HQ 15WG (PACAF)
JBPHH, HI 96853

15TH WING
JOINT BASE PEARL HARBOR-HICKAM, HAWAII

MID-AIR COLLISION AVOIDANCE (MACA) PLAN

15 WG OPERATION PLAN 91-3
22 October 2014

OPR: 15 WG/SE

OCT 22 2014

MEMORANDUM FOR ALL AVIATORS

FROM: 15 WG/CC

SUBJECT: 15th Wing Mid Air Collision Avoidance (MACA) Program Plan

1. As novice and experienced aviators alike know, flying the Hawaiian Islands can offer some of the most challenging conditions, primarly because of density in air traffic. Commercial, military, and general aviation are all represented in the growing mix of flyers. As the skies become saturated, the potential for a mid-air collision grows. Knowing where and when the traffic operated can be critical in avoiding an accident.

2. This pamphlet can be one of many resources that increase awareness, lowering the chances of a mid-air collision with United States Air Force aircraft. It details many routine operations of Air Force aircraft around the islands. While many types of aircraft utilize Hickam field and Honolulu International Airport as an intermediate stop, not every aircraft can be represented in such a brief pamphlet. However, there are helpful techniques to scan the airspace as you fly. It is everyone's responsibility to visually acquire and avoid other aircraft.

3. Another great tool to use for mid-air collision avoidance is the website seeandavoid.org (http://seeandavoid.org). This website includes maps and information about past problem areas and has details on local airports and military installations. No matter what your aviation skill level, this website will give you the tools to become a better and safer aviator.

4. The many years of close cooperation with the local general aviation community are valuable to us and we have been blessed with an outstanding aviation safety record. Continued success is attainable when we flight plan with the most information available and strive for better airborne communication. If you have any input or questions regarding the information in this pamphlet, please contact the 15th Wing Flight Safety Office at 808-449-SAFE.

RANDALL S. HUISS, Col, USAF
Commander

AIRCREWS ARE RESPONSIBLE FOR CHECKING FLIGHT INFORMATION PUBLICATIONS, DIRECTIVES, AND NOTAMS FOR CURRENT INFORMATION. CHARTS ARE NOT FOR NAVIGATION PURPOSES.

ATTENTION

THE ENCLOSED MATERIAL IS FOR THE PROMOTION OF FLIGHT SAFETY AND IS FOR INFORMATIONAL PURPOSES ONLY. IT IS NOT INTENDED TO BE USED DURING FLIGHT OTHER THAN AS A SOURCE OF MID-AIR COLLISION AVOIDANCE INFORMATION. ALL INFORMATION, ROUTE DESCRIPTIONS, AND PROCEDURES ARE SUBJECT TO CHANGE. CONSULT CURRENT FLIP, SECTIONALS, AND THE AIRMAN'S INFORMATION MANUAL (AIM) FOR MORE INFORMATION REGARDING MID-AIR COLLISION AVOIDANCE.

FOR ADDITIONAL INFORMATION, OR COPIES CONTACT:
15TH WING SAFETY OFFICE
Joint Base Pearl Harbor-Hickam, HI 96853
(808) 449-SAFE

ALOHA! This pamphlet is informational in nature and designed to familiarize you, the civilian pilot flying in Hawaii, with three things:

1. Aircraft stationed at Hickam Field
2. Airfields used by aircraft stationed at Hickam Field
3. Procedures used by aircraft stationed at Hickam Field

It does not replace any regulatory or instructional guidance. If there is a conflict between this document and another source, please contact the office of primary responsibility (OPR): 15th Wing Flight Safety Office (15 WG/SEF) *at 808-449-0794 or 15wg.sef@us.af.mil*

In addition to the material contained in this plan, the State of Hawaii produces the "Hawaii Airport and Flying Safety Manual" which covers all of Hawaii's state airports. It may be obtained through the Department of Transportation, Airports Division, Honolulu International Airport, 400 Rodgers Boulevard, Suite 700, Honolulu, Hawaii 96819-1880. Their phone number is 808-838-8701.

CONTACT INFORMATION

15th Wing Flight Safety (Active Duty):	808-449-0790
154th Wing Flight Safety (Guard):	808-448-7265
15th Wing Public Affairs (Active Duty):	808-449-1531
154th Wing Public Affairs (Guard):	808- 448-7255
15th Wing Airfield Operations (Active Duty):	808-449-0023

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PART 1: AIRCRAFT STATIONED AT HICKAM FIELD

C-17A – Boeing "Globemaster III"

Contractor	**Boeing**
Wingspan	**170 ft**
Length	**173 ft**
Height	**55 ft**
Color	**Gray**
Max T/O Weight	**585,000 lbs**
Max Speed	**.825 Mach / 350 Knots**
Normal Rate of Climb	**2000 FPM**
Normal Approach Speed	**110-130 Knots**
Power Plant	**4 Pratt & Whitney F117-PW-100 turbofan engines rated at 40,440 lbs thrust each**

C-37A – Gulfstream "G-V"

Contractor	**Gulfstream Aerospace Corporation**
Wingspan	**93 ft**
Length	**96 ft**
Height	**25 ft**
Color	**White/Blue**
Max T/O Weight	**90,500 lbs**
Max Speed	**.885 Mach / 340 Knots**
Normal Rate of Climb	**2000 FPM**
Normal Approach Speed	**120-130Knots**
Power Plant	**2 BMW/Rolls Royce BR710-48 high bypass**
	turbofans rated at 14,750 lbs each

C-40B – Boeing "Clipper"

Contractor	**Boeing**
Wingspan	**118 ft**
Length	**110 ft**
Height	**41 ft**
Color	**White/Blue**
Max T/O Weight	**171,000 lbs**
Max Speed	**.82 Mach / 350 Knots**
Normal Rate of Climb	**2000 FPM**
Normal Approach Speed	**120-140 Knots**
Power Plant	**2 CFM 56-7B rated at 27,000 lbs thrust each**

KC-135R – Boeing "Stratotanker"

Contractor	**Boeing**
Wingspan	**131 ft**
Length	**136 ft**
Height	**38 ft**
Color	**Gray**
Max T/O Weight	**322,500 lbs**
Max Speed	**.93 Mach / 350 KIAS**
Normal Rate of Climb	**2000 FPM**
Normal Approach Speed	**135-155 Knots**
Power Plant	**4 CFM International CFM-56 turbofan engines rated at 22,000 lbs thrust each**

F-22A – Lockheed Martin "Raptor"

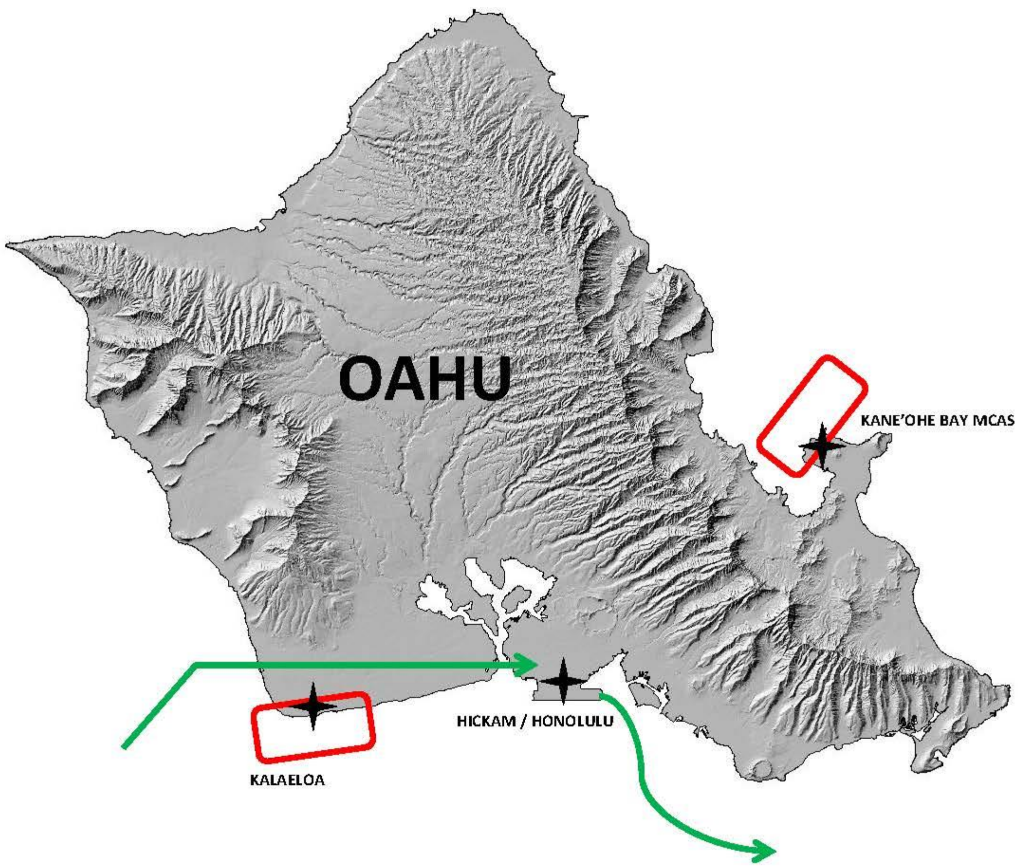
Contractor	**Lockheed-Martin, Boeing**
Wingspan	**44 ft**
Length	**62 ft**
Height	**17 ft**
Color	**Gray**
Max T/O Weight	**60,000 lbs**
Speed	**Mach 2 Class**
Power Plant	**Two Pratt & Whitney F119-PW-100 turbofan engines with afterburners and two-dimensional thrust vectoring nozzles, 35,000lb thrust each**

PART 2: AIRFIELDS USED BY HICKAM FIELD AIRCRAFT

General Notes That Apply to All Airfields

All 15 & 154 WG aircraft (C-17s, C-37s, C-40s, KC-135s, and F-22s) generally use published pattern altitudes for VFR traffic patterns.

