129th RQW/SE
P.O. Box 103, MS#1
Moffett Federal Airfield, CA 94035-0103

MID-AIR COLLISION AVOIDANCE (MACA) HANDBOOK

129TH RESCUE WING
MOFFETT FEDERAL AIRFIELD, CA

1 NOV 2013

TABLE OF CONTENTS

NOTE: Illustrations contained within are for information only and not to be used for air navigation purposes.

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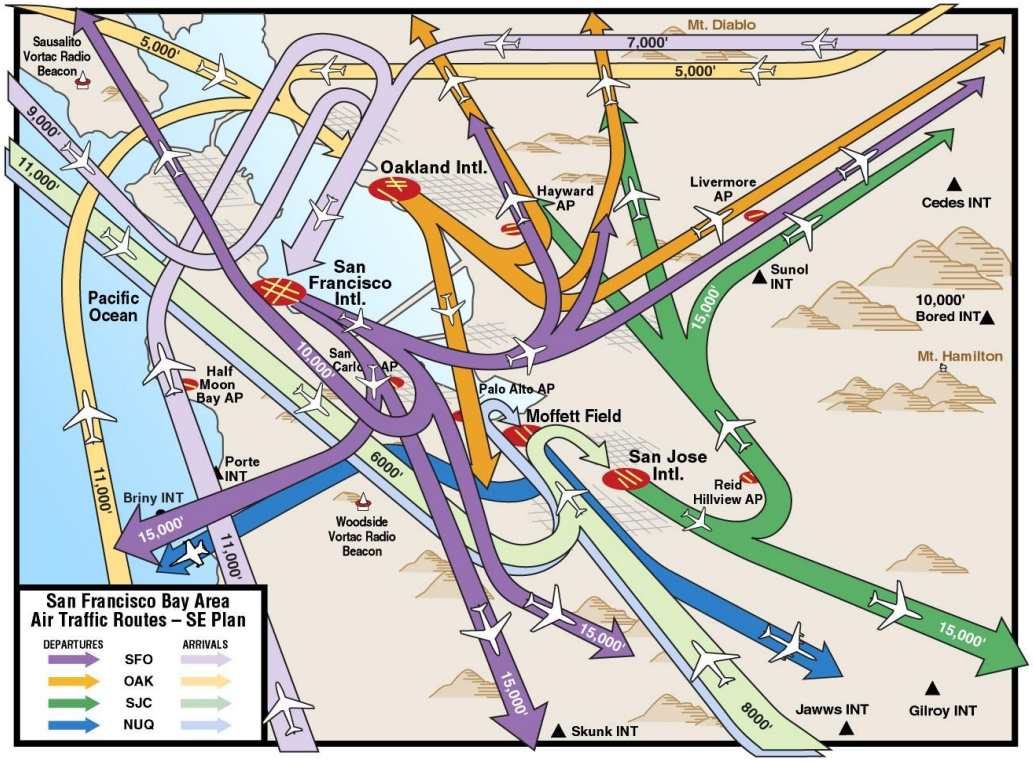
SAN FRANCISCO BAY AREA
AIR TRAFFIC ROUTES

SOUTH EAST PLAN



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FLYING SAFETY IN THE NO. CALIFORNIA AREA

Fellow Aviators:

We provide this handbook to you with the hope that the information it contains will be useful as you fly the skies over Northern California and Moffett FAF, CA. The potential for mid-air and near mid-air collisions has increased significantly throughout the United States in recent years and this trend will continue. As airspace becomes more congested, we must all make a personal and professional commitment to flight safety. All pilots, military and civilian alike, must be aware of the potential dangers and apply the **"see and avoid"** concept with extreme vigilance. Detailed information about other military flying operations throughout the country can be found at http://www.seeandavoid.org. This site contains other MACA pamphlets plus information about low level training routes, special use airspace, and past occurrences of mid-air collisions.

The 129th Rescue Wing at Moffett FAF, CA operates MC-130 and HH-60 aircraft. Moffett FAF is also home to NASA aircraft which conduct research and specialized flight operations. This handbook will provide you with basic information about 129th Rescue Wing local training areas, special use airspace, NORCAL Radar Approach Control (RAPCON), and 129th Rescue Wing assigned aircraft. Please take a few moments to read the information in this handbook. We recommend that you carry it with you in flight. If you have any questions or comments or would like additional information please call or write us. Thanks for your shared interest in flight safety.

