATIONAL WEATHER SERVICE HONOLULU HI
11 PM HST SAT SEP 12 1992

...HURRICANE INIKI FAR NORTH OF THE HAWAIIAN ISLANDS
MOVING AWAY RAPIDLY AND WEAKENING...

AT 11 PM HST...THE CENTER OF HURRICANE INIKI WAS
APPROXIMATELY 835 MILES NORTH OF KAUAI NEAR LATITUDE
34.2 NORTH LONGITUDE 156.7 WEST AND MOVING TOWARD
THE NORTH AT 30 MPH.

STRONGEST SUSTAINED WINDS ARE ESTIMATED TO BE 75
MPH WITH GUSTS AS HIGH AS 90 MPH NEAR THE CENTER.

INIKI IS FORECAST TO WEAKEN AND CONTINUE MOVING
RAPIDLY TOWARDS THE NORTH OVER THE OPEN OCEAN. ALL
SHIPPING AND MARINE INTERESTS ARE URGED TO KEEP
ABREAST OF THE LATEST ADVISORIES.

REPEATING THE 11 PM HST POSITION 34.2 NORTH 156.7
WEST.

THE NEXT REGULAR ADVISORY ON HURRICANE INIKI WILL BE
ISSUED BY THE CENTRAL PACIFIC HURRICANE CENTER AT 5
AM HST SUNDAY.

LAY NATIONAL WEATHER SERVICE HONOLULU

WTPA33 PHNL 131500
BULLETIN
TROPICAL STORM INIKI ADVISORY NUMBER 31
NATIONAL WEATHER SERVICE HONOLULU HI
5 AM HST SUN SEP 13 1992

...INIKI DOWNGRADED TO A TROPICAL STORM...

AT 5 AM HST...THE CENTER OF TROPICAL STORM INIKI WAS APPROXIMATELY 960 MILES NORTH OF KAUAI NEAR LATITUDE 36.0 NORTH LONGITUDE 158.4 WEST AND MOVING TOWARD THE NORTH AT ABOUT 25 MPH.

STRONGEST SUSTAINED WINDS ARE ESTIMATED TO BE 65 MPH WITH GUSTS AS HIGH AS 80 MPH NEAR THE CENTER.

INIKI IS FORECAST TO RAPIDLY WEAKEN AND CONTINUE MOVING RAPIDLY TO THE NORTH OVER THE OPEN OCEAN. ALL SHIPPING AND MARINE INTERESTS ARE URGED TO KEEP ABREAST OF THE LATEST ADVISORIES.

REPEATING THE 5 AM HST POSITION 36.0 NORTH 156.4 WEST.

THE NEXT REGULAR ADVISORY ON HURRICANE INIKI WILL BE ISSUED BY THE CENTRAL PACIFIC HURRICANE CENTER AT 11 AM HST SUNDAY.

CRAIG NATIONAL WEATHER SERVICE HONOLULU

.....
WTPA33 PHNL 131500 COR
BULLETIN
TROPICAL STORM INIKI ADVISORY NUMBER 31...CORRECTED
NATIONAL WEATHER SERVICE HONOLULU HI
5 AM HST SUN SEP 13 1992

...CORRECTION TO LAST SENTENCE...

...INIKI DOWNGRADED TO A TROPICAL STORM..

AT 5 AM HST...THE CENTER OF TROPICAL STORM INIKI WAS APPROXIMATELY 960 MILES NORTH OF KAUAI NEAR LATITUDE 36.0 NORTH LONGITUDE 156.4 WEST AND MOVING TOWARD THE NORTH AT ABOUT 25 MPH.

STRONGEST SUSTAINED WINDS ARE ESTIMATED TO BE 65 MPH WITH GUSTS AS HIGH AS 80 MPH NEAR THE CENTER.

INIKI IS FORECAST TO RAPIDLY WEAKEN AND CONTINUE MOVING RAPIDLY TO THE NORTH OVER THE OPEN OCEAN. ALL SHIPPING AND MARINE INTERESTS ARE URGED TO KEEP ABREAST OF THE LATEST ADVISORIES.

REPEATING THE 5 AM HST POSITION 36.0 NORTH 158.4 WEST.

THE NEXT REGULAR ADVISORY ON TROPICAL STORM INIKI WILL BE ISSUED BY THE CENTRAL PACIFIC HURRICANE CENTER AT 11 AM HST SUNDAY.

CRAIG NATIONAL WEATHER SERVICE HONOLULU

WTPA33 PHNL 132100
BULLETIN
TROPICAL STORM INIKI ADVISORY NUMBER 32
NATIONAL WEATHER SERVICE HONOLULU HI
11 AM HST SUN SEP 13 1992

...INIKI BECOMING EXTRATROPICAL...

AT 11 AM HST...THE CENTER OF TROPICAL STORM INIKI WAS FAR NORTH OF THE HAWAIIAN ISLANDS NEAR LATITUDE 37.5 NORTH LONGITUDE 157.4 WEST MOVING TOWARD THE NORTH AT 20 MPH.

STRONGEST SUSTAINED WINDS ARE ESTIMATED TO BE 45 MPH.

INIKI IS LOOSING ITS TROPICAL CHARACTERISTICS AND BECOMING PART OF A LARGE GALE CENTERED NEAR 39N 177W.

REPEATING THE 11 AM HST POSITION 37.5 NORTH 157.4 WEST.

THIS WILL BE THE FINAL ADVISORY ISSUED BY THE CENTRAL PACIFIC HURRICANE CENTER.

CHUN NATIONAL WEATHER SERVICE HONOLULU

A-2 WSO LIHUE LOCAL STATEMENTS

WOHW3 PHLI 110325
HIZ001-110630-

BULLETIN
HURRICANE INIKI LOCAL STATEMENT
NATIONAL WEATHER SERVICE LIHUE HI
5PM HST THURSDAY SEP 10 1992

...**HURRICANE** INIKI IS 400 MILES SOUTH OF LIHUE AND IS MOVING TOWARD THE NORTHWEST AT 9 MPH...

...A HURRICANE WATCH IS EFFECTIVE AT 5PM HST FOR KAUAI AND NIIHAU...

A HIGH SURF ADVISORY REMAINS IN EFFECT FOR SOUTHERN SHORES OF KAUAI AND NIIHAU...

A HURRICANE WATCH MEANS THAT THERE IS A CHANCE THAT **HURRICAN** CONDITIONS MAY DEVELOP OVER KAUAI AND NIIHAU WITHIN 36 HOURS.

STRONGEST SUSTAINED WINDS ARE ESTIMATED TO BE 125 MPH WITH GUSTS AS HIGH AS 155 MPH NEAR THE CENTER.

HURRICANE INIKI IS FORECAST TO CONTINUE ON A NORTHWEST COURSE AT 8 TO 10 MPH WITH **LITTLE** CHANGE IN INTENSITY DURING THE NEXT 12 HOURS AND THEN BEGIN TO WEAKEN AS IT TURNS ON A MORE NORTHERLY TRACK. ALONG THIS FORECAST COURSE INIKI SHOULD PASS ABOUT 200 MILES WEST OF KAUAI IN 48 HOURS.

SURF ALONG SOUTH SHORES FROM **NAWILIWILI** TO **POIPU** WILL BE PARTICULARLY ROUGH AND MAY BECOME DESTRUCTIVE TO IMMEDIATE SHORELINE PROPERTY ON FRIDAY.

ALL PERSONS ALONG **STREAMS...RIVERS...VALLEYS** AND FLOOD PRONE AREAS SHOULD TAKE PRECAUTIONARY MEASURES AGAINST POSSIBLE FLOODING.

ALL LOOSE OBJECTS SHOULD BE WELL SECURED OR REMOVED TO PROTECTED AREAS. STAY AWAY FROM UNPROTECTED WINDOWS AND GLASS DOORS.

HURRICANE INIKI WILL BE CLOSELY MONITORED FOR SUDDEN CHANGES IN SPEED... DIRECTION OF MOVEMENT... AND INTENSIFICATION.

THE NEXT LOCAL STATEMENT WILL BE ISSUED BY THE LIHUE WEATHER SERVICE OFFICE AT 830 PM HST.

LEAHY NATIONAL WEATHER SERVICE LIHUE

WOHW3 PHLI 110630
HIZ001-110900-
BULLETIN
HURRICANE INIKI LOCAL STATEMENT
NATIONAL WEATHER SERVICE LIHUE HI
830 PM HST THU SEP 10 IQQ2

...**DANGEROUS** HURRICANE INIKI MOVING NORTHWARD...

...A HURRICANE WARNING IS EFFECTIVE AT 8 PM HST FOR THE ISLANDS OF KAUAI AND NIIHAU...

...A HIGH SURF ADVISORY REMAINS IN EFFECT FOR SOUTH FACING SHORES OF KAUAI AND NIIHAU...

A HURRICANE WARNING MEANS THERE ARE DEFINITE SIGNS OF A HURRICANE STRIKING THE ISLANDS WITHIN 24 HOURS.

THIS STATEMENT APPLIES ONLY TO THOSE PERSONS ON THE ISLANDS OF KAUAI AND NIIHAU...

...**HURRICANE** INIKI HAS TURNED ON A MORE NORTHERLY TRACK AND HAS ACCELERATED TO A SPEED OF 14 MPH FROM ITS POSITION AT 350 MILES SOUTH OF LIHUE. STRONGEST SUSTAINED WINDS REMAIN AT 125 MPH WITH GUSTS TO 155 MPH NEAR ITS CENTER. THE CURRENT TRACK WILL BRING THE EYE CLOSE TO THE ISLAND OF KAUAI FRIDAY EVENING WITH STRONG DESTRUCTIVE WINDS AND SEAS.

SAFETY PRECAUTIONS SHOULD REMAIN IN EFFECT AND BE CONTINUED FOR THE DURATION OF THE STORM. DANGEROUS STORM TIDES OF 4 TO 8 FEET WITH LIFE THREATENING SURF OF 30 FEET OR MORE WILL LIKELY AFFECT THE ISLAND OF KAUAI BY FRIDAY EVENING. BUILDING SURF AND WAVES WILL SPREAD INTO THE SOUTHERN BEACHES OF KAUAI FRIDAY AFTERNOON.

HURRICANE INIKI WILL BE CLOSELY MONITORED FOR SUDDEN CHANGES IN DIRECTION OF MOVEMENT AND SPEED ... AND INTENSIFICATION, INTERMEDIATE ADVISORIES WILL BE ISSUED IF SIGNIFICANT CHANGES OCCUR.

THE NEXT LOCAL HURRICANE STATEMENT WILL BE ISSUED AT 1130 PM TONIGHT.

LEAHY NATIONAL WEATHER SERVICE LIHUE

WOHW3 PHLI 110900
HIZ001-111200-

BULLETIN

NATIONAL WEATHER SERVICE LIHUE HI
11 PM HST THU SEP 10 IQQ2

...**DANGEROUS** HURRICANE INIKI AIMING TOWARDS
KAUAI...

THIS STATEMENT APPLIES ONLY TO PERSONS ON THE
ISLANDS OF KAUAI AND NIIHAU.

...A HURRICANE WARNING REMAINS IN EFFECT FOR
THE ISLANDS OF KAUAI AND NIIHAU...

A HURRICANE WARNING MEANS THERE ARE DEFINITE
SIGNS OF A HURRICANE STRIKING THE ISLANDS
WITHIN 24 HOURS OR SOONER.

AT 11 PM HST... THE CENTER OF HURRICANE INIKI
WAS ESTIMATED AT 17.5 NORTH AND 160.0 WEST.
MOVEMENT OF THE STORM HAS TURNED MORE
NORTHERLY...NOW DUE NORTH...TRAVELING AT 15
MPH. ALTHOUGH THE STORM IS 310 MILES SOUTH OF
LIHUE STRONGEST SUSTAINED WINDS REMAINED
UNCHANGED AT 125 MPH WITH GUSTS TO 155 MPH.
ALL PERSONS ON KAUAI AND NIIHAU SHOULD
CONTINUE TO MAINTAIN SAFETY PRECAUTIONS.

DAMAGING STORM TIDES OF 4 TO ~~8~~ FEET WITH LIFE
THREATENING SURF OF 30 FEET OR MORE WILL BE
AFFECTING THE SHORELINES FROM NAWILIWILI TO
POIPU TO BARKING SANDS BY FRIDAY EVENING. ALL
PERSONS IN THE AFFECTED AREA ARE ADVISED TO
WATCH

TORRENTIAL RAINS AND MAJOR FLOODING WILL BE
ACCOMPANYING THE HURRICANE. ALL PERSONS IN
FLOOD PRONE AREAS SHOULD CONTINUE SAFETY
PRECAUTIONS.

ALL PERSONS ARE ADVISED TO LISTEN TO THE RADIO
OR TV FOR FURTHER INFORMATION AND ADVISORIES
GIVEN BY CIVIL DEFENSE OR LOCAL SAFETY
OFFICIALS. BE PREPARED TO TAKE **QUICK** SAFETY
ACTIONS IF CONDITIONS WORSENS RAPIDLY.

THE NEXT LOCAL STATEMENT ISSUED BY THE LIHUE
NATIONAL WEATHER SERVICE OFFICE WILL BE AT 2 AM
HST OR SOONER IF NECESSARY.

TABONIAR NATIONAL WEATHER SERVICE LIHUE

WOHW3 PHLI 111500
HIZ001-1118001

BULLETIN
HURRICANE INIKI LOCAL STATEMENT
NATIONAL WEATHER SERVICE LIHUEHI
5 AM HST FRI SEP 11 1992

...**DANGEROUS** HURRICANE INIKI CONTINUES ONWARD
TOWARDS KAUAI...