Oahu



Honolulu International (Hickam Field), Oahu (PHIK/PHNL)

Honolulu has a large volume of civilian and military traffic transiting its airspace during all hours of the day, with multiple VFR and IFR departures/arrivals at any given time. All four VFR arrivals into Honolulu Intl Airport grant only 500' of vertical separation between aircraft in the overhead pattern and aircraft on the VFR arrivals. All aircraft must be vigilant in clearing visually and on the radios.

Notes

Air Force: All USAF aircraft depart and arrive PHNL utilizing either VFR or IFR as conditions and training permit. USAF aircraft cannot participate in Land and Hold Short Operations. 154th Wing fighter aircraft operate in the overhead traffic pattern at 350 KIAS at 2000' MSL.

Mello Four Departure: This allows fighter aircraft to transit from takeoff at Honolulu across central Oahu to the northern warning areas. This departure is accomplished at 350 KIAS, and allows multiple aircraft to take up the block 5000' to 18000' crossing central Oahu.

Kalaeloa (John Rodgers Field), Oahu

This field has both military and civilian traffic operating in its VFR and an instrument pattern. Light civil aircraft operate in the pattern at 800' while turboprop and jet traffic operate at 1000'. Aircraft in the instrument pattern operate from 1200' to1500' MSL. The field is under the approach path for runway 8L at Honolulu Intl. Aircraft operate from 3000' to 2000' MSL directly over the field while on an instrument approach or when on approach to the overhead pattern at Honolulu Intl. The tower frequency is 132.6 or 340.2.

Notes

Air Force: C-17s use 4R for night assault-zone training between 8PM-10PM. During these times, the airfield is "blacked out" to allow crews to train on night vision goggles. C-37s and C-40s use this field frequently.

Kaneohe Bay MCAF, Oahu (PHNG)

This field has high-density military traffic that utilizes northern rectangular patterns, with a high volume of helicopter activity intermingled. The tower frequency is 120.7 or 360.2.

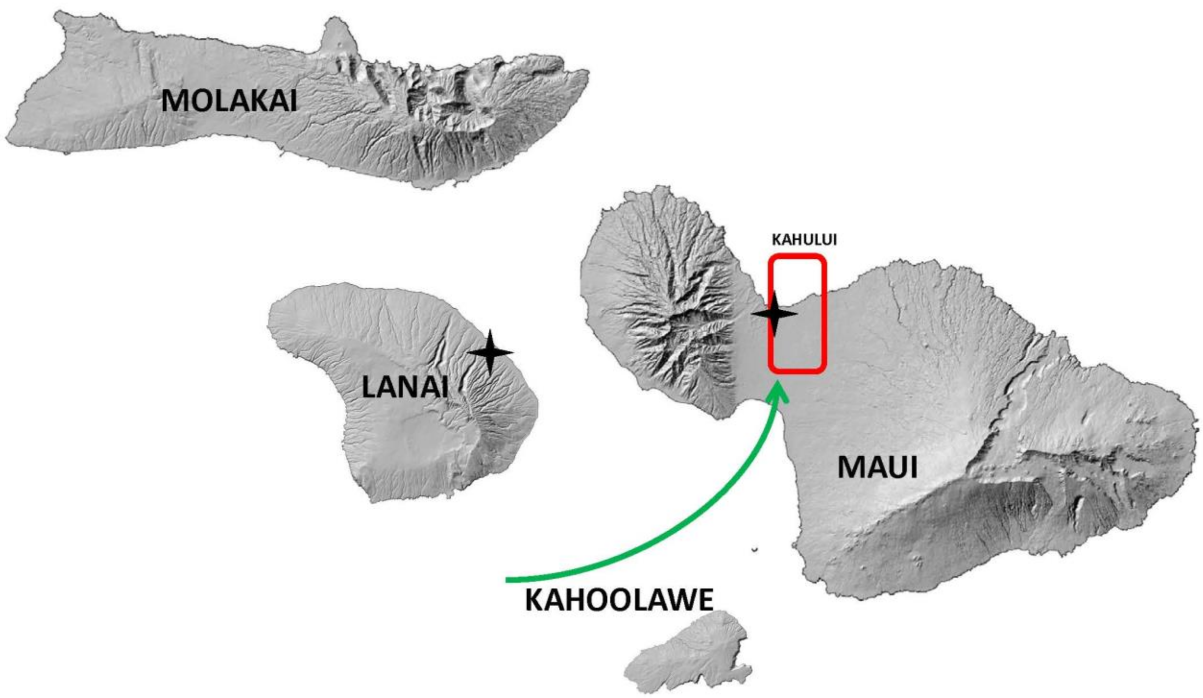
Notes

Air Force: C-17s fly steep approaches from 10,000'MSL and above from the East (normally inbound to the TACAN for Rwy 22 and circle (at MDA) or enter the VFR pattern (1000' AGL) on a left downwind. KC-135s, C-37s, and C-40s use this field frequently. See diagram for preferred arrival routing in use.

Wheeler Army Airfield, Oahu (PHHI)

Located in central Oahu, Wheeler AAF plays host to a variety of DoD airframes, from turboprops to multi-engine jets, utilizing Lightning Drop Zone east of the runway. Wheeler AAF has many different rotary wing aircraft conducting VFR operations in the pattern and in the local area. Clear visually and on the radios to the max extent possible. Tower frequency is 126.3 or 235.625.

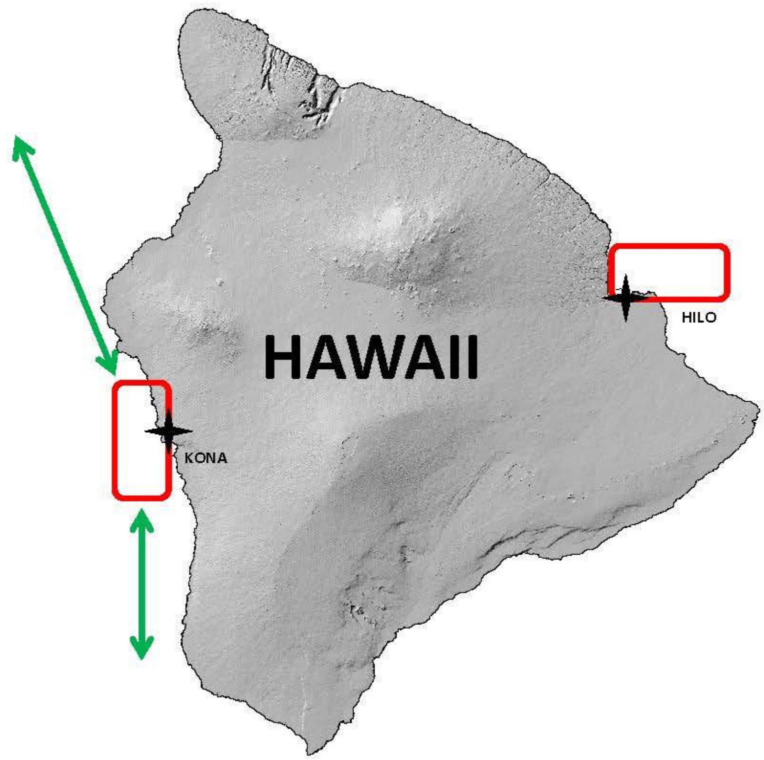
MAUI



Kahului, Maui (PHOG)

This field has both military and civilian traffic operating in its VFR and instrument pattern. Many military aircraft practice instrument approaches into this field. Extensive helicopter traffic exists all around the field. Helicopter traffic operates from 500’ to 2000’ AGL. Helicopter traffic operates between a drag strip to the south of the field and the island of Kahoolawe. Aircraft operate in the instrument pattern from 3000’ to 6000’ MSL. Traffic in the VFR pattern operates from 900’ to 1500’ AGL. C17s, C-37s, and C-40s use this field frequently.