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THE MID-AIR COLLISION POTENTIAL

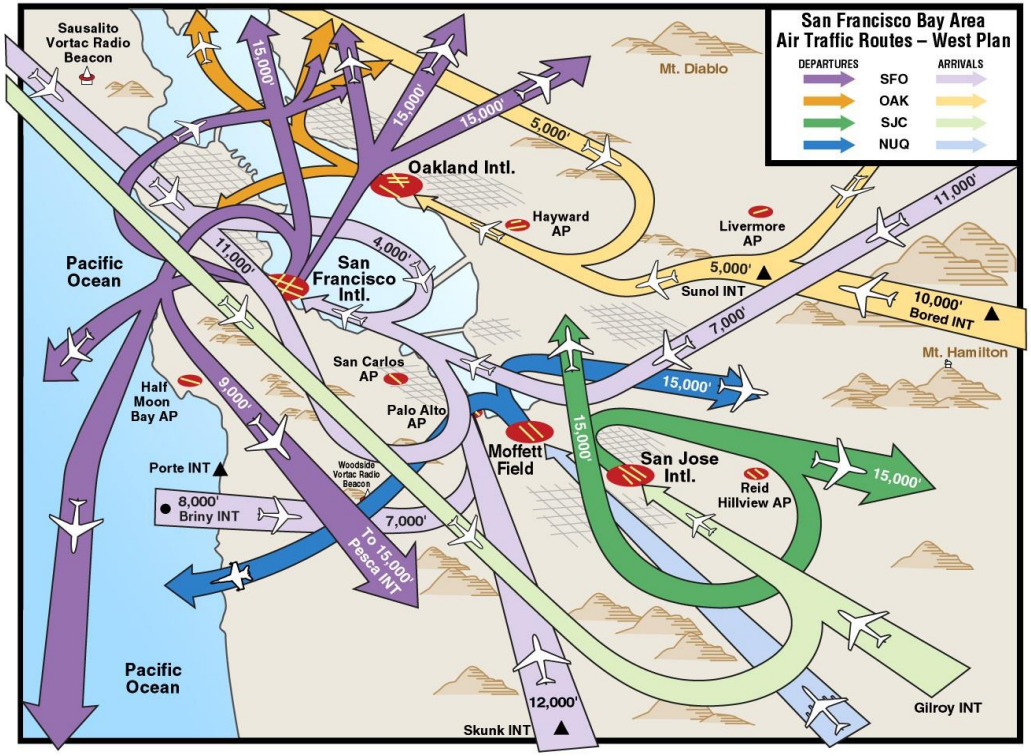
Despite numerous advances in air traffic rules and separation devices, the potential for a mid-air will always be present. Research has proven that the most critical times for mid-air collisions are the first three minutes after take-off and the last eight minutes before landing. Mid-airs usually occur on clear days (more people flying) and near airports (higher density traffic at similar altitudes). The most reliable means of preventing mid-air collisions is to **"see and avoid"**. Pilots must divide their attention between the aircraft instrumentation and outside clearing. They should also encourage other occupants of the aircraft to assist with looking out for conflicting air traffic. The geometry of a collision course can occur quickly in the fast moving arena of flight. Keep your eyes and ears open, listen to your radio and clear outside your aircraft.

SEE AND AVOID CONCEPT

The number one cause of mid-air collisions is the failure to properly adhere to the "**see and avoid**" concept. In accordance with CFR Part 91, this concept requires that vigilance shall be maintained at all times, by each person operating an aircraft, regardless of whether the operation is conducted under IFR or VFR.