THIS STATEMENT APPLIES ONLY TO PERSONS ON THE
ISLANDS OF KAUAI AND NIIHAU.

...A HURRICANE WARNING REMAINS IN EFFECT FOR
THE ISLANDS OF KAUAI AND NIIHAU...

A HURRICANE WARNING MEANS THERE ARE DEFINITE
SIGNS OF A HURRICANE STRIKING THE ISLANDS
WITHIN 24 HOURS.

THE 5 AM HST ESTIMATED POSITION OF HURRICANE
INIKI WAS NEAR 19.0 NORTH AND 160.3 WEST... OR
ABOUT 220 MILES SOUTH SOUTHWEST OF LIHUE. INIKI
CONTINUES TO TREK NORTHWARD TOWARDS KAUAI
AT 13 MPH. DO NOT CONCENTRATE ON THE

STRONGEST WINDS ESTIMATED AT 140 MPH WITH
GUSTS AS HIGH AS 165 MPH NEAR THE CENTER.
SPEEDS ~~S~~ MAY BE SIGNIFICANTLY HIGHER IN VALLEYS
AND DOWNSLOPE OF MOUNTAIN AREAS.

WIND SPEEDS WILL BE INCREASING TO 50 MPH BY
FRIDAY AFTERNOON OR SOONER AND REACHING
HURRICANE FORCE LEVELS BY FRIDAY EVENING. ALL
SAFETY MEASURES SHOULD CONTINUE IN FORCE
UNTIL DECLARED ALL CLEAR BY SAFETY OFFICIALS.

STORM TIDES OF 4 TO **8** FEET WITH LIFE
THREATENING SURF OF 30 FEET ARE LIKELY ALONG
THE SOUTH AND WEST SHORES ...~~FROM NAWILIWILI~~
TO POIPU TO BARKING SANDS. RESIDENTS AND
PERSONS IN THE AFFECTED AREAS ARE URGED TO
BE VIGILANT TO RISING TIDES. TAKE IMMEDIATE
SAFETY ACTION WHEN THREATENED.

TORRENTIAL RAINS WILL CAUSE MAJOR FLOODING IN
LOW-LYING AND FLOOD PRONE AREAS. BE PREPARED
TO ACT QUICKLY AT THE ADVISE OF SAFETY
OFFICIALS OR CONDITIONS BECOMES THREATENING.

CONTINUE MONITORING THE RADIO OR TV FOR
FURTHER INFORMATION AND ADVISORIES. LISTEN TO
INSTRUCTIONS GIVEN BY CIVIL DEFENSE OR SAFETY
OFFICIALS.

THE NEXT LOCAL STATEMENT ISSUED BY THE LIHUE
NATIONAL WEATHER SERVICE OFFICE WILL BE AT 8
AM HST OR SOONER IF NECESSARY.

TABONIAR NATIONAL WEATHER SERVICE LIHUE

WOHW3PHLI 111830
HIZ001-112100-

BULLETIN
HURRICANE INIKI LOCAL STATEMENT
NATIONAL WEATHER SERVICE LIHUE HI
830 AM HST FRI SEP 11 1992

...HURRICANE INIKI INCREASES THREAT TO KAUAI
COUNTY...

THIS STATEMENT APPLIES ONLY TO PERSONS ON THE
ISLAND OF KAUAI AND NIIHAU.

. ...A HURRICANE WARNING MEANS THAT THERE ARE
DEFINITE SIGNS OF A HURRICANE STRIKING THE ISLANDS
OF KAUAI AND NIIHAU WITHIN 24 HOURS...

AT 7 AM HST...THE CENTER OF INIKI WAS NEAR 19.2 NORTH
AND 159.9 WEST..OR THE ABOUT 200 MILES SOUTH OF
LIHUE. MOVEMENT OF THE STORM CONTINUES
NORTHWARD ABOUT 16 MPH. REMEMBER THAT
HURRICANE EFFECTS WILL ARRIVE WELL IN ADVANCE OF
THE CENTER...EYE. ALL SAFETY MEASURES TAKEN
SHOULD REMAIN IN PLACE UNTIL THE ALL CLEAR IS GIVEN
BY CIVIL DEFENSE OR SAFETY OFFICIALS.

SOUTHERLY WINDS WILL INCREASE IN SPEED REACHING
HURRICANE FORCE LEVELS OF 85 MPH OR HIGHER BY
LATE THIS AFTERNOON. ALL LOOSE OBJECTS AND ITEMS
EXPOSED TO WIND EFFECTS SHOULD HAVE BEEN
SECURED OR STORED INDOORS SPEEDS WILL BE
ESPECIALLY SIGNIFICANTLY HIGHER IN VALLEYS AND
DOWNSLOPES OF MOUNTAINS AREAS.

SURF ALONG THE SOUTH AND WEST SHORELINES WILL
LIKELY REACH DANGEROUS AND DAMAGING HEIGHTS TO
30 FEET OR HIGHER. RESIDENTS IN THE AFFECTED AREAS
ARE ADVISED TO MOVE QUICKLY WHEN CONDITIONS
BECOME THREATENING. ALL OTHER PERSONS SHOULD
STAY AWAY FROM THESE SHORELINES.

TORRENTIAL RAINS WITH MAJOR FLOODING CAPABILITY
ACCOMPANIES HURRICANE INIKI. PERSONS NEAR
STREAMS..RIVERS..AND LOW-LYING FLOOD PRONE AREAS
ARE URGED TO BE ESPECIALLY ALERT TO FLASH
FLOODING. FOLLOW INSTRUCTIONS GIVEN BY CIVIL
DEFENSE AND SAFETY OFFICIALS.

KEEP MONITORING YOUR LOCAL RADIO OR TV STATIONS
FOR FURTHER INFORMATION AND ADVISORIES. LISTEN TO
INSTRUCTIONS ISSUED BY KAUAI CIVIL DEFENSE AND
SAFETY OFFICIALS.

THE NEXT LOCAL STATEMENT ISSUED BY THE NATIONAL
WEATHER SERVICE LIHUE OFFICE WILL BE AT 11 AM HST
OR SOONER.

TABONIAR NATIONAL WEATHER SERVICE LIHUE

WOHW3PHLI 111830 COR
HIZ001-112100-

BULLETIN
HURRICANE INIKI LOCAL STATEMENT
NATIONAL WEATHER SERVICE LIHUE HI
830 AM HST FRI SEP 11 1992

. ...HURRICANE INIKI INCREASES THREAT TO KAUAI
COUNTY...

THIS STATEMENT APPLIES ONLY TO PERSONS ON THE
ISLANDS OF KAUAI AND NIIHAU.

. ...A HURRICANE WARNING REMAINS IN EFFECT FOR THE
ISLANDS OF KAUAI AND NIIHAU...

A HURRICANE WARNING MEANS THERE ARE DEFINITE
SIGNS OF A HURRICANE STRIKING THE ISLANDS OF KAUAI
AND NIIHAU WITHIN 24 HOURS.

AT 7 AM HST...THE CENTER OF INIKI WAS NEAR 19.2 NORTH
AND 159.9 WEST..OR THE ABOUT 200 MILES SOUTH OF
LIHUE. MOVEMENT OF THE STORM CONTINUES
NORTHWARD ABOUT 16 MPH. REMEMBER THAT
HURRICANE EFFECTS WILL ARRIVE WELL IN ADVANCE OF
THE CENTER...EYE. ALL SAFETY MEASURES TAKEN
SHOULD REMAIN IN PLACE UNTIL THE ALL CLEAR IS GIVEN
BY CIVIL DEFENSE OR SAFETY OFFICIALS.

SOUTHERLY WINDS WILL INCREASE IN SPEED REACHING
HURRICANE FORCE LEVELS OF 85 MPH OR HIGHER BY
LATE THIS AFTERNOON. ALL LOOSE OBJECTS AND ITEMS
EXPOSED TO WIND EFFECTS SHOULD HAVE BEEN
SECURED OR STORED INDOORS. SPEEDS WILL BE
ESPECIALLY SIGNIFICANTLY HIGHER IN VALLEYS AND
DOWNSLOPES OF MOUNTAINS AREAS.

SURF ALONG THE SOUTH AND WEST SHORELINES WILL
LIKELY REACH DANGEROUS AND DAMAGING HEIGHTS TO
30 FEET OR HIGHER. RESIDENTS IN THE AFFECTED AREAS
ARE ADVISED TO MOVE QUICKLY WHEN CONDITIONS
BECOME THREATENING. ALL OTHER PERSONS SHOULD
STAY AWAY FROM THESE SHORELINES.

TORRENTIAL RAINS WITH MAJOR FLOODING CAPABILITY
ACCOMPANIES HURRICANE INIKI. PERSONS NEAR
STREAMS..RIVERS..AND LOW-LYING FLOOD PRONE AREAS
ARE URGED TO BE ESPECIALLY ALERT TO FLASH
FLOODING. FOLLOW INSTRUCTIONS GIVEN BY CIVIL
DEFENSE AND SAFE-I-Y OFFICIALS.

KEEP MONITORING YOUR LOCAL RADIO OR TV STATIONS
FOR FURTHER INFORMATION AND ADVISORIES. LISTEN TO
INSTRUCTIONS ISSUED BY KAUAI CIVIL DEFENSE AND
SAFETY OFFICIALS.

THE NEXT LOCAL STATEMENT ISSUED BY THE NATIONAL
WEATHER SERVICE LIHUE OFFICE WILL BE AT 11 AM HST
OR SOONER.

TABONIAR NATIONAL WEATHER SERVICE LIHUE

WOHW3 PHLI 112130
HIZ001-120000-

BULLETIN
HURRICANE INIKI LOCAL STATEMENT
NATIONAL WEATHER SERVICE LIHUE HI
1130 AM HST FRI SEP 11 1992

...HURRICANE INIKI INCREASES THREAT TO KAUAI COUNTY...

THIS STATEMENT APPLIES ONLY TO PERSONS ON THE ISLANDS OF KAUAI AND NIIHAU.

...A HURRICANE WARNING REMAINS IN EFFECT FOR THE ISLANDS OF KAUAI AND NIIHAU...

A HURRICANE WARNING MEANS THERE ARE DEFINITE SIGNS OF A HURRICANE STRIKING THE ISLANDS OF KAUAI AND NIIHAU WITHIN 24 HOURS.

AT 11 AM HST, THE CENTER OF INIKI WAS NEAR 20.2 NORTH AND 159.8 WEST, OR ABOUT 130 MILES SOUTH SOUTHWEST OF LIHUE. THE STORM CONTINUES TO MOVE NORTHWARD ABOUT 17 MPH. REMEMBER THAT HURRICANE EFFECTS WILL ARRIVE WELL IN ADVANCE OF THE CENTER...EYE. ALL SAFETY MEASURES TAKEN SHOULD REMAIN IN PLACE UNTIL THE ALL CLEAR IS GIVEN BY CIVIL DEFENSE OR SAFETY OFFICIALS.

WIND SPEEDS HAVE ALREADY INCREASED OVER THE WEST END OF KAUAI. WIND SPEEDS OF 40 TO 50 MPH HAVE BEEN REPORTED IN THE KALAHEO TO KEKAHA AND KOKEE SECTIONS OF THE ISLAND. PERSONS SHOULD REFRAIN FROM VENTURING OUTDOORS UNLESS ABSOLUTELY NECESSARY. LOCAL EFFECTS MAY ACCELERATE SPEEDS TO HIGHER VELOCITY.

SURF OF 20 FEET HAVE BEEN REPORTED IN THE PORT ALLEN AREA...WAVES CRASHING OVER HIWAYS IN POIPU AND KEKAHA ALSO HAVE BEEN REPORTED. RESIDENTS ALONG THE SOUTH AND WEST SHORELINES ARE URGED TO MOVE QUICKLY WHEN ADVISED BY SAFETY OFFICIALS...OR THE DANGER INCREASES ALL OTHER PERSONS ARE ADVISED TO STAY AWAY FROM BEACHES AND SHORELINES.

TORRENTIAL RAINS WITH POTENTIAL MAJOR FLOODING CAPABILITY IS RAPIDLY APPROACHING THE ISLAND. RESIDENTS AND PERSONS NEAR STREAMS, RIVERS, LOW-LYING AND FLOOD PRONE AREAS ARE ADVISED TO MOVE QUICKLY WHEN DIRECTED BY SAFETY OFFICIALS...OR CONDITIONS WORSENS RAPIDLY.

CONTINUE TO LISTEN TO YOUR RADIO OR TV FOR FURTHER ADVISORIES AND INFORMATION ON HURRICANE INIKI. OBEY INSTRUCTIONS GIVEN BY CIVIL DEFENSE AND LOCAL SAFETY OFFICIALS

THE NEXT LOCAL STATEMENT ISSUED BY THE NATIONAL WEATHER SERVICE LIHUE OFFICE WILL BE AT 2 PM HST OR SOONER.

TABONIAR NATIONAL WEATHER SERVICE LIHUE

WOHW3 PHLI 112200
HIZ001-120000-

BULLETIN
HURRICANE INIKI LOCAL STATEMENT
NATIONAL WEATHER SERVICE LIHUE HI
1 PM HST FRI SEP 11 1992

...HURRICANE INIKI TOUCHING KAUAI COUNTY...

THIS STATEMENT APPLIES ONLY TO PERSONS ON THE ISLANDS OF KAUAI AND NIIHAU,

...A HURRICANE WARNING REMAINS IN EFFECT FOR THE ISLANDS OF KAUAI AND NIIHAU...

A HURRICANE WARNING MEANS THERE ARE DEFINITE SIGNS OF A HURRICANE STRIKING THE ISLANDS OF KAUAI AND NIIHAU WITHIN 24 HOURS.