HAWAII



Kona International, Hawaii (PHKO)

A rectangular pattern over the water is utilized between 600’ AGL and 1500’ AGL. Civilian light aircraft operate east of the field at 800’ AGL. Civilian helicopters operate Northeast and Southeast of the field along the coastline. This non-radar environment can become very congested; therefore, clear visually and on the radios to the maximum extent possible. Tower frequency is 120.3 or 254.3.

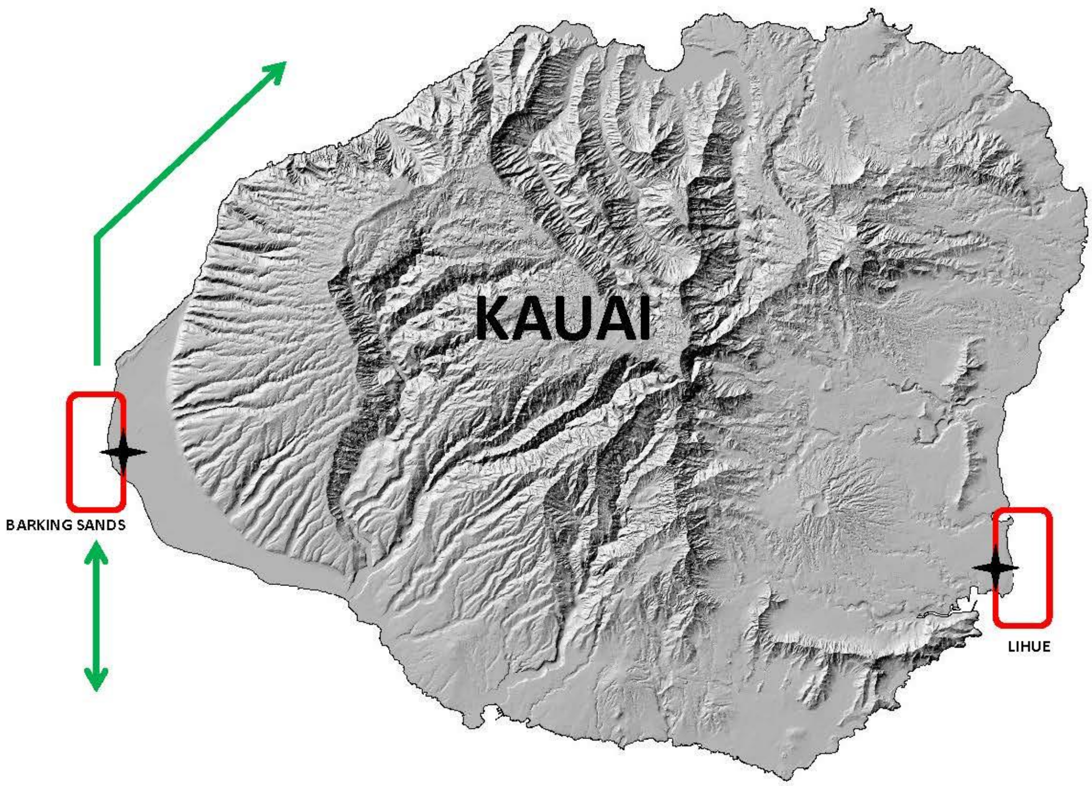
Notes

Air Force: C-17s conduct “blacked-out” (covert) NVG flight and ground operations in the evening throughout the week. C-37s and C-40s, and KC135s use this field frequently as well.

Hilo International, Hawaii (PHTO)

A rectangular pattern over the water is utilized between 600’ AGL and 1500’ AGL. Military aircraft practice instrument approaches into this field. Civilian light aircraft and helicopters operate to this airport. Tower frequency is 118.1 or 263.1.

KAUAI



Barking Sands, Kauai (PHBK)

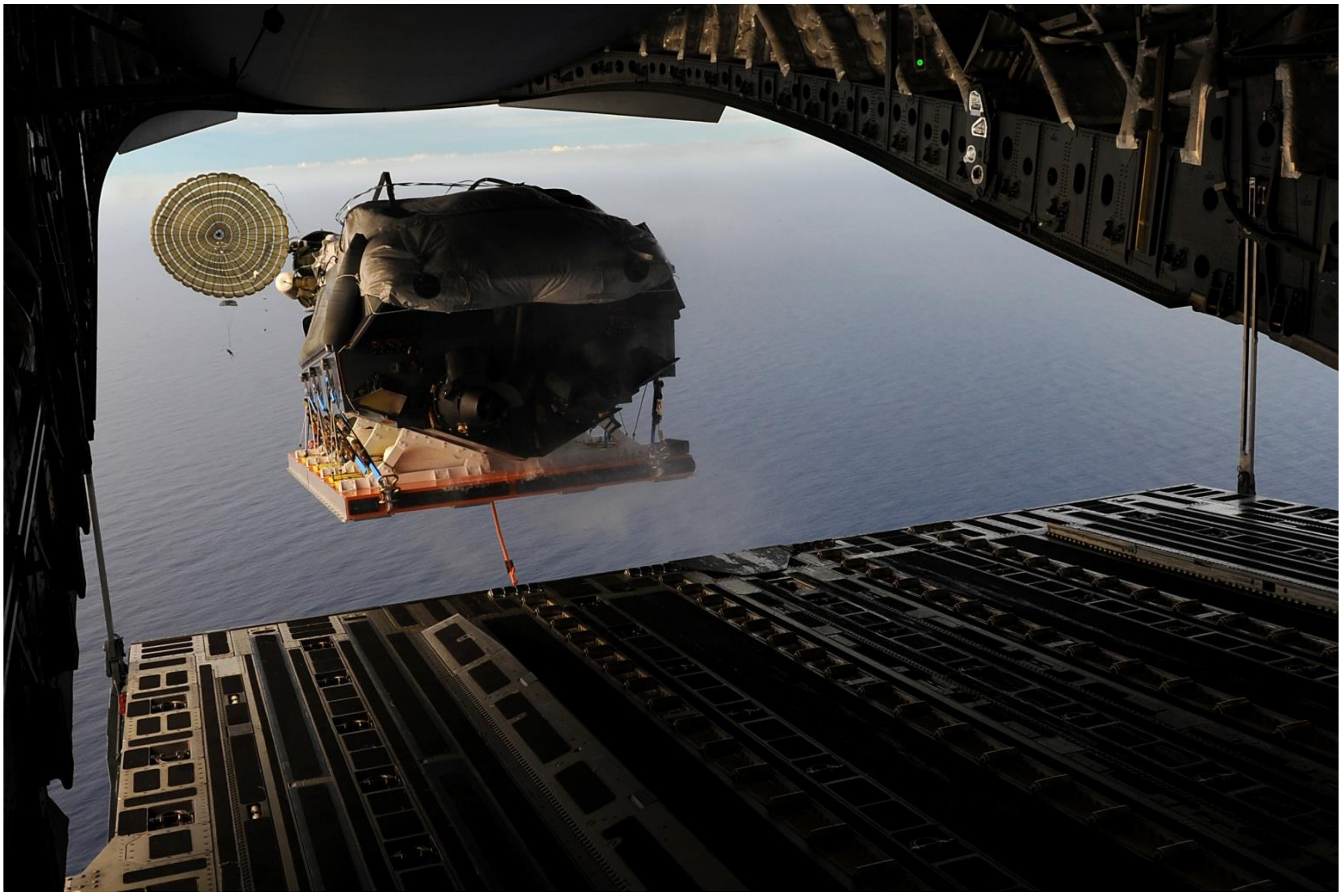
A rectangular pattern over the water is utilized between 500' AGL and 1500' AGL. Civilian helicopters operate Northeast and Southeast of the field along the coastline. Military aircraft practice instrument approaches into this field and utilize warning airspace, including R3101 to the west and north of the airfield. C-17s accomplish assault landings and other VFR training. Tower frequency is 126.2 or 360.2.

Lihue, Kauai (PHLI)

A rectangular VFR pattern over the water is utilized at 1500' AGL. Observe preferred VFR routings to avoid IFR traffic. VFR aircraft departing Lihue via runway 3/35 eastbound, fly outbound on or north of LIH 105 degree radial until 25 miles east. There is extensive helicopter traffic and birds in vicinity of the airport. Tower frequency is 118.9 or 263.1.