SAN FRANCISCO BAY AREA
AIR TRAFFIC ROUTES

WEST PLAN



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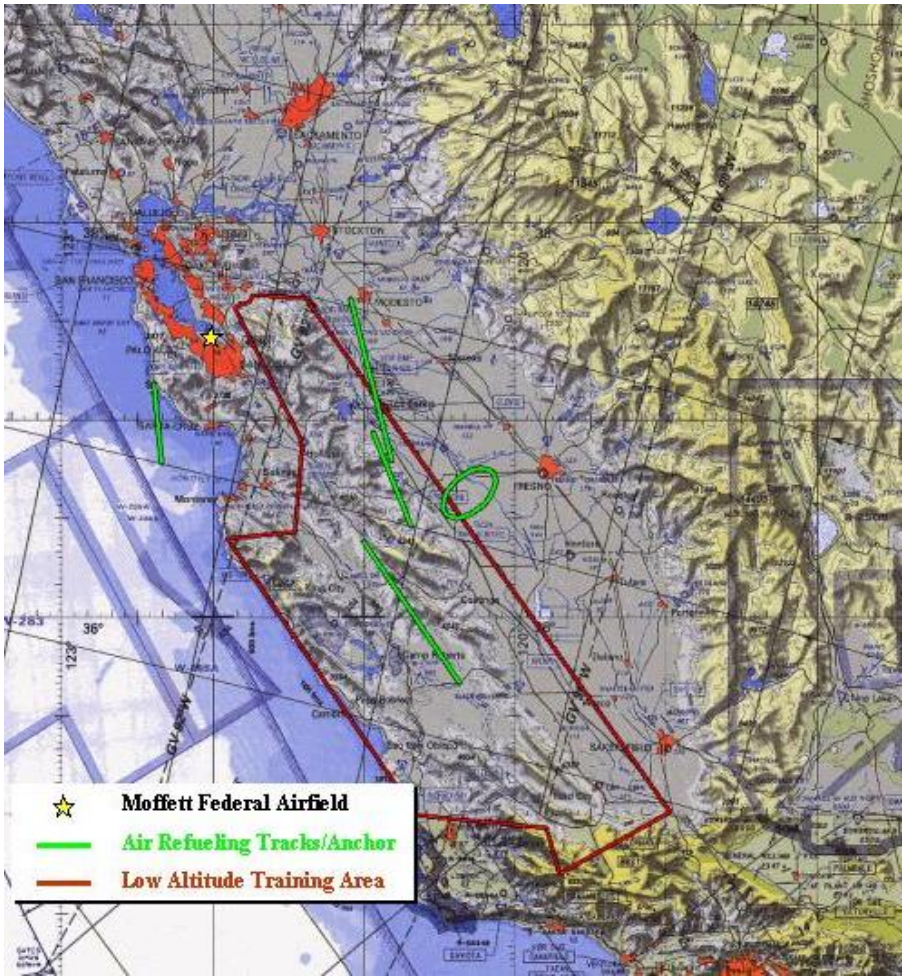
MOST FREQUENT 129th TRAINING AREAS

LOW ALTITUDE TRAINING AREA
Surface to 5,000 AGL
&
HELICOPTER AIR REFUELING TRACKS



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COLLISION AVOIDANCE TIPS

Studies on mid-air collisions show most accidents occur below 8000 feet AGL and near airports, NAVAIDS, and other high-density traffic areas. Here are some ideas to help reduce your mid-air collision potential:

1. Know areas of high-density traffic.
2. Fly as high as practical.
3. Obtain an IFR clearance or participate in radar advisory services whenever possible, and continue to practice "**see and avoid**" at all times.
4. Use landing lights at lower altitudes, especially when near airports.
5. Announce your intentions on Unicom and use standard traffic pattern procedures at non-towered fields. Try to present a "predictable target."
6. Always use your transponder (upgrade it with an altitude reporting capability).
7. Use the appropriate hemispheric altitudes when VFR above 3000' AGL.
8. Constantly scan for other aircraft. The most critical areas to scan are 60 degrees to the left and right of your central visual area and 10 degrees up and down from your flight altitude. Remember, **if you see one military aircraft, look for more**. We often fly in formations.
9. Keep your windshield and windows clean and clear. A bug on the windscreen can obstruct and disrupt your visual lookout.
10. CFIs need to continue visually clearing during instruction. It's easy to let instructing, especially instructing instrument flying, distract you from this duty.
11. If another aircraft appears to have no relative motion in your windscreen but is increasing in size, it is on a direct collision course with you.

MOFFETT FEDERAL AIRFIELD

Moffett has two parallel runways (14/32 L & R). Instrument approaches include LOC/DME, TACAN and ILS. You may see military aircraft performing instrument approaches to these runways up to 20 miles out on final at altitudes up to 5500' MSL.