HURRICANE INIKI PRESENTS ITSELF WITH 40 MPH SUSTAINED WINDS...GUSTING TO 51 MPH AT WSO LIHUE AT 1240 PM HST. REPORTS OF SPEEDS AROUND KAUAI INDICATES INIKI'S HAND TOUCHING THE ISLAND. MAKAHUENA PT...51 GUSTING TO 67 MPH...PRINCEVILLE 40 GUSTING TO 58 MPH...ELEELE...58 MPH WITH HIR GUSTS...NAWILIWILI...58 MPH WITH HIGHER GUSTS...KEKAHA...58 MPH WITH HIR GUSTS AND HEAVY RAIN.

ALL PERSONS ON KAUAI AND NIIHAU ARE STRONGLY ADVISED TO STAY INDOORS. IT IS NOW CONSIDERED TOO DANGEROUS TO VENTURE OUTDOORS. YOU ARE REMINDED TO STAY AWAY FROM UNBOARDED AND UNTAPED WINDOWS AND GLASS DOORS. CONTINUE TO MONITOR INFORMATION ABOUT HURRICANE INIKI ON YOUR RADIO OR TV. YOU ARE STRONGLY URGED TO LISTEN TO ADVICE AND INSTRUCTIONS ISSUED BY THE CIVIL DEFENSE AND LOCAL SAFETY OFFICIALS.

THE NEXT STATEMENT WILL BE ISSUED BY THE NATIONAL WEATHER SERVICE LIHUE OFFICE AT 2 PM HST OR SOONER.

TABONIAR NATIONAL WEATHER SERVICE LIHUE

A-3 WSFO HONOLULU LOCAL STATEMENTS

WOHW3 PHNL 111200
BULLETIN
HURRICANE INIKI...LOCAL STATEMENT
NATIONAL WEATHER SERVICE HONOLULU HI
2 AM HST FRI SEP 11 1992

CENTER OF HURRICANE INIKI FORECAST TO PASS NEAR KAUAI FRIDAY NIGHT WITH GUSTY HURRICANE FORCE WINDS EXPECTED FOR PARTS OF OAHU.

THIS STATEMENT RECOMMENDS SPECIFIC ACTIONS TO BE TAKEN BY PERSONS ON OAHU ONLY.

A HURRICANE WARNING IS IN EFFECT FOR OAHU.

SOUTHERLY WINDS ARE EXPECTED TO INCREASE TO 25 TO 50 MPH BY FRIDAY AFTERNOON...AND 40 TO 80 MPH BY EARLY FRIDAY NIGHT. STRONGER GUSTS OVER MOUNTAINOUS TERRAIN AND THROUGH PASSES WILL LIKELY DEVELOP...WITH SOME OF THE STRONGEST GUSTS DOWN THE EAST SLOPES OF THE WAIANAE AND KOOLAU RANGES. THIS WOULD INCLUDE PERSONS LIVING IN THE COMMUNITIES FROM KANEOHE TO PUNALUU.

LOOSE OBJECTS SUCH AS LUMBER...LAWN FURNITURE...GARBAGE CANS...AND OTHER ITEMS SHOULD BE SECURED OR STORED INDOORS. STAY INDOORS IF POSSIBLE DURING THE PERIOD OF HIGHEST WINDS THROUGH FRIDAY NIGHT.

HIGH SURF ALONG SOUTH AND WEST SHORES OF OAHU WILL BUILD TO HEIGHTS OF 10 TO 20 FEET BY FRIDAY EVENING. OAHU CIVIL DEFENSE RECOMMENDS THAT PERSONS RESIDING WITHIN 300 FEET OF THE WAIANAE COAST AND WITHIN 300 FEET OF THE ENTIRE SOUTH SHORE OF OAHU BE PREPARED TO EVACUATE SHOULD THE BUILDING SURF THREATEN. DO NOT WAIT FOR ORDERS TO EVACUATE.

BOATERS SHOULD MOVE BOATS TO SAFE MOORING AND PERSONS SHOULD CANCEL ANY BEACH ACTIVITIES UNTIL FURTHER NOTICE.

AT 2 AM HST...THE CENTER OF HURRICANE INIKI WAS LOCATED NEAR LATITUDE 18.0 NORTH LONGITUDE 180.0 WEST OR 315 MILES SOUTH SOUTHWEST OF HONOLULU MOVING TOWARD THE NORTH AT 15 MPH. STRONGEST WINDS WERE ESTIMATED TO BE 125 MPH IN A SMALL AREA NEAR THE CENTER.

ALTHOUGH THE CENTER OF HURRICANE INIKI IS EXPECTED TO MOVE CLOSEST TO KAUAI...THE HURRICANE'S EFFECTS WILL BE FAR REACHING. FORECAST MOVEMENT...DIRECTION...AND SPEED ARE ONLY ESTIMATES.

THE NEXT LOCAL STATEMENT WILL BE ISSUED AT 5 AM HST OR SOONER IF NECESSARY.

HEFFNER NATIONAL WEATHER SERVICE HONOLULU

WOHW3 PHNL 111330
BULLETIN
HURRICANE INIKI...LOCAL STATEMENT
NATIONAL WEATHER SERVICE HONOLULU HI
330 AM HST FRI SEP 11 1992

CENTER OF HURRICANE INIKI FORECAST TO PASS NEAR KAUAI FRIDAY NIGHT WITH GUSTY HURRICANE FORCE WINDS EXPECTED FOR PARTS OF OAHU.

THIS STATEMENT RECOMMENDS SPECIFIC ACTIONS TO BE TAKEN BY PERSONS ON OAHU ONLY.

A HURRICANE WARNING IS IN EFFECT FOR OAHU.

SOUTHERLY WINDS ARE EXPECTED TO INCREASE TO 25 TO 50 MPH BY FRIDAY AFTERNOON...AND 40 TO 80 MPH BY EARLY FRIDAY NIGHT. STRONGER GUSTS OVER MOUNTAINOUS TERRAIN AND THROUGH PASSES WILL LIKELY DEVELOP...WITH SOME OF THE STRONGEST GUSTS DOWN THE EAST SLOPES OF THE WAIANAE AND KOOLAU RANGES. THIS WOULD INCLUDE PERSONS LIVING IN THE COMMUNITIES FROM KANEOHE TO PUNALUU.

LOOSE OBJECTS SUCH AS LUMBER...LAWN FURNITURE...GARBAGE CANS...AND OTHER ITEMS SHOULD BE SECURED OR STORED INDOORS. STAY INDOORS IF POSSIBLE DURING THE PERIOD OF HIGHEST WINDS THROUGH FRIDAY NIGHT.

HIGH SURF ALONG SOUTH AND WEST SHORES OF OAHU WILL BUILD TO HEIGHTS OF 10 TO 20 FEET BY FRIDAY EVENING. OAHU CIVIL DEFENSE RECOMMENDS THAT PERSONS RESIDING WITHIN 300 FEET OF THE WAIANAE COAST AND WITHIN 300 FEET OF THE ENTIRE SOUTH SHORE OF OAHU BE PREPARED TO EVACUATE SHOULD THE BUILDING SURF THREATEN. DO NOT WAIT FOR ORDERS TO EVACUATE.

BOATERS SHOULD MOVE BOATS TO SAFE MOORING AND PERSONS SHOULD CANCEL ANY BEACH ACTIVITIES UNTIL FURTHER NOTICE.

AT 2 AM HST...THE CENTER OF HURRICANE INIKI WAS LOCATED NEAR LATITUDE 18.2 NORTH LONGITUDE 180.2 WEST OR 270 MILES SOUTH SOUTHWEST OF HONOLULU MOVING TOWARD THE NORTH AT 15 MPH. STRONGEST WINDS WERE ESTIMATED TO BE 145 MPH IN A SMALL AREA NEAR THE CENTER.

IN THE PAST FEW HOURS RADAR INDICATES BANDS OF HEAVY SHOWERS MOVING FROM THE SOUTH TOWARD OAHU. THESE SHOWERS WILL INCREASE OVER OAHU TODAY...GIVING A GREATER POTENTIAL FOR FLASH FLOODING. RAIN TOTALS COULD RANGE FROM 5 TO 10 INCHES IN SOME LOCATIONS.

ALTHOUGH THE CENTER OF HURRICANE INIKI IS EXPECTED TO MOVE CLOSEST TO KAUAI...THE HURRICANE'S EFFECTS WILL BE FAR REACHING. FORECAST MOVEMENT...DIRECTION...AND SPEED ARE ONLY ESTIMATES.

THE NEXT LOCAL STATEMENT WILL BE ISSUED AT 5 AM HST OR SOONER IF NECESSARY.

HEFFNER NATIONAL WEATHER SERVICE HONOLULU

WOHW3 PHNL 111400
BULLETIN
HURRICANE INIKI...LOCAL STATEMENT
NATIONAL WEATHER SERVICE HONOLULU HI
4 AM HST FRI SEP 11 1992

CENTER OF HURRICANE INIKI FORECAST TO PASS NEAR
KAUAI FRIDAY NIGHT WITH GUSTY HURRICANE FORCE
WINDS EXPECTED FOR PARTS OF OAHU.

THIS STATEMENT RECOMMENDS SPECIFIC ACTIONS TO BE
TAKEN BY PERSONS ON OAHU ONLY.

A HURRICANE WARNING IS IN EFFECT FOR OAHU.

SOUTHERLY WINDS ARE EXPECTED TO INCREASE TO 25 TO
50 MPH BY FRIDAY AFTERNOON...AND 40 TO 80 MPH BY
EARLY FRIDAY NIGHT. STRONGER GUSTS OVER
MOUNTAINOUS TERRAIN AND THROUGH PASSES WILL LIKELY
DEVELOP...WITH SOME OF THE STRONGEST GUSTS DOWN
THE EAST SLOPES OF THE WAIANAE AND KOOLAURANGES.
THIS WOULD INCLUDE PERSONS LIVING IN THE
COMMUNITIES FROM KANEHOE TO PUNALUU.

LOOSE OBJECTS SUCH AS LUMBER...LAWN
FURNITURE...GARBAGE CANS...AND OTHER ITEMS SHOULD
BE SECURED OR STORED INDOORS. STAY INDOORS IF
POSSIBLE DURING THE PERIOD OF HIGHEST WINDS
THROUGH FRIDAY NIGHT.

HIGH SURF ALONG SOUTH AND WEST SHORES OF OAHU
WILL BUILD TO HEIGHTS OF 10 TO 20 FEET BY FRIDAY
EVENING. OAHU CIVIL DEFENSE RECOMMENDS THAT
PERSONS RESIDING WITHIN 300 FEET OF THE WAIANAE
COAST AND WITHIN 300 FEET OF THE ENTIRE SOUTH SHORE
OF OAHU BE PREPARED TO EVACUATE SHOULD THE
BUILDING SURF THREATEN. DO NOT WAIT FOR ORDERS TO
EVACUATE.

BOATERS SHOULD MOVE BOATS TO SAFE MOORING AND
PERSONS SHOULD CANCEL ANY BEACH ACTIVITIES UNTIL
FURTHER NOTICE.

IN THE PAST FEW HOURS RADAR INDICATES BANDS OF
HEAVY SHOWERS MOVING FROM THE SOUTH TOWARD
OAHU. THESE SHOWERS WILL INCREASE OVER OAHU
TODAY...GIVING A GREATER POTENTIAL FOR FLASH
FLOODING. RAIN TOTALS COULD RANGE FROM 5 TO 10
INCHES IN SOME LOCATIONS.

ALTHOUGH THE CENTER OF HURRICANE INIKI IS EXPECTED
TO MOVE CLOSEST TO KAUAI...THE HURRICANE'S EFFECTS
WILL BE FAR REACHING. FORECAST
MOVEMENT...DIRECTION...AND SPEED ARE ONLY ESTIMATES.

THE NEXT LOCAL STATEMENT WILL BE ISSUED AT 5 AM HST
OR SOONER IF NECESSARY.

HEFFNER NATIONAL WEATHER SERVICE HONOLULU

WOHW3 PHNL 11 1500
BULLETIN
HURRICANE INIKI...LOCAL STATEMENT
NATIONAL WEATHER SERVICE HONOLULU HI
5 AM HST FRI SEP 11 1992

CENTER OF HURRICANE INIKI FORECAST TO PASS NEAR
KAUAI EARLY FRIDAY NIGHT WITH GUSTY HURRICANE FORCE
WINDS EXPECTED FOR PARTS OF OAHU.

THIS STATEMENT RECOMMENDS SPECIFIC ACTIONS TO BE
TAKEN BY PERSONS ON OAHU ONLY.

A HURRICANE WARNING IS IN EFFECT FOR OAHU.

SOUTHERLY WINDS ARE EXPECTED TO INCREASE TO 25 TO
50 MPH BY FRIDAY AFTERNOON...AND 40 TO 80 MPH BY
EARLY FRIDAY NIGHT.

GUSTS ABOVE 40 MPH ASSOCIATED WITH THUNDERSTORMS
MAY BE FREQUENT BEGINNING THIS MORNING.

STRONGER GUSTS OVER MOUNTAINOUS TERRAIN AND
THROUGH PASSES WILL LIKELY DEVELOP...WITH SOME OF
THE STRONGEST GUSTS DOWN THE EAST SLOPES OF THE
WAIANAE AND KOOLAURANGES. THIS WOULD ESPECIALLY
IMPACT PERSONS LIVING IN THE COMMUNITIES FROM
KANEHOE TO PUNALUU.