PART 3 - LOCAL ACTIVITIES BY HICKAM FIELD AIRCRAFT

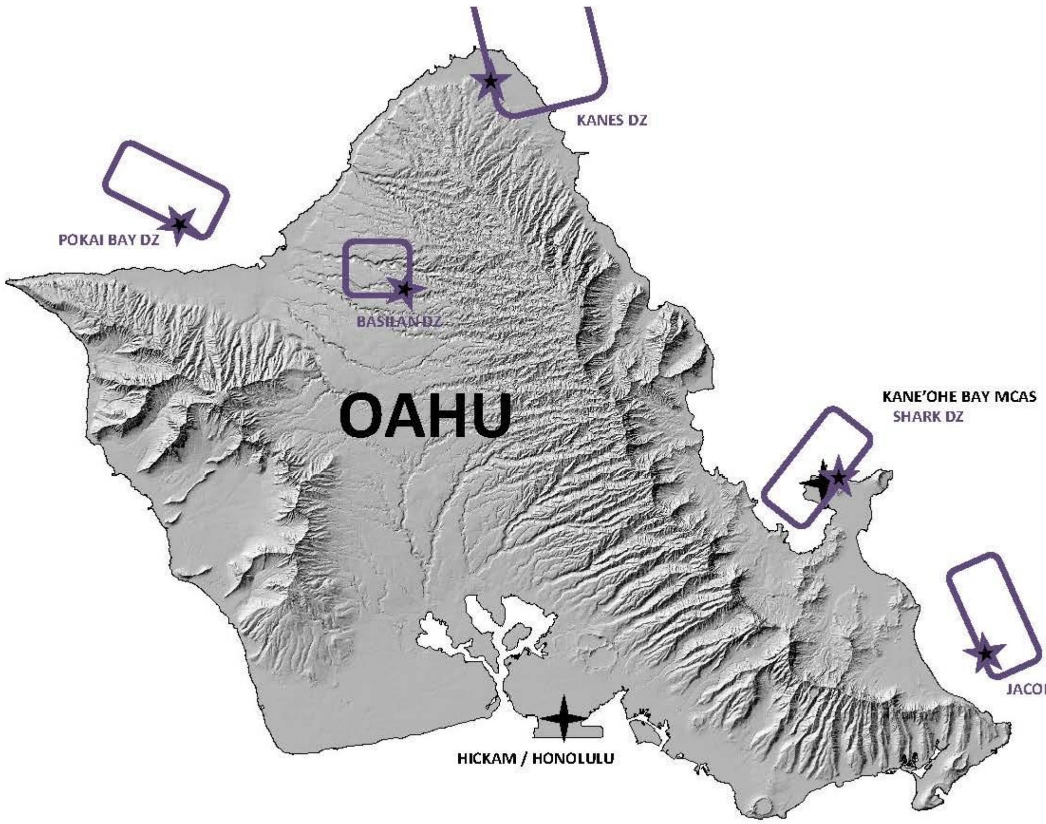
Drop Zone (DZ) Operations



General: C-17 crews are required to train frequently to stay proficient at airdropping cargo. There are many drop zones in Hawaii. The drop zone where cargo is most frequently dropped is “Kanes DZ”. For noise abatement, C-17s use an overland altitude of 2000' AGL as a minimum, except for descent to drop altitude. C-17s typically fly at least 2 NM offshore during over-water missions. Drop zones and routing descriptions are listed below so you may be familiar with this activity. Most DZs are activated by NOTAM.

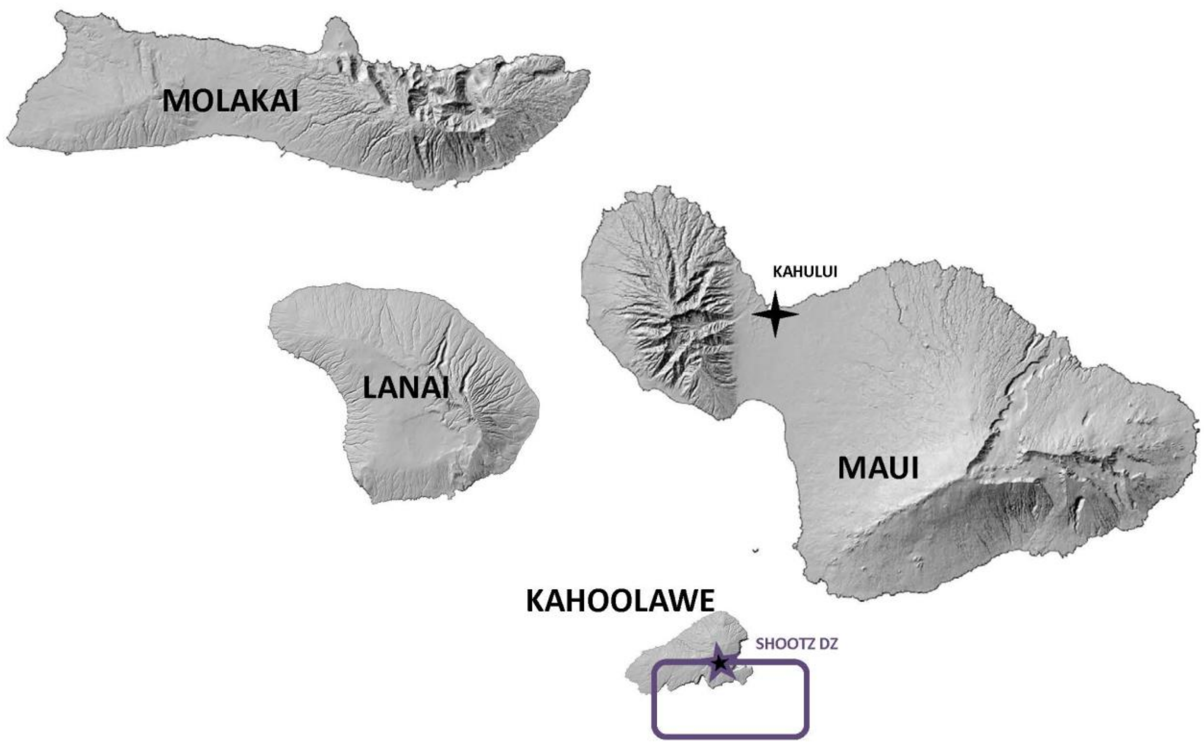
- *Call the Honolulu FSS at 833-8440 for current airdrop NOTAMS*

OAHU



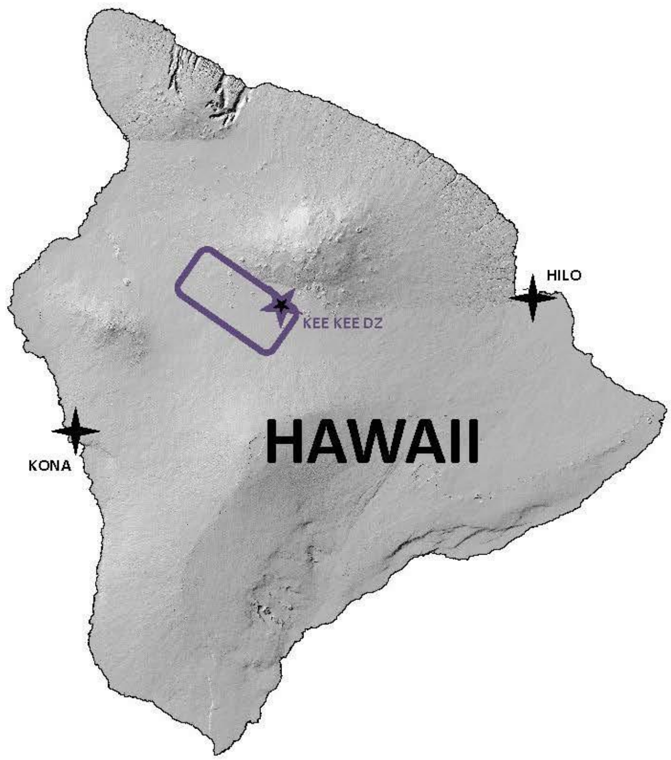
BASILAN DZ: N 21 33 41.7 W 158 03 16.9, Run-In 081M
JACOB DZ: N 21 21 45.0 W 157 50 50.9, Run-In 156.8M
KANES DZ: N 21 40 48.4 W 157 59 43.0, Run-In 145M
POKAI BAY DZ: N 21 26 22.2 W 158 12 31.3, Run-In 131M, 311M
SHARK DZ: N 21 27 10.8 W 157 45 47.4, Run-In 225 M