Normally, VFR traffic pattern operations are conducted east of the base at 1000' MSL and to the west side at 1500' MSL. Moffett and Palo Alto Municipal Airport share Class D airspace. Moffett's runway 32 extended centerline and Palo Alto's runway 30 left downwind are coincidental and require extreme vigilance, especially when Palo Alto is operating an extended downwind (closer to Moffett FAF). **SPECIAL NOTE FOR PALO ALTO PILOTS:** There is extensive training done during the evening hours in and around the Class D airspace after sunset until approximately 11:00 pm. If the runway lights at Moffett are out prior to 11:00 pm it is highly likely that MC-130 and /or HH-60 aircraft are airborne over the bay adjacent to Palo Alto Municipal Airport at altitudes 500 feet AGL and below.

In general, civilian aircraft remaining west of interstate 280 outside Class B airspace will be clear of the Moffett FAF traffic pattern. The MC-130 and HH-60 aircraft primarily use a Low Altitude Tactical Navigation (LATN) training area to the southeast from 50ft AGL to 5,000ft MSL for our training. The MC-130s usually fly the SOLN departure from Moffett to transit to the area, and recover via HOOKS intersection (NUQ 140° radial, 20 DME), while the HH-60s usually operate VFR.

We highly recommend that anyone flying near Moffett FAF contact NORCAL Approach Control or Moffett FAF tower, as appropriate, to receive traffic advisories.

129th RESCUE WING AIRCRAFT

MC-130P Performance Characteristics:

Typical departure climb: 1000-1500 fpm at 160-180 KIAS

Normal cruise speed: 210 -240 KIAS

Typical approach speed: 120-140 KIAS

Traffic Avoidance System: TCAS II. See and Avoid.

MC-130P "Combat Shadow"

129th RESCUE WING AIRCRAFT

HH-60 Performance Characteristics:

Typical departure climb: 500-1000 fpm at 80-120 KIAS

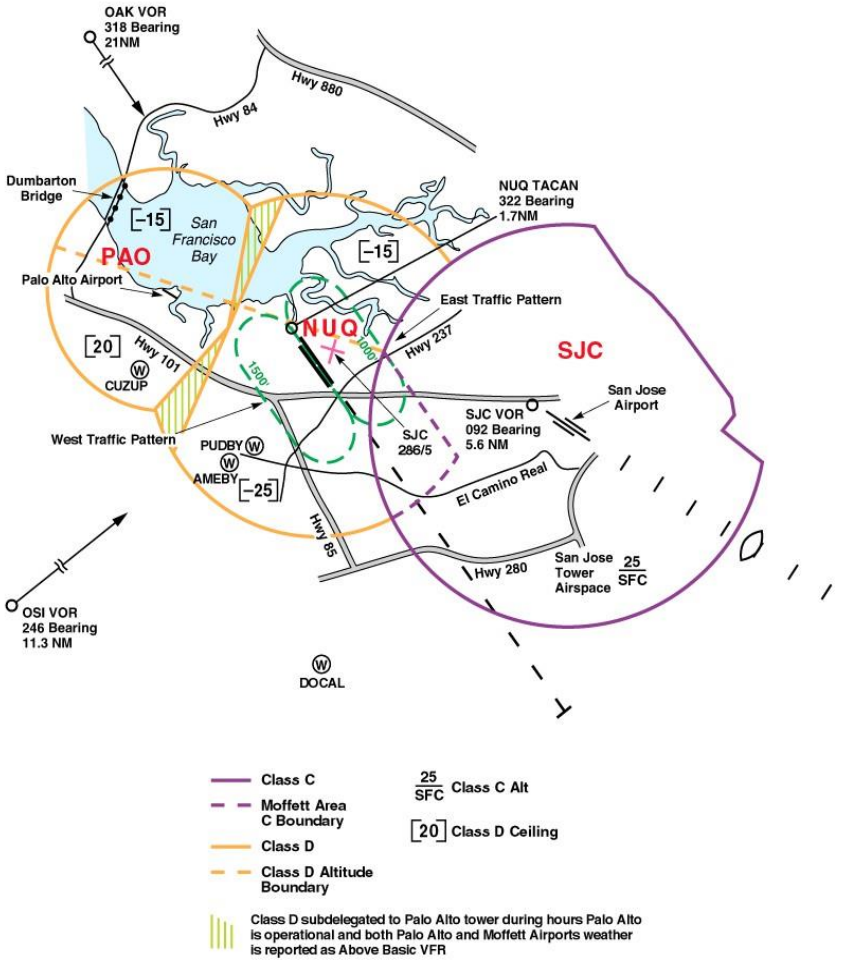
Normal cruise speed: 120 KIAS, typically at altitudes at or below 500 feet AGL.