LOOSE OBJECTS SUCH AS LUMBER...LAWN
FURNITURE...GARBAGE CANS...AND OTHER ITEMS SHOULD
BE SECURED OR STORED INDOORS. STAY INDOORS IF
POSSIBLE DURING THE PERIOD OF HIGHEST WINDS
THROUGH FRIDAY NIGHT.

HIGH SURF ALONG SOUTH AND WEST SHORES OF OAHU
WILL BUILD TO HEIGHTS OF 10 TO 20 FEET BY FRIDAY
EVENING. OAHU CIVIL DEFENSE RECOMMENDS THAT
PERSONS RESIDING WITHIN 300 FEET OF THE WAIANAE
COAST AND WITHIN 300 FEET OF THE ENTIRE SOUTH SHORE
OF OAHU BE PREPARED TO EVACUATE SHOULD THE
BUILDING SURF THREATEN. DO NOT WAIT FOR ORDERS TO
EVACUATE.

BOATERS SHOULD MOVE BOATS TO SAFE MOORING AND
PERSONS SHOULD CANCEL ANY BEACH ACTIVITIES UNTIL
FURTHER NOTICE.

IN THE PAST FEW HOURS RADAR INDICATES BANDS OF
HEAVY SHOWERS CONTINUING TO MOVE IN FROM THE
SOUTH TOWARD OAHU. THESE SHOWERS WILL INCREASE
OVER OAHU TODAY...GIVING A GREATER POTENTIAL FOR
FLASH FLOODING. RAIN TOTALS COULD RANGE FROM 5 TO
10 INCHES IN SOME LOCATIONS.

ALTHOUGH THE CENTER OF HURRICANE INIKI IS EXPECTED
TO MOVE CLOSEST TO KAUAI...THE HURRICANE'S EFFECTS
WILL BE FAR REACHING. FORECAST
MOVEMENT...DIRECTION...AND SPEED ARE ONLY ESTIMATES.

THE NEXT LOCAL STATEMENT WILL BE ISSUED AT 8 AM HST
OR SOONER IF NECESSARY.

HEFFNER NATIONAL WEATHER SERVICE HONOLULU

WOHW3 PHNL 111800
BULLETIN
HURRICANE INIKI...LOCAL STATEMENT
NATIONAL WEATHER SERVICE HONOLULU HI
8 AM HST FRI SEP 11 1992

THE CENTER OF HURRICANE INIKI IS FORECAST TO PASS JUST EAST OF KAUAI IN THE KAUAI CHANNEL LATE THIS AFTERNOON. SOUTHERLY WINDS WILL STEADILY INCREASE THROUGH TODAY BECOMING 40 TO 80 MPH BY LATE THIS AFTERNOON.

THIS STATEMENT RECOMMENDS SPECIFIC ACTIONS TO BE TAKEN BY PERSONS ON OAHU ONLY.

A HURRICANE WARNING IS IN EFFECT FOR OAHU.

STRONGER QUSTS OVER MOUNTAINOUS TERRAIN AND THROUGH PASSES WILL LIKELY DEVELOP...WITH SOME OF THE STRONGEST QUSTS DOWN THE EAST SLOPES OF THE WAIANAE AND KOOLAURANGES. THIS WOULD ESPECIALLY IMPACT PERSONS LIVING IN THE COMMUNITIES FROM KANEOHE TO PUNALUU.

LOOSE OBJECTS SUCH AS LUMBER...LAWN FURNITURE...GARBAGE CANS...AND OTHER ITEMS SHOULD BE SECURED OR STORED INDOORS. STAY INDOORS IF POSSIBLE DURING THE PERIOD OF HIGHEST WINDS THROUGH FRIDAYNIGHT.

HIGH SURF ALONG SOUTH AND WEST SHORES OF OAHU WILL BUILD TO HEIGHTS OF 10 TO 20 FEET BY FRIDAY EVENING. OAHU CIVIL DEFENSE RECOMMENDS THAT PERSONS RESIDING WITHIN 300 FEET OF THE WAIANAE COAST AND WITHIN 300 FEET OF THE ENTIRE SOUTH SHORE OF OAHU BE PREPARED TO EVACUATE SHOULD THE BUILDING SURF THREATEN. DO NOT WAIT FOR ORDERS TO EVACUATE.

BOATERS SHOULD MOVE BOATS TO SAFE MOORING AND PERSONS SHOULD CANCEL ANY BEACH ACTIVITIES UNTIL FURTHER NOTICE.

IN THE PAST FEW HOURS RADAR INDICATES BANDS OF HEAVY SHOWERS CONTINUING TO MOVE IN FROM THE SOUTH TOWARD OAHU. THESE SHOWERS WILL INCREASE OVER OAHU TODAY...GIVING A GREATER POTENTIAL FOR FLASH FLOODING. RAIN TOTALS COULD RANGE FROM 5 TO 10 INCHES IN SOME LOCATIONS.

ALTHOUGH THE CENTER OF HURRICANE INIKI IS EXPECTED TO MOVE CLOSEST TO KAUAI...THE HURRICANE'S EFFECTS WILL BE FAR REACHING. FORECAST MOVEMENT...DIRECTION...AND SPEED ARE ONLY ESTIMATES.

THE NEXT LOCAL STATEMENT WILL BE ISSUED AT 8 AM HST OR SOONER IF NECESSARY.

CRAIGNATIONAL WEATHER SERVICE HONOLULU

WOHW3 PHNL 111800
BULLETIN
HURRICANE INIKI...LOCAL STATEMENT
NATIONAL WEATHER SERVICE HONOLULU HI
8 AM HST FRI SEP 11 1992

THE CENTER OF HURRICANE INIKI IS FORECAST TO PASS JUST EAST OF KAUAI IN THE KAUAI CHANNEL LATE THIS AFTERNOON. SOUTHERLY WINDS WILL STEADILY INCREASE THROUGH TODAY BECOMING 40 TO 80 MPH BY LATE THIS AFTERNOON.

THIS STATEMENT RECOMMENDS SPECIFIC ACTIONS TO BE TAKEN BY PERSONS ON OAHU ONLY.

A HURRICANE WARNING IS IN EFFECT FOR OAHU.

STRONGER QUSTS OVER MOUNTAINOUS TERRAIN AND THROUGH PASSES WILL LIKELY DEVELOP...WITH SOME OF THE STRONGEST QUSTS DOWN THE EAST SLOPES OF THE WAIANAE AND KOOLAURANGES. THIS WOULD ESPECIALLY IMPACT PERSONS LIVING IN THE COMMUNITIES FROM KANEOHE TO PUNALUU.

LOOSE OBJECTS SUCH AS LUMBER...LAWN FURNITURE...GARBAGE CANS... AND OTHER ITEMS SHOULD BE SECURED OR STORED INDOORS STAY INDOORS IF POSSIBLE DURING THE PERIOD OF HIGHEST WINDS THROUGH FRIDAYNIGHT.

HIGH SURF ALONG SOUTH AND WEST SHORES OF OAHU WILL BUILD TO HEIGHTS OF 10 TO 20 FEET BY FRIDAY EVENING. OAHU CIVIL DEFENSE RECOMMENDS THAT PERSONS RESIDING WITHIN 300 FEET OF THE WAIANAE COAST AND WITHIN 300 FEET OF THE ENTIRE SOUTH SHORE OF OAHU BE PREPARED TO EVACUATE SHOULD THE BUILDING SURF THREATEN. DO NOT WAIT FOR ORDERS TO EVACUATE.

BOATERS SHOULD MOVE BOATS TO SAFE MOORING AND PERSONS SHOULD CANCEL ANY BEACH ACTIVITIES UNTIL FURTHER NOTICE.

IN THE PAST FEW HOURS RADAR INDICATES BANDS OF HEAVY SHOWERS CONTINUING TO MOVE IN FROM THE SOUTH TOWARD OAHU. THESE SHOWERS WILL INCREASE OVER OAHU TODAY...GIVING A GREATER POTENTIAL FOR FLASH FLOODING. RAIN TOTALS COULD RANGE FROM 5 TO 10 INCHES IN SOME LOCATIONS.

ALTHOUGH THE CENTER OF HURRICANE INIKI IS EXPECTED TO MOVE CLOSEST TO KAUAI...THE HURRICANE'S EFFECTS WILL BE FAR REACHING. FORECAST MOVEMENT...DIRECTION...AND SPEED ARE ONLY ESTIMATES.

THE NEXT LOCAL STATEMENT WILL BE ISSUED AT 8 AM HST OR SOONER IF NECESSARY.

CRAIG NATIONAL WEATHER SERVICE HONOLULU

WOHW3 PHNL 111645 COR
BULLETIN
HURRICANE INIKI...LOCAL STATEMENT...CORRECTED
NATIONAL WEATHER SERVICE HONOLULU HI
8 AM HST FRI SEP 11 1992

...CORRECTS THE NEXT ISSUANCE TIME...

THE CENTER OF HURRICANE INIKI IS FORECAST TO PASS JUST EAST OF KAUAI IN THE KAUAI CHANNEL LATE THIS AFTERNOON. SOUTHERLY WINDS WILL STEADILY INCREASE THROUGH TODAY BECOMING 40 TO 80 MPH BY LATE THIS AFTERNOON.

THIS STATEMENT RECOMMENDS SPECIFIC ACTIONS TO BE TAKEN BY PERSONS ON OAHU ONLY.

A HURRICANE WARNING IS IN EFFECT FOR OAHU.

STRONGER QUSTS OVER MOUNTAINOUS TERRAIN AND THROUGH PASSES WILL LIKELY DEVELOP...WITH SOME OF THE STRONGEST QUSTS DOWN THE EAST SLOPES OF THE WAIANAE AND KOOLAU RANGES. THIS WOULD ESPECIALLY IMPACT PERSONS LIVING IN THE COMMUNITIES FROM KANEOHE TO PUNALUU.

LOOSE OBJECTS SUCH AS LUMBER...LAWN FURNITURE...GARBAGE CANS... AND OTHER ITEMS SHOULD BE SECURED OR STORED INDOORS. STAY INDOORS IF POSSIBLE DURING THE PERIOD OF HIGHEST WINDS THROUGH FRIDAY NIGHT.

HIGH SURF ALONG SOUTH AND WEST SHORES OF OAHU WILL BUILD TO HEIGHTS OF 10 TO 20 FEET BY FRIDAY EVENING. OAHU CIVIL DEFENSE RECOMMENDS THAT PERSONS RESIDING WITHIN 300 FEET OF THE WAIANAE COAST AND WITHIN 300 FEET OF THE ENTIRE SOUTH SHORE OF OAHU BE PREPARED TO EVACUATE SHOULD THE BUILDING SURF THREATEN. DO NOT WAIT FOR ORDERS TO EVACUATE.

BOATERS SHOULD MOVE BOATS TO SAFE MOORING AND PERSONS SHOULD CANCEL ANY BEACH ACTIVITIES UNTIL FURTHER NOTICE.

IN THE PAST FEW HOURS RADAR INDICATES BANDS OF HEAVY SHOWERS CONTINUING TO MOVE IN FROM THE SOUTH TOWARD OAHU. THESE SHOWERS WILL INCREASE OVER OAHU TODAY...GIVING A GREATER POTENTIAL FOR FLASH FLOODING. RAIN TOTALS COULD RANGE FROM 5 TO 10 INCHES IN SOME LOCATIONS.

ALTHOUGH THE CENTER OF HURRICANE INIKI IS EXPECTED TO MOVE CLOSEST TO KAUAI...THE HURRICANE'S EFFECTS WILL BE FAR REACHING. FORECAST MOVEMENT...DIRECTION...AND SPEED ARE ONLY ESTIMATES.

THE NEXT LOCAL STATEMENT WILL BE ISSUED AT 11 AM HST OR SOONER IF NECESSARY.

CRAIG NATIONAL WEATHER SERVICE HONOLULU

WOHW3 PHNL 112100
BULLETIN
HURRICANE INIKI...LOCAL STATEMENT
NATIONAL WEATHER SERVICE HONOLULU HI
11 AM HST FRI SEP 11 1992

...A HURRICANE WARNING REMAINS IN EFFECT FOR OAHU...

THIS STATEMENT RECOMMENDS SPECIFIC ACTIONS TO BE TAKEN BY PERSONS ON OAHU ONLY.

AT 11 AM HST THE CENTER OF HURRICANE INIKI WAS LOCATED ABOUT 130 MILES SOUTH SOUTHWEST OLIUUE MOVING TOWARD THE NORTH AT 17 MPH. THE CENTER OF INIKI IS FORECAST TO PASS JUST EAST OF KAUAI AT AROUND 5 PM THIS AFTERNOON. SOUTHERLY WINDS WILL STEADILY INCREASE THROUGH TODAY BECOMING 50 TO 75 MPH WITH QUSTS TO 100 MPH BY LATE THIS AFTERNOON.

STRONGER QUSTS OVER MOUNTAINOUS TERRAIN AND THROUGH PASSES WILL LIKELY DEVELOP...WITH SOME OF THE STRONGEST QUSTS DOWN THE EAST SLOPES OF THE WAIANAE AND KOOLAU RANGES. THIS WOULD ESPECIALLY IMPACT PERSONS LIVING IN THE COMMUNITIES FROM KANEOHE TO PUNALUU.

LOOSE OBJECTS SUCH AS LUMBER...LAWN FURNITURE...GARBAGE CANS... AND OTHER ITEMS SHOULD BE SECURED OR STORED INDOORS. STAY INDOORS IF POSSIBLE DURING THE PERIOD OF HIGHEST WINDS THROUGH FRIDAY NIGHT.