KAHOOLAWE



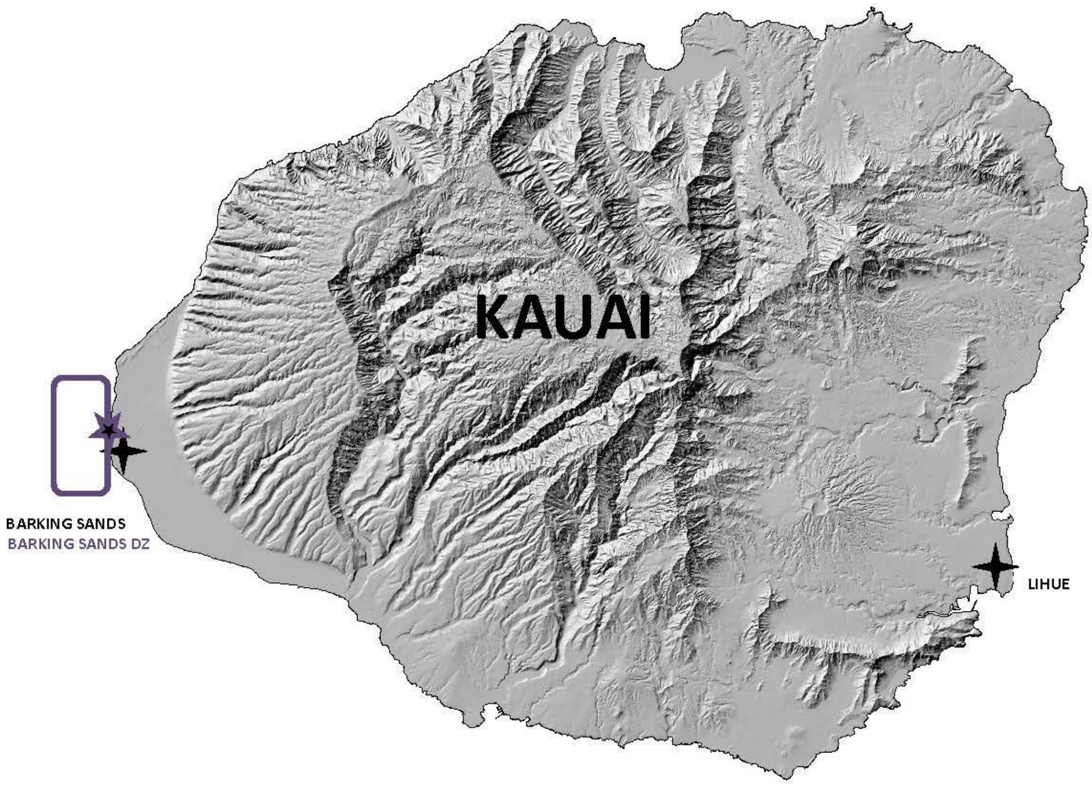
SHOOTZ DZ: N 20 32 15.6 W 156 34 57.0, Run-In 097.1M

HAWAII



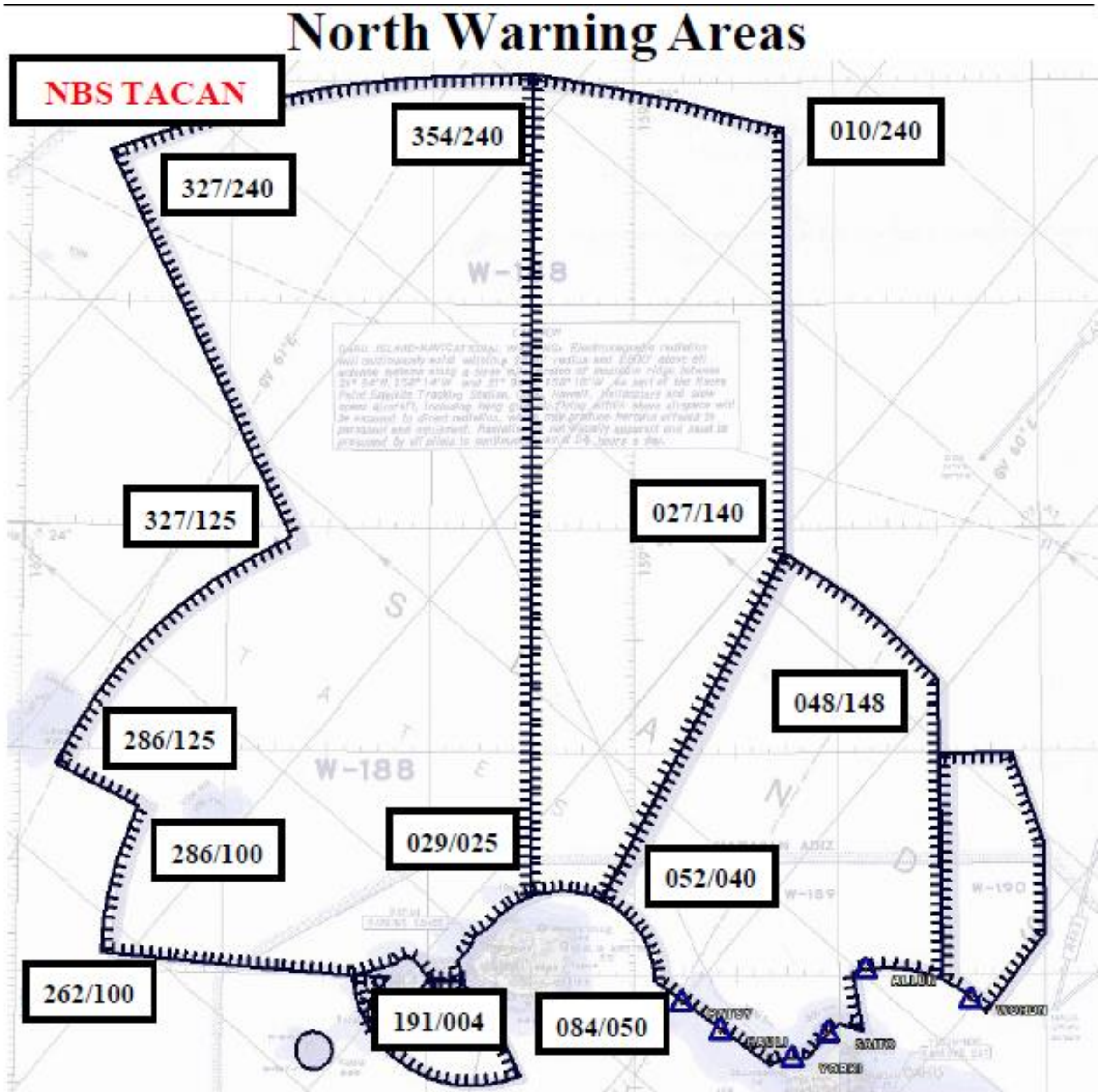
KEEKEE DZ: N 19 47 32.7 W 155 39 04.7, Run-In 114.2M