HIGH SURF ALONG SOUTH AND WEST SHORES OF OAHU WILL BUILD TO HEIGHTS OF 10 TO 20 FEET BY THIS EVENING. OAHU CIVIL DEFENSE HAS ORDERED THAT PERSONS RESIDING WITHIN 300 FEET OF ALL OAHU SHORES TO EVACUATE TO HIGHER GROUND.

BOATERS SHOULD MOVE BOATS TO SAFE MOORING AND PERSONS SHOULD CANCEL ANY BEACH ACTIVITIES UNTIL FURTHER NOTICE.

IN THE PAST FEW HOURS RADAR INDICATES BANDS OF HEAVY SHOWERS ARE MOVING TOWARD OAHU FROM THE SOUTH AND SHOULD BE ARRIVE IN THE NEXT TWO HOURS. RAIN TOTALS COULD RANGE FROM 5 TO 10 INCHES IN SOME LOCATIONS RESULTING IN LOCAL FLASH FLOODING.

ALTHOUGH THE CENTER OF HURRICANE INIKI IS EXPECTED TO MOVE CLOSEST TO KAUAI...THE HURRICANE'S EFFECTS WILL BE FAR REACHING. FORECAST MOVEMENT...DIRECTION...AND SPEED ARE ONLY ESTIMATES.

THE NEXT LOCAL STATEMENT WILL BE ISSUED AT 2 PM HST OR SOONER IF NECESSARY.

CRAIG NATIONAL WEATHER SERVICE HONOLULU

WOHW3 PHNL 112315
BULLETIN
SPECIAL WEATHER STATEMENT
NATIONAL WEATHER SERVICE HONOLULU HI
115 PM HST FRI SEP 11 1992

FOLLOWING ARE SOME WIND REPORTS AS OF 1 PM HST...

HONOLULU IAP SE 35 GUST 45 MPH.
BARBERS POINT SE 31 GUST 43 MPH.
WHEELER AFB SE 25 GUST 39 MPH.
LIHUE AIRPORT E 40 GUST 52 MPH.
KAHULUI AIRPORT SW 30 GUST 37 MPH.

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WOHW3 PHNL 120000
BULLETIN
HURRICANE INIKI...LOCAL STATEMENT
NATIONAL WEATHER SERVICE HONOLULU HI
2 PM HST FRI SEP 11 1992

...A HURRICANE WARNING REMAINS IN EFFECT FOR OAHU...

THIS STATEMENT RECOMMENDS SPECIFIC ACTIONS TO BE
TAKEN BY PERSONS ON OAHU ONLY.

AT 1 PM HST THE CENTER OF HURRICANE INIKI WAS LOCATED
ABOUT 72 MILES SOUTHWEST OF LIHUE AND MOVING TOWARD
THE NORTH AT 17 MPH. THE CENTER OF INIKI IS FORECAST TO
PASS NEAR KAUAI AROUND 5 PM THIS AFTERNOON.

SOUTHERLY WINDS WILL STEADILY INCREASE TO 50 TO 75
MPH WITH GUSTS TO 100 MPH BY LATE THIS AFTERNOON.
GUSTS WILL BE STRONGEST OVER MOUNTAINOUS TERRAIN
AND THROUGH PASSES. COMMUNITIES ALONG THE EASTERN
SLOPES OF THE WAIANAE AND KOOLAU RANGES ARE
PARTICULARLY EXPOSED TO THE STRONG GUSTS.

LOOSE OBJECTS SUCH AS LUMBER...LAWN
FURNITURE...GARBAGE CANS...AND OTHER ITEMS SHOULD BE
SECURED OR STORED INDOORS. STAY INDOORS IF POSSIBLE
DURING THE PERIOD OF HIGHEST WINDS THROUGH FRIDAY
NIGHT.

HIGH SURF ALONG SOUTH AND WEST SHORES OF OAHU WILL
BUILD TO HEIGHTS OF 10 TO 20 FEET BY THIS EVENING. OAHU
CIVIL DEFENSE HAS ORDERED THAT PERSONS RESIDING
WITHIN 300 FEET OF ALL OAHU SHORES TO EVACUATE TO
HIGHER GROUND.

IN THE PAST FEW HOURS RADAR INDICATES BANDS OF HEAVY
SHOWERS MOVING ACROSS THE ISLAND. RAIN TOTALS COULD
RANGE FROM 5 TO 10 INCHES IN SOME LOCATIONS
RESULTING IN LOCAL FLASH FLOODING.

ALTHOUGH THE CENTER OF HURRICANE INIKI IS EXPECTED TO
MOVE CLOSEST TO KAUAI...THE HURRICANE'S EFFECTS WILL
BE FAR REACHING. FORECAST MOVEMENT...DIRECTION...AND
SPEED ARE ONLY ESTIMATES.

THE NEXT LOCAL STATEMENT WILL BE ISSUED AT 5 PM HST
OR SOONER IF NECESSARY.

CRAIG NATIONAL WEATHER SERVICE HONOLULU

WOHW3 PHNL 120330
BULLETIN
HURRICANE INIKI...LOCAL STATEMENT
NATIONAL WEATHER SERVICE HONOLULU HI
530 PM HST FRI SEP 11 1992

...THE HURRICANE WARNING HAS BEEN DOWNGRADED TO A
TROPICAL STORM WARNING AS OF 5PM HST...

THIS STATEMENT RECOMMENDS SPECIFIC ACTIONS TO BE
TAKEN BY PERSONS ON OAHU ONLY.

AT 5 PM HST...THE CENTER OF HURRICANE INIKI WAS
LOCATED ABOUT 50 MILES NORTH OF KAUAI MOVING 30 MPH
TO THE NORTH. INIKI IS FORECAST TO CONTINUE MOVING
RAPIDLY NORTHWARD AWAY FROM THE ISLANDS.

THE SOUTHERLY WINDS OF 25 TO 50 MPH WITH HIGHER
GUSTS WILL DECREASE TONIGHT AND BECOME
SOUTHWESTERLY 10 TO 20 MPH SATURDAY. STRONGEST
GUSTS WILL OCCUR OVER MOUNTAINOUS TERRAIN AND
THROUGH PASSES.

WEATHER RADAR CONTINUES TO SHOW A NORTH-SOUTH LINE
OF HEAVY SHOWERS OVER OAHU ACCOMPANIED BY STRONG
AND GUSTY WINDS. OAHU RESIDENTS AND VISITORS ARE
THEREFORE URGED TO REMAIN INDOORS AWAY FROM
POSSIBLE FLYING DEBRIS UNTIL THE LATER TONIGHT.

SURF ALONG SOUTH AND WEST SHORES OF OAHU WILL
REMAIN AT 10 TO 20 FEET THROUGH MOST OF TONIGHT THEN
LOWER TO 6 TO 12 FEET SATURDAY. PERSONS RESIDING
WITHIN 300 FEET OF ALL OAHU SHORES ARE URGED TO STAY
ON HIGHER GROUND UNTIL THE OAHU CIVIL DEFENSE SAYS
OTHERWISE,

THE NEXT LOCAL STATEMENT WILL BE ISSUED AT 6 PM HST
OR SOONER IF NECESSARY.

CRAIG NATIONAL WEATHER SERVICE HONOLULU

WOHW3 PHNL 120630
BULLETIN
HURRICANE INIKI...LOCAL STATEMENT
NATIONAL WEATHER SERVICE HONOLULU HI
6 PM HST FRI SEP 11 1992

...THE TROPICAL STORM WARNING FOR OAHU IS CANCELLED
AT 6 PM HST...

. ...A HIGH SURF ADVISORY REMAINS IN EFFECT FOR ALL
SHORES...

AT 6 PM HST...THE CENTER OF HURRICANE INIKI WAS
LOCATED ABOUT 120 MILES NORTH OF KAUAI MOVING TO THE
NORTH AT 30 MPH. INIKI IS EXPECTED TO CONTINUE MOVING
RAPIDLY AWAY TO THE NORTH.

THE SOUTHERLY WINDS OF 25 TO 50 MPH WILL DECREASE
TONIGHT AND BECOME SOUTHWESTERLY 10 TO 20 MPH
SATURDAY.

WEATHER RADAR CONTINUES TO SHOW HEAVY SHOWERS
OVER OAHU...BUT THEY SHOULD BE DECREASING LATER
TONIGHT.

SURF ALONG SOUTH AND WEST SHORES OF OAHU WILL
REMAIN AS HIGH AS 15 FEET THROUGH TONIGHT AND WILL
SLOWLY SUBSIDE ON SATURDAY. PERSONS RESIDING IN
COASTAL SECTIONS ARE URGED TO EXERCISE CAUTION AS
LONG AS THE SURF REMAINS HIGHER THAN NORMAL.

THIS WILL BE THE LAST LOCAL STATEMENT UNLESS
CONDITIONS WARRANT FURTHER ISSUANCES.

CRAIG NATIONAL WEATHER SERVICE HONOLULU

WOHW3 PHNL 120630 COR
BULLETIN
HURRICANE INIKI...LOCAL STATEMENT...CORRECTED
NATIONAL WEATHER SERVICE HONOLULU HI
6 PM HST FRI SEP 11 1992

...CORRECTS LOCATION OF THE HIGH SURF ADVISORY...

...THE TROPICAL STORM WARNING FOR OAHU IS CANCELLED
AT 8 PM HST...

. ...A HIGH SURF ADVISORY REMAINS IN EFFECT FOR ALL
SOUTH AND WEST FACING SHORES...

AT 8 PM HST...THE CENTER OF HURRICANE INIKI WAS
LOCATED ABOUT 120 MILES NORTH OF KAUAI MOVING TO THE
NORTH AT 30 MPH. INIKI IS EXPECTED TO CONTINUE MOVING
RAPIDLY AWAY TO THE NORTH.

THE SOUTHERLY WINDS OF 25 TO 50 MPH WILL DECREASE
TONIGHT AND BECOME SOUTHWESTERLY 10 TO 20 MPH
SATURDAY,

WEATHER RADAR CONTINUES TO SHOW HEAVY SHOWERS
OVER OAHU...BUT THEY SHOULD BE DECREASING LATER
TONIGHT.

SURF ALONG SOUTH AND WEST SHORES OF OAHU WILL
REMAIN AS HIGH AS 15 FEET THROUGH TONIGHT AND WILL
SLOWLY SUBSIDE ON SATURDAY. PERSONS RESIDING IN
COASTAL SECTIONS ARE URGED TO EXERCISE CAUTION AS
LONG AS THE SURF REMAINS HIGHER THAN NORMAL.

THIS WILL BE THE LAST LOCAL STATEMENT UNLESS
CONDITIONS WARRANT FURTHER ISSUANCES.

CRAIG NATIONAL WEATHER SERVICE HONOLULU

EXTRACTS FROM WSFO HONOLULU AND WSO LIHUE STATION DUTY MANUALS

TELEPHONE NUMBERS FOR CPHC COORDINATION

dia 6 + AREA CODE + xxx-xxxx (FTS or Commercial number)

CPHC fax..... 808-836-1126

Hawaiian Area Coordination

When **using** the FTS line 551-1697/551-1698, dial 8 + (606) + xxx-xxxx.

WSO Hilo..... 935-5533, 5971 (unlisted), 934-7004 (fax)
WSO Lihue..... 245-3711, 2420 (unlisted), 245-5394 (fax)
WSO Kahulul..... 877-6825, 6321 (unlisted), 677-6747 (fax)

Hawaii CD..... 935-0031, (Harry Kilm: home 959-8659)
Kauai CD..... 241-8336, 241-8335 (fax)
 (Sonny Gerado: home 742-7660)
Main CD..... 243-7721, 7623 (Set Menor: horns 877-6008)
Oahu CD..... 523-4121, fax 524-3439 (527-5900 In emergency)
 (Joe Reed: home 623-4367
 cellular 927-0734
 pager 527-6737 x 0319
 (Frank Apel: home 623-6472,
 cellular 927-4263
 pager 527-6737 x 0315
 (Bill Martin: home 523-7587
 cellular 927-4264
 pager 527-6737 x 0317
 (Phil Wehrman: home 263-1200
 cellular 927-0734
 pager 527-7567 x 0316
 (Malcolm Sussel: home 533-7138 or
 638-8567 weekends
 pager 527-6737 x 0352

NOTE When calling pager, dial first 7 numbers, wait for tone or beep, then dial next 4 numbers.

State CD 734-2161 (Don Gransback...home 732-7650)
fax 737-4150 cellular 226-1627)

State Warning Point. 529-3363, 529-3388, 529-3911

Other **alternatives**: use WATS (168-2675) if available: 1-xxx-xxxx or dial commercial and leave note for secretary.

NAVWESTOCEANCEN . 471-0004, 0145, 0090
474-4856, 4835, (fax 474-8902)
Hickam Base Weather (20WS)... 449-6262, 1634
METSAT Coordinator . 449-1279
Det II, AFGWC (wx monitor)..... 449-3994
Hickam Command Post (RTFC).. 449-2360, 9912

Hickam Airways.....	449-2904
Barbers Pt Wx.....	684-9250, 9292
Kaneohe MCAS Wx.....	257-2839, 2931
Army Corps of Engineers...	438-1673, 9256
U.S. coast Guard.....	628-4430, 4431, 5224426 (fax)

MIC, Glenn Trapp..... 396-3383
DMIC, Ben Hablutzel..... 9556631
RD, Richard Hagemeyer..... 395-0319

For **calls to outlying Pacific islands:**

Guam (NWSEO).. FTS **8+011+(671)344-4160**, 4175, fax **477-6185**
(JTWC)..... FTS **6 + Oil + (671) 344-5240, 4224**
(WSMO)..... FTS **6 + 700 + 550.7370 (fax or voice)**
or 6 011 (671) **355-5988, 5924**
Kwajalein..... **471-1836** end ask for Ext. 1506 or 2136
Wake (NWS)..... 424-2225, 424-2275
Johnston..... **621-3044, 3365, 2636** and ask for **ext 2310**.
Pago Pago..... 011 (664) **699-9130**, fax **699-1550**

NOTE: **Calling PJON, PWAK, or PKWA are direct dial or operator assisted calls. All calls to Samoa are international long distance calls. Use ETS line to call Guam.**

[12/92](cphc,tef)

[illegible]

WSFO HNL SDM 2.3 3/10/88
Central Pacific Hurricane Center (post.rpt)

POST STORM REPORTS

Ref: WSOM C-41

1. A summary of the **meteorological** aspects, as well as the best **Information** available on types and amount of damage to property, deaths, and number of people evacuated shall be prepared on each **tropical** storm or hurricane. These reports shall be sent to **PRH,NHC**, and **NWSH Warning** and Forecast Branch (**WOM1** 1). Summaries shall be submitted **within** four weeks following the fast advisory and include a best track of the storm within the central North **Pacific**.

2. CPHC shall provide CARCAH with a **written** assessment of the **reconnaissance** mission anytime its timeliness or **quality** is outstanding or substandard. Requirements **levied** as "resources permitting" shall not be assessed for **timeliness**, but may be assessed for quality of data gathered.

3. A **tropical** cyclone season data tabulation shall be prepared at the end of each season and distributed to the **appropriate** government agencies.

[illegible]

CENTRAL PACIFIC HURRICANE CENTER STAFFING GUIDELINES

Whenever the CPHC is activated, schedule an extra midnight shift (21 or A1) as necessary.

CONDITION - Tropical cyclone to effect the State of Hawaii within 24 hours.

Products Issued: WTPA2x - Marine Advisory
WTPA3x - Public Advisory
WTPA4x - Tropical Cyclone Discussion
WTPA51 - Tropical Cyclone Position Estimates es
mqlmd
WTPA61 - Narrative stating changing conditions as
mqlmd.
woHW3 - Local Statement (Issued by the Public
Service Forecaster)

Delay or discontinue routine issuances of the FPHW1, FPHW2, FPHW3, FPHW4, FPHW10, FOHW1, FOHW2, and FOHW3 with concurrence of the AM/MIC or DMIC.

Coverage: 1. AM/MIC end/or DMIC on duty continuously at the CPHC.
2. Overlap Z, H, and C1 shift lead forecasters es follows:

Z shift LF works until 1200 HST end issues 2100Z tropical cyclone package.

H shift LF works until 1930 HST end issues 0300Z tropical cyclone package.

Q shift LF works until 0300 HST and issues 0900Z tropical package end provides telephone support

3. DMIC or Hurricane PL shall work "D" shift to assist with "Z" shift issuances et 1500Z and to coordinate RECCE requirements with NHC. AM/MIC or DMIC assists with 0900Z package.
4. 24-hour telephone coverage shall be provided by supernumerary workers. Other assistance can be obtained by extending aviation end marine shifts forecast shifts and from PRH staff members.
6. AM/MIC or assigned person shall handle press, radio, end TV "interference."
6. Them shall be 24-hour electronics technician coverage II the storm is a direct threat or affecting Oahu.

7. Activate the ARES network.

8. AM/MIC recalls selected personnel from leave end/or requests assistance from PRH.

CONDITION - Tropical cyclone to affect the State of Hawaii within 46 hours.

Products Issued: Same es above, except the WOHW3 is issued only es required by the Public Service Forecaster.

- Coverage: 1. Lead Forecaster takes over the public service desk If originally scheduled for another position.
2. H shift stays to issued 0300Z advisories end guidance.

3. Q shift LF pmpems 0900Z guidance end, If necessary, Q1 shift prepares 0900Z Local Statement.
4. DMIC or Hurricane PL shall work e "D" shift end pmpem the 1500Z advisories/guidance, end coordinate RECCE requirements with NHC.
5. AM/MIC, DMIC, or Hurricane PL shall pmpem the 2100Z issuances.
6. Telephone assistance from 0500-2100 shall be provided by supernumerary shift workers, recalled personnel, end holdover aviation or marine forecasters. Also available for help em PRH staff members.
7. AM/MIC or designated person shall handle press, radio, and TV "interference."
6. AM/MIC shall consider recalling selected personnel on leave.
9. ARES personnel shall be alerted of pending activation of SKYWARN net.
10. SET shall be alerted of the possibility of 24-hour ET coverage.
11. SMT/TA shall check all emergency supplies end equipment, i.e. flashlights, water containers, etc., to ensure they em available in proper working order.

CONDITION - Tropical Cyclone not threatening Hawaii

Products Issued: Same es those for e tropical cyclone to effect the State of Hawaii In 46 hours, except no local statement is issued.

- Coverage: 1. Lead forecaster takes over the public service desk II originally scheduled for another position and issued the tropical cyclone advisories end discussion.
2. A shift LF shall coordinate predetermined RECCE requirements with NHC.
 3. AM/MIC, DMIC, or Hurricane PL shall be available to assist with 2100Z end 0300Z issuances If mqlmd.
 4. Q shift LF shall pmpem the 0900Z issuances.
 5. DMIC or Hurricane PL shall be within telephone contact for assistance or answering questions.

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ACTIONS TO BE TAKEN BEFORE THE HURRICANE SEASON

The following actions should be accomplished NLT 31 May of each year:

1. Review and critique latest Issuances and drafts of WSOM Chapter C-41, NHOP, and CINCPACINST 3140.1 (x). OPR: AM/MIC, DMIC, Hurricane PL, designated staff.
2. Contact critical weather observers and review instructions. Check supplies. OPR: SMT/TA
3. Prepare, revise, and/or update forms for marine advisories, public advisories, and local statements. Establish sufficient supplies of forms in district desk and overflow file. OPR: DMIC and/or Hurricane PL.
4. Contact civil defense officials and review and coordinate warning procedures. OPR: AM/MIC or Hurricane PL.
5. Conduct statewide hurricane drill in accordance with WSOM A-17. Coordinate drill with CD/WSO's/military agencies. Alert media of drill. See timetable for drills in this section. OPR: Hurricane PL.
6. Have all forecasters review WSOM C-41 and NHOP and participate in a written drill before statewide live drill in which they prepare advisories, local statements, aviation and marine products for a simulated tropical storm or hurricane. OPR: Hurricane PL.
7. Test communications procedures to ensure adequate capabilities. OPR: Hurricane PL.
8. Have AES provide written statement of operational capabilities of equipment statewide per WSOM C-41. OPR: Hurricane PL.

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TIMETABLE FOR ANNUAL HURRICANE DRILL

MID MARCH

Memo to WSFO forecasters with a **pre-drill exercise. Material delivered to participants should include a hurricane track chart with relevant information on a simulated hurricane.**

Lead **forecasters** should be asked to produce the following:

WTPA2 1 - Marine Advisory
WTPA3 1 - Public Advisory
WOHW3 - Local Statement

The rest of the forecast staff should produce the following:

WOHW3 • Local Statement
FAXX6 • **Aviation** area forecast
WAXXI • **AIRMETS** for **Hawaiian** area
WSPA2 • **SIGMET** for a **tropical** revolving storm
FTXX1 • **Terminal** forecast in FT format
FTX31 • **Terminal** forecast in TAF format
FZHW • Coastal and offshore **marine** bulletin

Memo to OICs at LIH, OGG, and ITO with pre-drill exercises. Each staff member should be asked to produce a local statement (LS) for their respective county warning areas from a given hurricane tracking chart. The OICs should also be notified of planned date for live drill.

EARLY MAY

Conduct **live drill** (mid-week between gam and 10am a good time).

Send a Special Weather Statement a day before to WSO's, press, and CD to remind them of drill. Call CD on telephone to ensure they receive notice. Coordinate with SMT/TA, Det 4, 20WS, and NAVWESTOCEANCEN.

WSFO drill participants should do the following:

Lead forecaster: LS for C & C of Honolulu.
 Aviation forecaster: FAXX6, WAXXI, FTXX1, FTPA31, WSPA2
 Marine forecaster: FZHW
 Outer Island WSS: LS for respective CWA.
 WSFO WSS: Record all 4LS for NWR broadcast when received.

All **drill** messages should be **transmitted** on the CD **circuit** using a **fictitious** or no header. Each **message must begin** with a (continued on next page)

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ZCZC and end with NNNN. Drill messages should also have the phrase "THIS IS A DRILL AND IS NOT FOR REBROADCAST OR TRANSMISSION TO THE PUBLIC...REPEATING...THIS IS ONLY A DRILL" at the beginning, middle and end of each message.

A log should be kept of any **problems** encountered. A **report** should be **submitted** to the **DMIC** as soon after the **drill** as **possible**.

LATE MAY

A critique of all written exercises and drill material should be completed and returned to participants. In addition, a memo should be sent to PRH notifying the RD of the completion of the annual drill IAW WSOM Chapter A-17.

[illegible]

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GUIDELINES FOR BULLETIN PREPARATION

1. Stay on the **established** best track. Call **DMIC** or **AMMIC** if there is a **significant difference** that may **require** a change in **track**.
2. Call NHC with data for model runs at 0100Z **PE6H**. Past and **present** **posits** be from the **best track**. Follow call to NHC with a call to the **NAVWESTOCEAN** duty **officer** and give the person a **posit** for **model runs** from **FNOC**, Monterey.
3. Do **preliminary** **bulletins**. Plot NHC and FNOC model outputs as soon as **received**.
4. Check plots **against** **preliminary** **advisory** **positions** and movement. Adjustment is **discretionary**.
5. The following **routine** **products** should be sent **routinely** at the **times** **indicated**:
 - a. **WTPA21-25 - marine** **advisory** at **03, 09, 15**, and **21** UTC.
 - b. **WTPA31-35 - public** **advisory** at **03, 09, 15**, and **21** UTC.
 - c. **WTPA41-45 - tropical** **cyclone** **discussion** at **0330** and **1530** UTC.

TROPICAL CYCLONE ADVISORIES

REF: WSOM C-41
NHOP

1. WSFO Honolulu has been designated the Central Pacific Hurricane Center (CPHC) for the Pacific Ocean area east of 180 to 140W longitude and north of the Equator.

2. WSOM Chapter C-41 and the National Hurricane Operations Plan (NHOP) cover procedures for the issuance of tropical cyclone bulletins and advisories. The important points as applicable to the CPHC are summarized below:

a. Advisories and bulletins shall be issued at 0300, 0900, 1500, and 2100 UTC with position times for the respective issuance times. The synoptic position for 0000, 0600, 1200, and 1800 UTC will also be included. The standardized format shall be used for the marine advisory and locally adapted formats shall be used for public advisories and local statements. See forms section of this manual.

b. Following is a list of tropical cyclone products and their appropriate WMO header:

WMO Heading	Product Description
ABPA20 PHNL	Tropical Weather Outlook
ABPA30 PHNL	Tropical Weather Summary
WOPA41 PHNL	Tropical Disturbance Statement
WTPA21-25 PHNL	Marine Tropical Cyclone Advisory
WTPA31-35 PHNL	Public Tropical Cyclone Advisory
WTPA41-45 PHNL	Tropical Cyclone Discussion
WTPA51 PHNL	Tropical Cyclone Position Estimate
WTPA61 PHNL	Tropical Cyclone Update

c. Numbering and naming of tropical cyclones is covered in WSOM C-41 and NHOP.

d. All marine advisories on intensifying tropical depressions, tropical storms, and hurricanes shall contain 12, 24, 36, 48, and 72-hour forecast positions. The 48 and 72-hour positions are designated as outlooks when transmitted on advisories or in verbal communications. The 48- and 72-hour outlooks shall be preceded by a standard statement indicating the uncertainty associated with the forecast positions.

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.. Aerial reconnaissance should be requested for my tropical cyclone in the CPHC area of responsibility, which poses a threat to Hawaii or my other U.S. possession at least 72 hours before gale force winds are forecast to begin. Tasking for reconnaissance should be made through the hurricane forecaster at the NHC after coordination with the AMMIC or DMIC.

PROCEDURES

The hurricane forecaster shall:

1. Complete both the marine and public advisories and have ready for transmission no later than 15 minutes before filing time. This will allow team members to quality check before the advisories are transmitted. Local statements should not be released before the marine and public advisories.

2. Ensure that the marine forecaster on duty issues a WOPN or an amendment to the FZPNPHNL normally issued at 0600, 1100, 1700, and 2300 UTC as soon as a new advisory is issued. This is essential to ensure that the latest information is broadcast.

3. Ensure that the aviation forecaster on duty issues SIGMETs to match the advisories.

4. Send a condensed version of the latest CPHC, JTWC, or NandI advisory to the NWSH Warning and Forecast Branch and FEMA (Washington, D.C. and San Francisco) whenever a tropical cyclone poses a threat within 24 hours to my

U.S. possession or trusteeship in the Pacific. Use the FEMA FMT format or the ADMN20.FEMA history file found in the Hurricane or Public Service Directory

The AMMIC or DMIC and the NWS Pacific Region Director should also be notified of these threats.

5. Ensure that the marine forecaster includes requests for ship reports in the marine bulletins and arranges for special rawinsonde releases and surface observations. See PRH ROML P-6-75 under Special Warning Program Observations section of this manual.

6. Coordinate the transfer of warning responsibility with the NHC whenever a tropical cyclone is about to enter the CPHC area from the east and with the Tropical Duty Officer at the NAVWESTOCEANEN for transfer to JTWC when a system is forecast to cross the 180 meridian from east to west. The last advisory issued by the CPHC should contain a statement that future advisories will be issued by the JTWC, Guam.