KAUAI

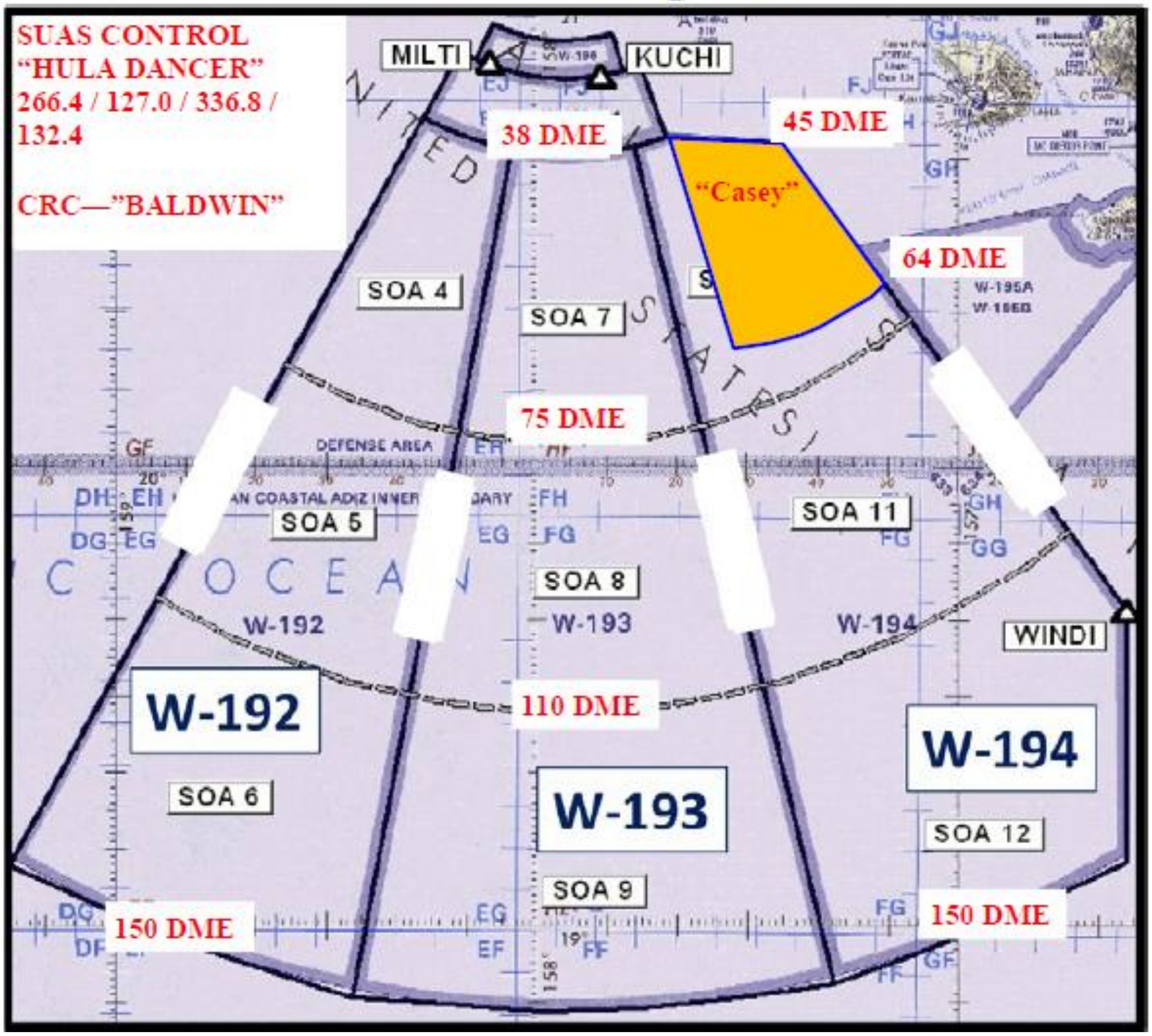


BARKING SANDS DZ: N 22 02 50.4 W 159 78 49.2, Run-In 340.M

Warning Area Operations



South Warning Areas



Air Refueling Routes

LOCAL AR TRACKS (AP3 EXTRACT)						
TRACK NUMBER	**ARIP**	**ARCP**	**NAV POINTS**	**EXIT**	**CR PLAN**	**ALT BLOCKS**
AR900E (Northeast) "LUAU" N/E Track	N22°46' W156°42'	N24°21' W156°10'	N24°56' W155°46' N27°48' W153°44'	N29°00' W152°27'	315.8 335.85 1-2-3 4/1 61/124	HIGH FL230-270 LOW FL180-220
AR900W (Southwest) "LUAU" S/W Track	N29°00' W152°27'	N27°48' W153°44'	N25°12' W156°48'	N24°48' W156°48'		
AR-901 (East) "LANI" East Track	N22°05' W156°09'	N23°00' W154°39'	N23°47' W153°22' N24°53' W151°29'	N25°46' W149°57'	314.3 243.3 1-1-1 2/1 30/93	HIGH FL230-270 LOW FL180-220
(West) "LANI" West Track	N25°46' W149°57'	N24°53' W151°29'	N23°47' W153°22' N23°00' W154°39'	N22°05' W156°09'		
AR902 (East) "LAVA" East Track	N21°30 W154°53	N21°43' W153°09	N22°21' W151°53' N23°07 W150°18'	N23°52' W148°41'	336.7 335.85 2-1-1 3/1 51/114	HIGH FL230-270 LOW FL180-220
(West) "LAVA" West Track	N23°52' W148°41'	N23°07 W150°18'	N22°21' W151°53' N21°43' W153°09	N21°30 W154°53		
AR903 (West) "HOKU" West Track	N21°16' W159°43'	N21°05' W161°23'	N21°07' W162°50 N21°09' W163°55'	N21°14' W166°47'	315.8 335.85 1-2-1 5/1 50/113	HIGH FL230-270 LOW FL180-220
(East) "HOKU" East Track	N21°14' W166°47'	N21°09' W163°55'	N21°07' W162°50 N21°05' W161°23'	N21°16' W159°43'		
AR904 (Northwest) "HULA" NW Track	N21°40' W161°22'	N22°48' W162°37'	N23°16' W163°51' N23°30' W164°38'	N24°00' W166°22'	336.7 243.3 2-2-2 6/1 62/125	HIGH FL230-270 LOW FL180-220
(Southeast) "HULA" SE Track	N24°00' W166°22'	N23°30' W164°38'	N23°16' W163°51' N22°48' W162°37'	N21°40' W161°22'		

PART 4 – COLLISION AVOIDANCE RESOURCES

Using the SeeAndAvoid.org Website

Since the late 1970's an average of 30 mid-air collisions and more than 400 near mid-air collisions have been reported each year in the United States. The SeeAndAvoid.org website offers a credible location where civilian and military pilots can access reciprocal information to aid in mid-air collision avoidance.

- Access: On any internet connected computer, type in the following website: http://seeandavoid.org.
- Use: Once in the main screen, enter the desired airfield's ICAO in the "START HERE" search engine. The web page will automatically take you to the respective airfield's map location and show all applicable flight operations information. (NOTE: Host installations are responsible for populating their respective web sites.) You can also navigate the map by clicking and dragging the picture, zooming in to the desired area, and then clicking on the desired field. Select symbols from the chart on the left of the screen to get more specific information.
- Drill Down: Each base with an aircraft/flying mission will show a General information tab, a Related links tab, and nearby Airports tab (as applicable). Under each tab additional drill down may be available, which may include aircraft pictures, airfield diagrams, low-level routes commonly used, etc.

What is a Near Mid-Air Collision?

According to the Aeronautical Information Manual (AIM), a Near Mid-Air Collision (NMAC) is: an incident associated with the operation of an aircraft in which a possibility of collision occurs as a result of proximity of less than 500 feet to another aircraft, or a report is received from a pilot or a flight crew member stating that a collision hazard existed between two or more aircraft.

How To Report NMAC

If you have a NMAC, make an airborne report to the nearest air traffic control facility or flight service station as soon as possible and provide them with the following information:

- Date, time, and location of the NMAC;
- Fix or facility nearest the NMAC;
- The NMAC location in respect to the fix or facility;
- Aircraft information, such as make, model, and registration number;
- Type of flight rules during the NMAC;
- The aircraft altitude during the NMAC; and
- A brief description of the NMAC, along with comments.

Note: DoD pilots follow their respective service components, not necessarily FAA, procedures to report a NMAC.

Mid-Air Collision Causes & Conditions

- Generally occurred during daylight hours.
- Most occurred in weather conditions when the visibility was acceptable, i.e., three miles or more.
- Fatigue was not a major factor. The average flight time prior to collision was 45 minutes.
- No pilot is immune. Experience levels ranged from initial solo to 15,000-hour veteran.
- The majority occurred below 8,000 feet MSL and near airports, NAVAIDS, and other high-density traffic areas.
- Flight instructors were aboard at least one of the aircraft in 37% of cases.

MACA While Under ATC Control

The single common factor in an overwhelming number of incidents under ATC control is the breakdown of communications between pilots and controllers. In 1988, the FAA launched a Communication Awareness Initiative focused on preventing this breakdown. Eleven items were addressed**.**

1. SIMILAR SOUNDING ALPHANUMERICS

Sometimes instructions and clearances are issued to the wrong aircraft, especially when multiple aircraft are operating on the same frequency with similar call signs. The controller will, in accordance with AIM 4-2-4, emphasize certain parts of the call sign or even ask pilots to use a different call sign temporarily. They are also obligated to announce to all traffic that there are similar sounding call signs on the frequency.

2. CONTROLLER HEAR-BACK PROBLEMS

One of many contributing factors prompting hear-back problems is ambient noise. Pilots must ensure that the controller heard, repeated, and understood what was said. If either party has any doubts about what was or was not heard, it is important to initiate clarification or repeat the read-back.

3. PHRASEOLOGY

Of the numerous communications problems evident throughout the ATC system the most common and troublesome is the improper use of established and recommended phraseology by pilots and controllers. One very effective way to reduce the communications problems caused by improper use of phraseology is for both pilots and controllers to know and use standard terminology prescribed in the Pilot/Controller Glossary contained in the AIM.

4. BLOCKED OR SIMULTANEOUS TRANSMISSIONS

Simultaneous transmissions on the same frequency in proximity to the same intended receiver are frequent and self-defeating phenomena detrimental to effective communication. Initiation of a transmission on an occupied frequency can (and does) result in information not being received by the intended ATC facility or aircraft. The most basic solution is for controllers and pilots to listen before transmitting on the frequency.

5. STUCK MICROPHONES

The pilot's microphone on many occasions has been the disruptive link in the chain, not only for the pilot whose microphone was stuck but for others sharing the frequency -- and the airspace. The solution is for increased pilot and controller attention to microphone keying and deliberate effort to preclude accidental keying caused by sitting on the microphone, jammed keys, loose connections, and other inadvertent keying.

6. READ-BACK PROBLEMS

Spoken communication is the most essential activity in aircraft operations and the most vulnerable to human error. Controllers are responsible for assuring read-back of a clearance is correct. However, pilots must help controllers fulfill that responsibility by providing them with consistent read-backs of all clearances in the sequence they were issued.

7. INITIAL RADIO CONTACT

To contact most facilities within the ATC system, pilots must use the procedures in AIM 4-2-3. If these procedures are not followed, the result may be delayed or even failed communications. Pilots must follow appropriate procedures when attempting initial contact with a ground facility; controllers must respond with appropriate phraseology.