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The public service forecaster shall maintain a weather watch for tropical cyclones in the western North Pacific and in the South Pacific at all times when the CPHC is not active. Advisories should be relayed to NWSH and FEMA per instructions in Item 4 above. A special clipboard shall be maintained during the course of each storm for filing:

- Advisories
- All special reports received pertaining to damage, injuries, or deaths.
- Copies of significant weather reports, showing sustained winds, peak gusts, etc.

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PRODUCT ISSUANCE TIMES

WTPA2x (JTC)	WTPA3x (UTC)	WTPA4x (UTC)	WOHW3 (UTC)	(LS)	Prepare (HST)	Issue by (HST)
1500					0200-0430	0430
	1500				0200-0430	0430
		1530			0500-0530	0530
			1500*		0430-0500	0500
2100					800-1030	1030
	2100				0500-1030	1030
			2100*		1030-1100	1100
0300					1400-1630	1630
	0300				1430-1630	1630
		0330			1700-1730	1730
			0300*		1630-1700	1700
0900					2000-2230	2230
	0900				2000-2230	2230
			0900*		2230-2300	2300

* Local statements shall be issued by the lead forecaster working the public service desk.

WTPA51-Tropical Cyclone Position Estimates shall be issued hourly when the storm is under liftoff surveillance and within 200 nautical miles of land based radar. Estimates shall be prepared a short time before each hour, except at times when advisories are issued (assuming that there is an operational radar at WSFO or reports are available).

10. **ADVISORIES.** Double **check** and **proofread** **advisories** and local statements before transmission.
11. **EMERGENCY STAFFING.** Arrange for emergency **staffing**. Request **extra** staff from **RD** if necessary. **Curtail** all leave and recall people from leave If necessary and practkal. Contact Area **IAES** and arrange for **EL** staffing.
12. **MARINE BULLETINS.** Ensure the **marine** forecaster Includes a statement **requesting special ship observations** addressed to **OBS METEO HONOLULU** In the **FZPN, FZHW,** and **WOHW1/WOPN** bulletins.
13. **PREPARE FOR MEDIA.** Have **available graphics** depicting track, safety rules, **climat tracks,** etc. Ensure a **monitor containing appropriate** animated **satellite** Imagery is available In **media** center.
14. **RADAR.** Call the Hkkam Base **Weather Station,** **KOKEE,** and **KAALA** and arrange for **hourly** radar **observations.** Coordinate with **FAA** approach control.
15. **NOTIFY NWSH.** When a suffkiently severe event **is** likely to **strike** the Islands contact the **NWSH** Warning and Forecast Branch (**W/OM1** 1) during normal **business** hours. At all other **times,** contact the **designated** duty officer as per **list** Included In **Section 3** (Telephone Numbers) of **this** manual.
16. **SNORT FUSE WARNINGS.** **Coordinate possible** use of **EBS** with State CD. See Emergency **Operations** Manual
17. **CRITICAL WEATHER** OBSERVERS. Contact **observers** on **critical** weather observers **list** and arrange for reports. Use caution to **avoid** unnecessary alarm or spread of rumors.
16. **EMERGENCY** COMMUNICATION& **Alert** **ARES operators** and have the **standby** in case they are needed. Have **ETs** or Emergency **Radio PL** **checkout** ham **radio equipment.**

[illegible]

HINTS AND TIPS FOR THE HURRICANE FORECASTER

1. If the state **is being** threatened, get the advisory to **Civil** Defense **using HAWAS net**, then follow **with** hardcopy for the rest of the world and **confirmation** for CD.
2. A **hurricane** watch and a tropical storm warning can be in effect at the same **time**.
3. Tropkal Storm Watches should be Issued for tropkal storms not expected to reach **hurricane** strength or for nearby **tropical** systems or **depressions** expected to reach only **T.S.** strength. (NOTE: Recommend the Tropkal **Storm** Watch not be used, **if** at all **possible**.)
4. Tropkal Storm Warnings should be issued when tropkal **storm** **conditions** are expected. **Accordingly**, they may be Issued on either **side** of a **hurricane** warning area.
5. A **Tropical** Weather Outlooks (**TWOs**), prepared by the **satellite meteorologist**, should be **coordinated** with the **hurricane** forecaster and

checked for **consistency** before transmission.

6. Be careful when comparing a system with a past **storm**.
7. **Providing positions** to CD and other **agencies**:
 - a. It is **alright** to pass on **RECCE** **fixes**.
 - b. When **giving** out **satellite** fixes (**depending** on **quality**), couch with **reliability** terms (**IR** vs **VIS**), **time**, not **representative** of present and past movement, etc.
6. **Transmissions** on **HAWAS** are recorded, so be **caeful** of what is said over the system.
9. Don't wait **untill** **routine times** to make changes. This is a common trap we all fall into. The **WTPA61** is a quikk and convenient way to update.
10. **Shift Coverage**:
 - a. For far away systems - augment **mid-shift**. LF does public and tropical cyclone bulletins. **Augmentee works** the aviation desk. **DMIC** will usually come **in** to **coordinate** RECCE.
 - b. System closing in and a threat - augment **mid-shift** with an aviation and a hurricane forecaster. **MIC**, **DMIC**, and **SFSS** Manager **will** also be on hand.

圖 10-1-1 係以圖 10-1-2 之圖式，說明其計算方法。

11. Try not to duplicate **discussions, i.e.,** between the FP3 and **WTPA41-45**. In the **FP3**, just add the statement **"SEE WTPA41 FOR SPECIFIC DETAILS."** This **is** okay for **FP3s issued** at 0315 and **1515Z**. The **following** are suggested for the **FP3 issued** at **2115Z**:
- a. no **significant** changes **occurring**, **"NO SIG CHANGE FROM WTPA41 ISSUED A 1530Z.**
 - b. If a significant change **is** going on, **"SEE SPECIAL ADVISORY."**
 - c. If there is an **apparent** change in progress, **"SEE WTPA41 PHNL xx0330."**
12. **QPF** -the **NMC Heavy Precipitation** Branch (HPB) should call the **CPHC** **if their quantitative** precipitation model **predicts rainfall** of 4 Inches or more over the state from a tropical cyclone **approaching** the Hawaiian Islands. If no call **is** made and a **T.C. is bearing** down on **Hawaii**, call the **SDM** or HPB and request a **QPF**. This is just another **piece of guidance** and strictly conjecture, so use **with caution** if used at all.

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LOCAL STATEMENTS (LS)

Definition: A public release prepared by a WSO or WSFO in or near a threatened area giving SPECIFIC details for its area of county responsibility on:

- (a) Weather conditions (where a hurricane is located and where it is moving).
- (b) Sections that should be evacuated (alter CD has recommended evacuation).
- (c) Other precautions necessary to protect life and property.

PROCEDURES:

1. LS's should normally be issued whenever WSFO's county warning area (CWA) is affected by:

- (a) a tropical storm watch/warning.
- (b) a hurricane watch/warning
- (c) evacuation orders
- (d) tumors which the MIC feels should be countered by appropriate statements.

When, for any reason, warnings from the hurricane center are inadequate to cover current or imminent events, LS's should include such local warnings as necessary for the protection of life and property.

2. Time of Issuance.

- (a) At regular and frequent intervals of 2 or 3 hourly intervals or more frequently if information and circumstances warrant.
- (b) LS's should NOT be released immediately before an advisory.

3. General Instructions.

- (a) LS's should amplify, not restate or conflict with hurricane center releases.
- (b) LS's should NOT IN ANY WAY change any of the forecasts given in the latest advisory.
- (c) Remember that a hurricane warning supercedes ALL other warnings. It is not necessary to explicitly state high surf advisories, flood warnings, etc. when a hurricane warning is in effect. Those warnings become necessary beyond the periphery of the hurricane warning area and as the hurricane approaches or leaves an area. Wording, such as torrential rain, present high surf and wind, as well as trends of these items should be included in the LS's.
- (e) Specific geographical areas or portions of the Island should be mentioned when the entire Island is not under the same threat.

PROCEDURES FOR OBTAINING HURRICANE MODEL GUIDANCE FROM NHC/NMC

1. Fill out the "Tropical Cyclone Model Worksheet". A sample is attached.
2. FAX to NHC 1-(305)-536-8881. Unfortunately, the FAX machine at NHC is in an unmanned area, so a follow up call to the duty hurricane specialist (FTS 350-5547) is required.
3. Telephone NAVWEST (471-0004) and give the tropical duty officer (TDO) the current time information.
4. Deadlines for providing input parameters to NHC: 0100Z PE6H.
5. The outputs from the various models will be sent by NHC under the heading WHXX1KMIA usually within 30 minutes after input data is provided. The data for the QLM will be sent under the header WHXX04 KWBC about 4 hours after the 002 and 122 synoptic times.

6. Following are the models currently being run by NHC and included in their WHXX1KMIA bulletin:

Acronym	Model
XTRP	eXTRaPolation - A pure extrapolation model
HURN	HURricane aNalog (formerly EPAN65)
CLIP	CLImatology and Persistence (formerly EPCL64)
BAMD	Beta-Advection Model Deep layer - The Beta-Advection Model with a mean layer averaged between 650 and 200 mb.
BAMN	Beta-Advection Model Medium layer - The Beta-Advection Model with a mean layer averaged between 650 and 400 mb.
BAMS	Beta-Advection Model Shallow layer - The Beta-Advection Model with a mean layer averaged between 650 and 700 mb.
PSS	Pacific Statistical Synoptic (formerly EPSS87)
PSDE	Pacific Statistical Dynamic Early run
SHFR	Statistical Hurricane Intensity FoRecast (formerly SHIFT)

7. The WHXX1KMIA bulletin is stored in the PRIME data base and can be displayed by entering H27 from the Hurricane Menu.

H30 will display the WHXX04 KWBC bulletin which contains the QLM output.

Additional Model Definitions are as follows:

P91E - National Hurricane Center's Pacific version of the Statistical Dynamical model for the Atlantic and Gulf of Mexico. It consists of Atlantic Predictors and Pacific climatology and persistence. This is an interim model until one can be developed for the East and Central Pacific.

The following are definitions of Navy models:

HPAC - Half Persistence And half Climatology
CLIP - CLImatology and Persistence
CLIM - CLImatology
XTRP - eXTRaPolation
SBAM - Shallow layer Beta Advection Model
OTCM - One way Tropical Cyclone Model
TOTL - TOTaL analog
FBAM - Fleet Numerical Oceanographic Center Beta Advection Model

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(recon)

TROPICAL CYCLONE AERIAL RECONNAISSANCE

[illegible]

9. See Chapter 5 of the NHOP for details and explicit instructions on aircraft reconnaissance.

[illegible]

RECONNAISSANCE WORKSHEET

2 . N . W ¹ _____ KT ² _____

D. ADDITIONAL DAYS OUTLOOK.

E. REMARKS.

B-2 SECTIONS OF WSO LIHUE SDM

SDM

HURRICANE OPERATIONS

WSO LIHUE, HI
11/09/90

REFERENCE: WSOM C - 41 (8/2/90)
ROML P - 73 - 11 (2/2/82)

SECTION 5.1

INTRODUCTION: This section contains guidelines for conducting the NWS operations for hurricane warning service. Written instructions cannot cover every situation, therefore, the employee's initiative and professional judgement will be exercised in meeting and dealing with these events.

SECTION 5.2

RESPONSIBILITY: The NWS has no greater responsibility than preparing and distributing warnings and forecasts of impending severe weather. There will be times when routine work has to be temporarily suspended in order to meet this obligation. Every effort will be expended to assure that this service is accomplished in the most expeditious and effective manner possible.

SECTION 5.3

DEFINITIONS: A. **Tropical Storm Watch** - An announcement that a tropical storm, or tropical storm conditions poses a threat to coastal areas generally within 36 hours.

B. **Tropical Storm Warning** - A warning issued for tropical storm conditions including sustained winds within the range of 39 to 73 mph (34 to 63 knots) expected in a specified coastal area within 24 hours or less.

C. **Hurricane Watch** - an announcement for specific areas that a hurricane or an incipient hurricane condition poses a possible threat to coastal areas generally within 36 hours.

D. **Hurricane Warning** - a warning that sustained winds of 74 mph (64 knots) or higher associated with a hurricane are expected in a specified coastal area in 24 hours or less.

E. **Local Statement** - A public release prepared by a Weather Service Office (WSO), or Weather Service Forecast Office (WSFO) in or near a threatened area giving specific details for its County Warning Area (CWA) on: 1) weather conditions, 2) sections that should be evacuated per Civil Defense orders, and 3) other precautions necessary to protect life and property.

F. **Advisory - Official Information** issued by the Hurricane Center (CPHC) describing all tropical cyclone watches and warnings in effect, along with details concerning tropical cyclone locations, intensity and movement, and precautions that should be taken.

SECTION 5.4

PROCEDURES: Upon official notification by the Central Pacific Hurricane Center (CPHC) of an IMPENDING Hurricane/Tropical Storm Watch, the employee receiving the notification will:

1. Notify the OIC/AOIC.
2. Inform the Kauai Civil Defense Administrator (KCDA).
3. Take survey of operational supplies and equipment:
a) upper air b) surface c) weather fax
d) printer ribbons & paper
4. Check status of all equipment (including back-up):
a) upper air b) surface c) facsimile communications d) automatic stations
e) NWR Kokee Xmtr f) NWR monitor
g) station vehicle
5. Take visual checks of emergency supplies:
a) back-up lights (including flashlight batteries)
b) stored drinking water
c) rations (if any) d) first aid kit
e) emergency generator fuel & oil
f) storm shutters
6. Enter actions taken in Stations Log Book.