8. ENUNCIATION

Although English is the official language of aviation, we do not all speak it with the same clarity and understanding. What can be done to minimize the problems stemming from the enunciation pitfalls? If you have an accent, remember it affects both your speaking and your listening. Second, properly adjust your radio equipment. Finally, when you speak, use a normal speaking voice and proper phraseology to minimize confusion.

9. HEADSETS VERSUS SPEAKERS

Pilots and controllers have their own preferences as to individual use of speakers versus headsets. However, communication problems occur more frequently when using only speakers. If personal preference dictates the use of a speaker for communications, consider the empty gap between the source of the clearance and the ear. With a headset, there is considerably less noise.

10. RADIO DISCIPLINE

Poor technique by pilots and controllers in the application of radio discipline tends to confuse and frustrate each party. Use proper radio techniques and standardize all communication to the extent possible. AIM, Chapter 4, Section 2 standardizes communications techniques.

11. INTRA-COCKPIT COMMUNICATIONS

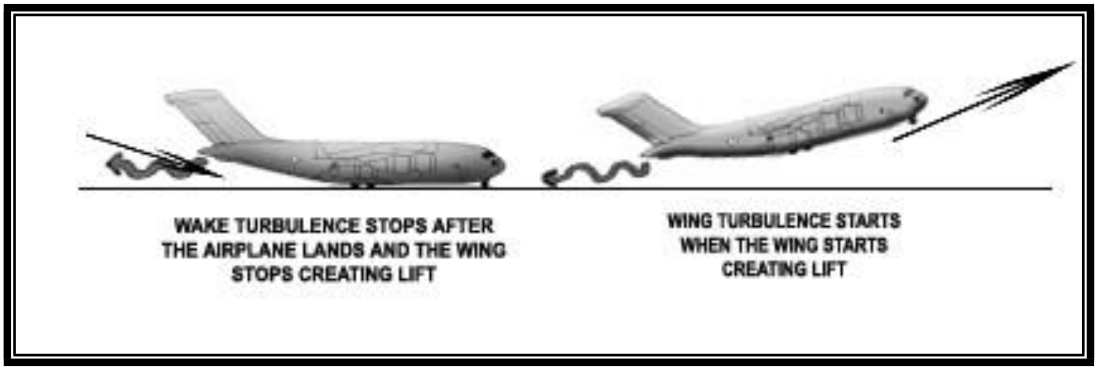
What could be simpler? Most pilots do not believe it is possible to have a communications or information transfer problem when only two or three people are present in the cockpit and are "communicating" among themselves. By using cockpit/crew resource management, clearly and explicitly conveying clearances and checklist items, always using full call signs and read-back of clearances, questioning a clearance if in doubt, and avoiding complacency, pilots will improve overall aircrew communications.

Collision Avoidance Tips

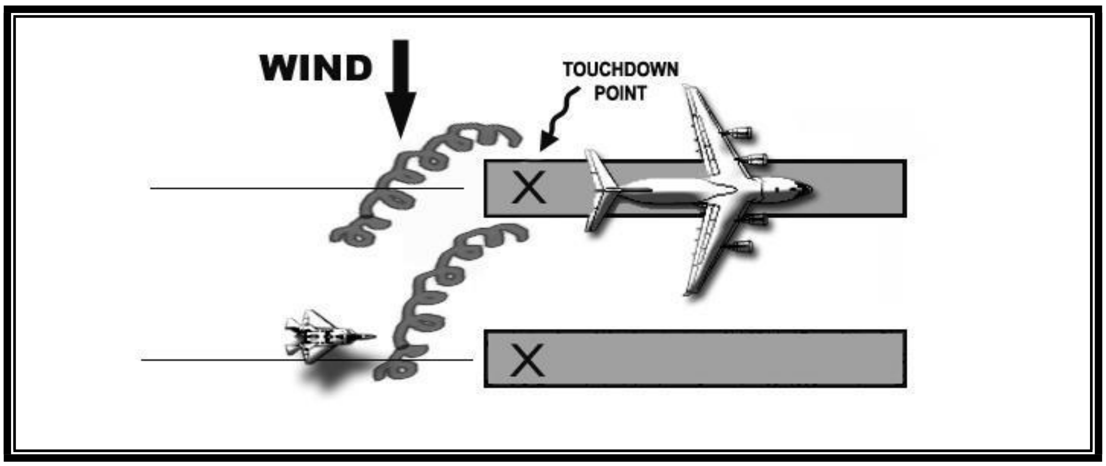
- Clear constantly for other aircraft, both visually and over the radio.
- Know where high-density traffic areas are.
- Obtain an IFR clearance or participate in radar flight following whenever possible and continue to practice ―see and avoid‖ at all times.
- Use landing lights at lower altitudes, especially when near airports.
- Announce your intentions on UNICOM and use standard traffic pattern procedures at uncontrolled airfields.
- Always use your Mode C transponder.
- Use the appropriate hemispherical altitudes and do not let your altitude wander.
- Fly as high as possible.
- Keep your windows and windscreen clean and clear. A bug on the windscreen can obstruct aircraft coming your way.
- Properly manage tasks in the air. A cockpit gets very busy. Learn the proper methods to reduce workload demands and time crunches.
- Do not get complacent during instruction! Instructors make mistakes too. Many mid-air collisions occur during periods of instruction or supervision.
- When flying at night avoid white light in the cockpit. White light, even if used momentarily, disrupts your night vision. Use flashlights in the cockpit with red or green lenses.
- Beware of wake turbulence. Especially watch out for heavy aircraft.
- Understand the limitations of your eyes and use proper visual scanning techniques. If another aircraft appears to have no relative motion but is increasing in size, it is on a collision course with you.
- Clear before and during all climbs, descents, and turns.
- Above all, AVOID COMPLACENCY! There is no guarantee that everyone is flying by the rules or that everyone is where they are supposed to be, SEE AND BE SEEN!

Wake Turbulence

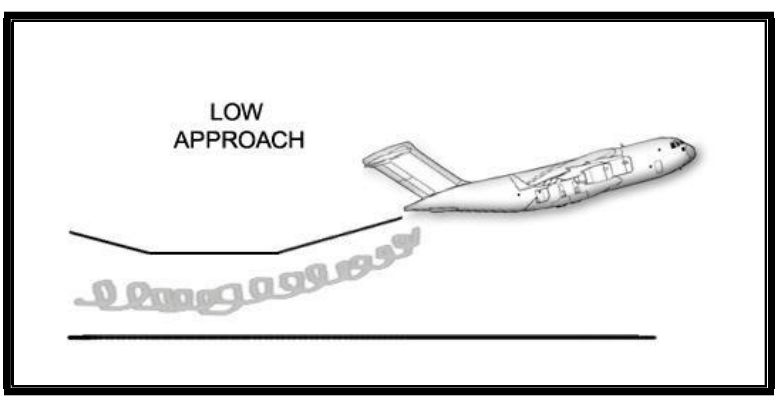
Wake vortices are formed any time an airfoil is producing lift. The pressure differential between the upper and lower wing surfaces triggers the rollup of the airflow aft of the wing resulting in swirling air masses trailing downstream of the wingtips. Viewed from behind the generating aircraft, the left vortex rotates clockwise and the right vortex rotates counterclockwise. The intensity of the vortex is a function of aircraft weight and configuration (flap setting etc.). The strongest vortices are produced by heavy aircraft, flying slowly, and in a clean configuration. For example, a large or heavy aircraft that must reduce its speed to 250 knots below 10,000 feet and is flying in a clean configuration while descending, produces a very strong wake.



Crosswind blows wake turbulence from upwind runway into the approach path of the parallel runway. Smaller planes should cross above the possible area of turbulence and land well beyond the threshold.

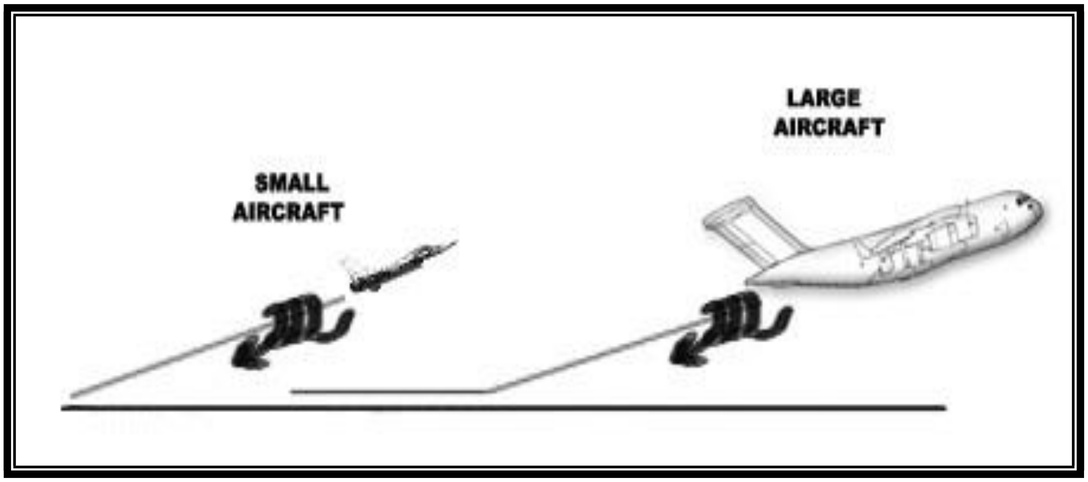


LOW MISSED APPROACH
A large or heavy aircraft making a low missed approach or a touch-and-go- landing leaves significant wake turbulence at low level all along the runway surface. Monitor communications carefully to know when larger aircraft are going around.



SAME RUNWAY DEPARTURE

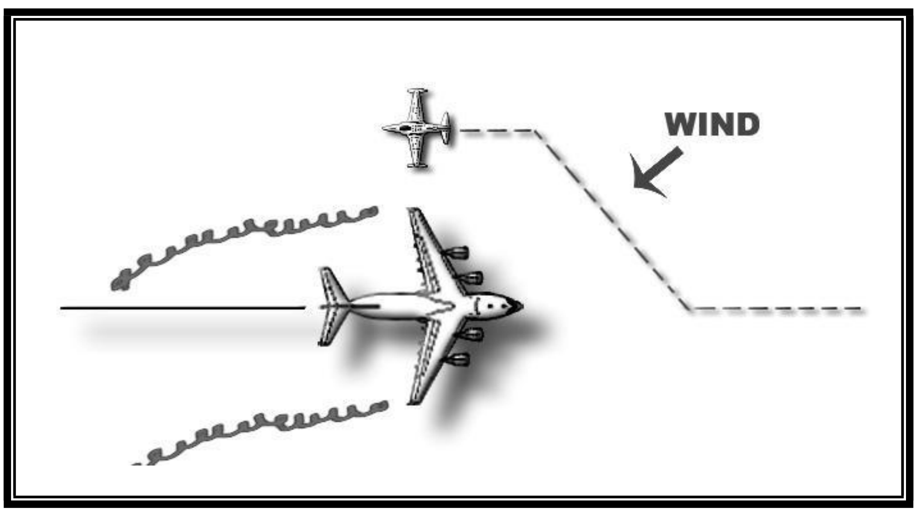
A small aircraft departing the same runway as a large or heavy airplane should lift off before the point of the other's rotation and stay above the other aircraft's flight path; something to remember if your aircraft cannot out climb the preceding aircraft or if considering an intersection takeoff.



When in doubt – WAIT IT OUT!

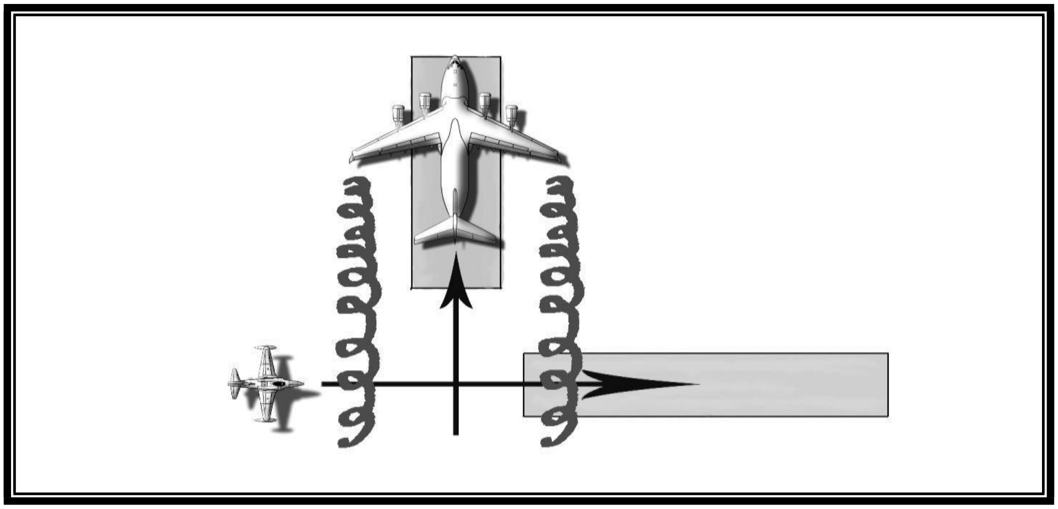
TRACKING BELOW TURBULENCE

Small aircraft beneath larger aircraft on the same track should have at least 1000 feet vertical separation. Otherwise, the pilot of a smaller aircraft should adjust course upwind of track.



INTERSECTING RUNWAY CENTERLINES

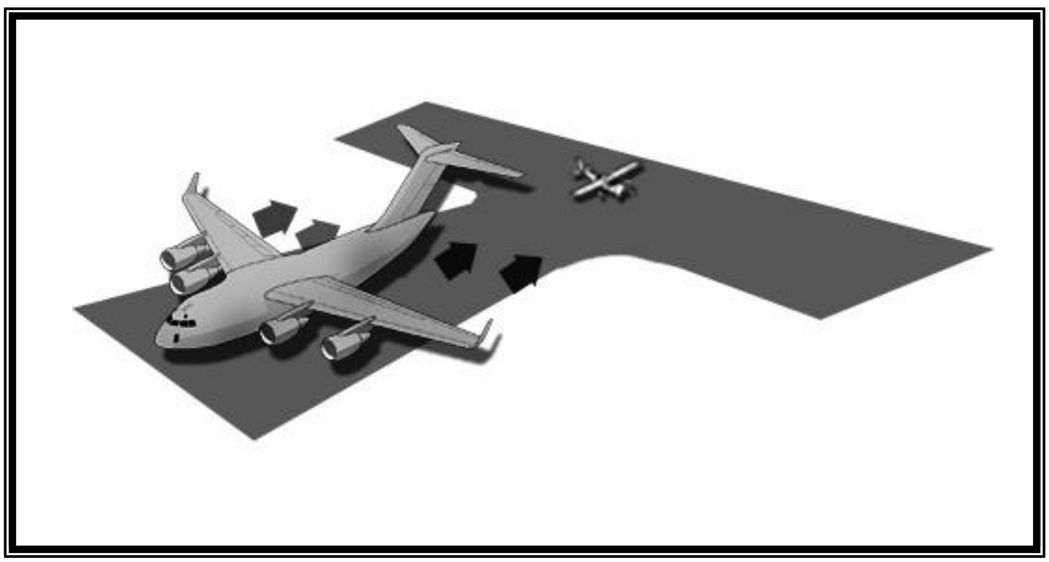
Operations on runways where centerlines intersect may cause wake turbulence from one runway to trail into the approach path of the other. A pilot should cross above the turbulence and land further down the runway.



2 minutes between aircraft (same direction) and 3 minutes for opposite direction (reference FAAO 7110.65R)

Jet Blast

Along with aircraft wake turbulence, jet blast can also create a great deal of danger. Jet blast can up-root trees, flatten building structures, shatter windows, lift and propel heavy objects, weathercock airplanes, blow over lift trucks, and create other problems on airport ramps, taxiways, and runways.



What to consider:

1. Almost half of reported jet blast incidents occurred on taxiways, in run-up areas, and adjacent to or on runways—all relatively uncongested airport areas. The other half occurred on ramps, where many more such incidents might be expected because of close aircraft parking and tight maneuvering conditions.

2. 85% of the damage inflicted by jet blast was to the wings, props, flaps, and rudders of other aircraft, especially to light aircraft weighing five-thousand pounds or less.

3. An aircraft initiating movement from a full stop requires more power to overcome inertia and tire friction than an aircraft already in motion. Additional breakaway thrust is needed if the aircraft must also turn during the initial movement. Unless carefully managed, these power applications can result in jet blast damage.

Caution Areas

- **Kaena Point Tracking Station:** Radiation hazard exists within 3000 ft. of ridgeline antennas from N 21-34 W 158-14 to N 21-34 W 158-16.
- **Dillingham Airfield:** This is a high-density traffic area. Contact Dillingham UNICOM on 123.0 upon entry/ exit of airport traffic area. There is acrobatic training off shore above 1500' AGL and glider traffic south of the runway. Parachutists jump to drop zones at both ends of runway, up to 13000' MSL and 1 1/2 miles from DZ (by NOTAM).
- **A-311:** Low altitude helicopter operations area from surface to 500' AGL.
- **R3109/ R3110:** Live fire area surface up to 19000' MSL. Active by NOTAM.
- **Hang gliders:** Extensive glider activity occurs daily from surface to 1500' AGL between Makapu'u Point and Waimanalo Beach. Aircraft should remain 1 mile offshore in this area.
- **R3103:** Periodically, intense military operations take place in the Pohakaloa Training Area (PTA). Use caution for other military aircraft, especially helicopters during the run-in and escape. R-3103 operations must be scheduled with PTA Range Control.