NOTE: During non-working hours, contact Kauai P. D. (County Warning Point) and request they relay the information to the KCDA.

SECTION 5.4.1

OIC/AOIC ACTIONS:

Upon notification of an IMPENDING Hurricane/Tropical Storm Watch, the OIC/AOIC will:

1. Alert WSO Lihue staff members
2. Confer with CPHC/WSFO Honolulu
3. Confer with Kauai Civil Defense Agency
4. Assure Kauai P.D. informed.
5. Prepare for storm operation

SECTION 5.4.2

ACTIONS UNDER WATCH CONDITION: Upon being notified of Tropical Storm/Hurricane Watch condition by the CPHC/WSFO HNL, the employee on shift will follow the guidelines given in Appendix A.

The OIC/AOIC will complete appropriate entries on WSO Lihue Form #5. In addition, the OIC/AOIC will assure that:

1. The Watch message is on both code-a-phones
2. Local radio stations have been notified
3. The station is ready for storm operations
4. sufficient staff is on hand (call in more if needed)
5. Notification list is completed
6. Perform Safety procedures:
 - a) Ensure safety precautions of staff members & families have been taken of.
 - b) Secure Station facilities - see check list on WSO Lihue Form #5
 - c) Recheck emergency operations & survival status

Unless otherwise designated, the OIC/AOIC will prepare and transmit all Tropical Storm/Hurricane Local Statements. The OIC/AOIC will also respond to all media inquiries.

SECTION 5.4.3

ADDITIONAL STAFFING: When additional staffing are called in, the distribution of tasks will be as follows:

1. Plotting Desk:
 - a. Maintain all advisories on separate clipboards in numerical order, with the latest advisory on top.
 - b. Plot storm track positions.
 - c. Solicit Radar reports from HANG, Kokee and Barking Sands weather unit.
 - d. Solicit reports from CD, PD, and Critical Observers Network.
 - e. Interrogate Automatic Stations.
 - f. Inflate & release balloon.
2. RAOB Desk:
 - a. Perform Upper Air observation.
 - b. Assist Plotting Desk when free.
 - c. Assume the duties of employee on previous shift when he/she is relieved from duty.

SECTION 5.4.3.1

WARNING CONDITIONS - Upon being notified of Tropical Storm/Hurricane Warning conditions, unless otherwise designated, the OIC/AOIC will complete all entries on WSO Lihue Form #5. If not already done, additional staffing will be brought in at this time.

In addition, each staff member will:

1. Have ensured the safety of his/her family.
2. Report to duty as directed by the OIC/AOIC scheduled.

SECTION 5.4.3.2 (Continued):

3. Remain on duty until properly relieved or released and/or conditions are declared safe by local authorities.
4. Inform the OIC/AOIC by phone if unsafe traveling conditions impedes reporting to duty.
The employee will report to duty as soon as traveling conditions have been declared safe by local safety officials.
5. Not, under any circumstances expose him/her-self to physical danger.

SECTION 5.5

HURRICANE OBSERVATIONS:

1. Synoptic Observations: Every effort should be made to obtain high cloud movement and report this information in the "56DLMDH" group of the synoptic message. Special effort should be made to obtain this information whenever a hurricane/tropical storm is within a 500 mile radius of the station.
2. Upper Air Observations: Take special rawinsonde observations at 0600L & 1800L. In lieu of Pibal, whenever a Hurricane/Tropical Storm is within 300 miles of the station. Special Rawinsonde observations will also be taken when requested by the Central Pacific Hurricane Center (CPHC).

Unless otherwise instructed by the CPHC, special rawinsonde observations will terminate at 106 millibars.

If the "EYE" of the storm should pass over the station, an effort should be made to release a rawinsonde within the "EYE". However, it is not desired nor intended that employees expose themselves to undue risk in making such a release.

3. Radar Reports: Every effort should be made to obtain radar reports from the weather unit at Barking Sands and the HANG at Kokee AFS at 3-hourly intervals. These reports will be forwarded to the CPHC by telephone, then followed by a administrative message.

4. **Automatic Observing Stations:**
Interrogations of LARCs, MWTs, and ARCs
will be made at one hour **intervals** under
IMPENDING conditions.

Interrogation frequency will increase to 15 minute intervals under WARNING conditions.

SECTION 5.6

WSO's should normally issue local statements when it's CWA is affected by:

- A local **statement** takes the **place** of Severe **Weather**, Special Weather, **Marine** Weather, Coastal Flood, and Flash Flood statements during **Tropical Storm/Hurricane** Warning conditions.

When for any reason, warnings are not **received** from the **CPHC**, or **is inadequate** to cover current or **imminent** events, **kcai** statements **should include** local warnings as are necessary for the **protection of life** and property.

LOCAL STATEMENTS ISSUANCE: Local statements should be Issued at regular and frequent **Intervals**. When a tropical storm or **hurricane** is close to the Coast, **LS's** should be **Issued** at 2 or 3 hourly intervals, and **more** frequently **if** Information and **circumstances** warrant.

Local statements do not necessarily need to follow immediately after the issuance of a new advisory. And it should not be released immediately prior to an advisory.

[illegible]

LOCAL STATEMENT FORMAT & CONTENT: This order of contents may be **varied**, but the most important **items** should be first. The contents shall not in **anyway** change any of the forecasts given in the latest advisory. **Format** and content **will** be as follows:

- heights and times expected, present height and their locations, forecast surf heights.

6. Present winds and locate: and **expected** time of onset of tropical storm/hurricane force winds.
9. Any **required** statements on potential tornado and flash flood threats, **rip** currents, beach erosion, **etc.**
10. **Time** of next, or **final** statement.
11. Name of **employee issuing** the statement.

Routine **LS's** may cease when the tropical storm/hurricane is no longer a threat to Its CWA. All **LS's** shall be unnumbered and use a mass **media standard** heading. The word **"BULLETIN"**, should be used on the line **preceding the heading** on all messages **requiring emergency actions**.

LOCAL STATEMENT EXAMPLES: See exhibits A - E

REPORTS: The OIC/AOIC shall prepare and submit the following reports as indicated.

PRELIMINARY REPORT: This report will be prepared by the WSO issuing local statements on a storm. This report will be transmitted to the CPHC within 2 days following the transmission of the latest public release.

Within 5 days following the last LS, an updated version of the preliminary report will be sent via mail to the CPHC.

.....

and a copy to the **Regional** Director. This report **should** include accounts of unusual **storm** damage (**including photocopies** of barograph or other recorder traces, **pictures**, etc.). The following Items will be Included in **this** report:

1. **Highest sustained wind speed (knots)**, peak gusts (knots) and time of **occurrence (UCT)** at the **office**, and also any other **within** the **CWA**.
2. **Lowest sea level pressure (millibars)** and **time of occurrence (UCT)** at the office, and any other **within** the **CWA**.
3. Station **rainfall amounts (inches)** and **duration**, and any other **In the CWA**. List the **1, 6, 12**, and 24 hour amounts (inches) and **identify** with date/time UCT.
4. Maximum **storm tide heights (feet)** above Mean Sea Level, and **height** above normal. Identify **location** and **time (UCT)** if known.
6. Extent of beach **erosion**.
6. **Flooding/Flash Flooding - locations and times (UCT)**.
7. Tornadoes - locations and **times (UCT)**.
6. Preliminary storm effects such as death, injuries, dollar damages, number of **people** evacuated/homeless, etc. **within** the **CWA**.

INFORMATION FOR STORM SURVEY: A copy of all releases shall be mailed to the CPHC and Regional Director within 7 days following the issuance of the last local statement.

CLIMATOLOGICAL REPORT: This office shall mail County casualty and damage totals, along with the supporting WS Form F-60, to the CPHC and Regional Director within 30 days after the storm.

ACTIONS TO BE TAKEN WHEN A TROPICAL STORM/HURRICANE IS A

POSSIBLE THREAT OR A WATCH/WARNING IS ISSUED FOR KAUAI COUNTY

1. POSSIBLE THREAT:

- a. **Notify** OIC/AOIC **immediately**.
- b. Inform **Kauai Civil Defense Administrator**.
- c. Inform **Kauai P.D. of situation**.
- d. **Obtain** radar reports from Kokee HANG and **Barking Sands** Weather Station.
- e. Alert **Critical** Weather Observers Network and request weather reports in **their** area.
- f. **Interrogate** all automatic observing **stations** at one hour intervals.
- g. **Relay** all reports **received** to **CPHC/WSFO** Hnl Lead Forecaster.
- h. Issue Special Weather Statement If necessary.
- i. Be prepared to issue follow-up statements.
- j. Maintain log of actions taken (WSO **Lih Form #19**)

2. WATCH/WARNING:

- a. **Notify OIC/AOIC Immediately.**
- b. Checkoff WSO **Lihue Form #5 & 5A.**
- c. Issue **Tropical Storm/Hurricane** Local Statements and transmit under **WOHW3 PHL Heading.**
- d. **Obtain** updated radar reports from Kokee HANG and Barking Sands Weather Station at one hour **Intervals**, if necessary.
- e. **Obtain** updated reports from **Critical** Weather Observer Network at one intervals, **if** necessary.
- f. Increase **automatic observing** station **Interrogations** frequency to every **half** hour under WATCH..... and every 15 minutes under WARNING.
- g. Relay all Information/reports to **CPHC/WSFOHNL**, by phone **if** necessary.
- h. Be prepared to Issue fofollow-up Local Statements.
- i. **Maintain** log of **actions** taken (WSO Lih Form **#19**)

[illegible]

TROPICAL STORM/HURRICANE OPERATIONS CHECK-LIST

I. EQUIPMENT STATUS:

- A. SURFACE: HO93 Barograph F420 Wnd TBG
E/A Ops E/A Wnd LBC MAPSO
Automatic Obs Stns
a. Back-ups
- B. UPPER AIR: Microarts ART HGE
a. Back-u
- C. FACSIMILE: WEFAX ALDEN Back-ups
- D. COMMUNICATIONS: LABS CD Net GOV'T Radio AD
Code-A-Phones (CAP) Back-ups

ADMIN Fax _____

E. EMERGENCY POWER GENERATOR:

Test _____ Fuel _____ Oil _____

II. SUPPLIES

- A. SURFACE:
MF1-1 OA & B Forms **Barograph** Forms **Ink** **Printer** paper
 E/A Recorder Ink
- B. UPPER AIR:
 1000 gram Balloons Twine Parachutes **Lite** Unites
 H_2 Gas (In Storage tank)
- C. **FACSIMILE:**
 Paper
- D. COMMUNICATIONS:
 PRINTER PAPER CAP Cassette Tape
- E. SURVIVAL:
 Food Water (**Drinking**) Water (wash, etc.)
Flash light

[illegible]WSO LIHUE FORM #5
Rev. 11/09/90

PART 1 of 2
WATCH STATUS

TROPICAL STORM/HURRICANE OPERATIONS LOG

NAME OF STORM: _____

DATE/TIME HST INI

1. WATCH NOTIFICATION:.....
2. NOTIFICATION LIST:
- a. **Official** In Charge:.....
- b. **Civil** Defense Agency (**245-4001**):.....
- c. County **Warning** Point (**Kaui P.D.**):.....
(245-9711)
3. CODE-A-PHONES RECORDINGS:.....
4. **RADIO** STATIONS NOTIFICATION:
- a. **KQNG** (2459527):.....
- b. **KUAI** (335-3173):.....
5. **OIC/AOIC ACTIONS**:
- a. Personnel Work Schedule:.....
- b. Confer **with** **CPHC/WSFO** Honolulu:.....
- c. Confer with **Civil** Defense **Administrator**:.....
- d. Confer **with** **Operations Officer**, HANG:.....
Kokee AFS
- e. Confer **with** Weather Station, BKH:.....
- f. Set-up **TS/Hurricane** Section (maps, references, etc.):.....
- g. Check station **supplies** (**Aerological**):.....
- h. Check station **equipment** (Operation):..
- i. Check station **equip/comm** back-ups:..
- j. Check survival s u p p l i e s :
6. **ADVISORY UPDATES**:
- | 1. C D () | PD () | KQNG () | KUAI () | CAP () |
|------------|--------|----------|----------|---------|
| 2. () | () | () | () | () |
| 3. () | () | () | () | () |
| 4. () | () | () | () | () |

7. ENTER **PERTINENT** INFORMATION ON WSO LIHUE FORM #19

TROPICAL STORM/HURRICANE OPERATIONS LOG

NAME OF STORM _____

DATE/TIME HST INI

1. WARNING NOTIFICATION:
2. NOTIFICATION LIST:.....
 - a. Official In Charge: _____
 - b. Civil Defense Administrator (2454001): _____
 - c. County Warning Point (Kauai Police Dept. 245-9711): _____
3. CODE-A-PHONE RECORDINGS:
4. RADIO STATIONS:
 - a. KONG (2459527): _____
 - b. KUII (335-3173): _____
5. SECURE STATION FACILITIES:
 - a. Prepare Office (shutters, windows, doors, vehicle, etc.): _____
 - b. Secure/store all loose objects in area: _____
 - c. Secure Inflation bldg/Radome doors (raise roll up doors): _____
 - d. Secure Inflation bldg cabinets: _____
 - e. Recheck emergency generator & fuel: _____
 - f. Recheck primary & secondary comm equip: _____
 - g. Store survival supplies in storage room: _____
6. WARNING UPDATES:
 1. CD () PD () KQNG () KUII () CAP ()
 2. 0, () 0, 0, 0, - -
 3. () () () () () _____
 4. () () () () () _____
 5. () () () () () _____
 6. () () () () () _____

7. ENTER PERTINENT REMARKS ON WSO LIHUE FORM #19