Typical approach speed: 120 KIAS

Traffic Avoidance System: See and avoid: 4 crewmembers scanning.

HH-60G "Pave Hawk"

MOFFETT AIRFIELD VFR TRAFFIC PATTERNS



MOFFETT VFR TRAFFIC PATTERNS
(Some operations conducted overhead Moffett FAF up to 5,000' MSL)

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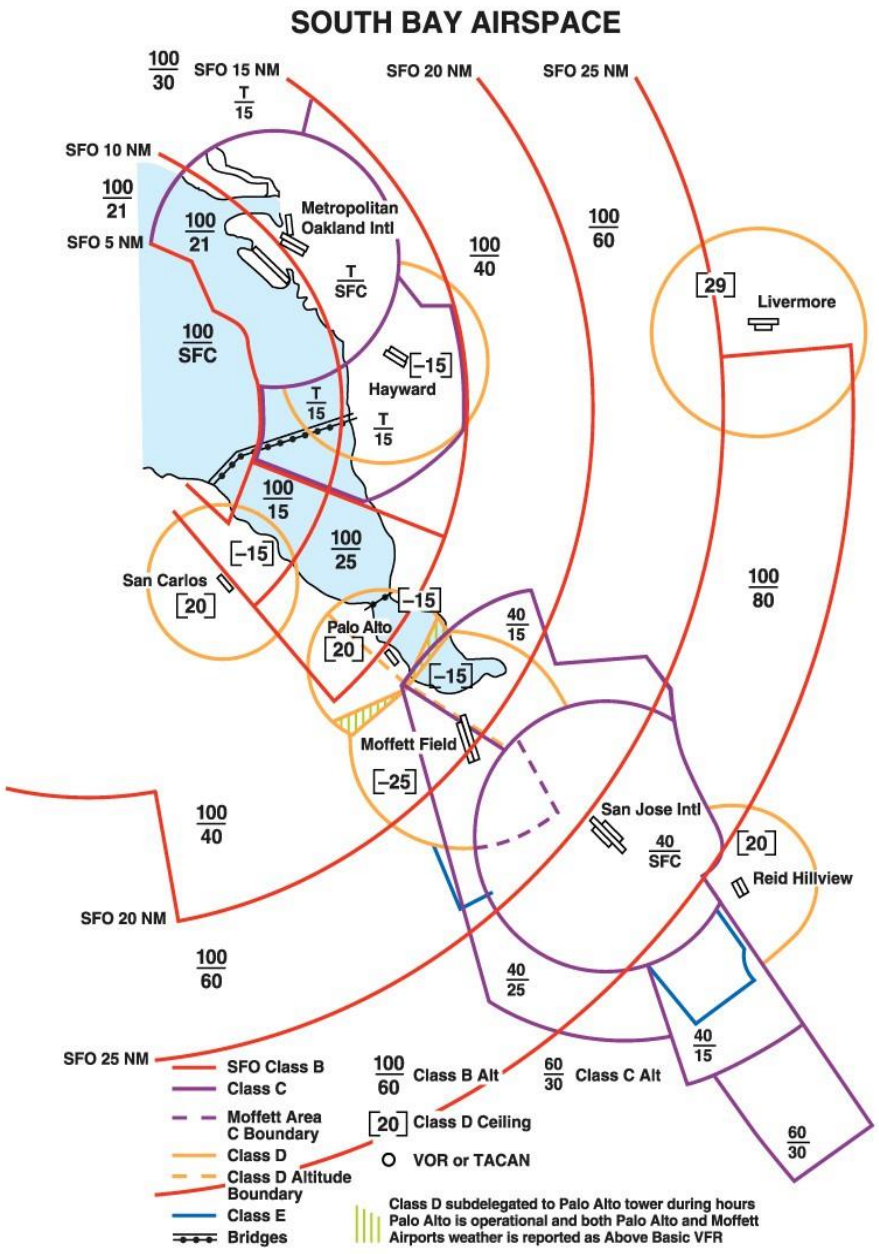

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129th RESCUE WING MISSION

The mission of the 129th Rescue Wing is to provide a trained and equipped rescue force able to respond to and sustain our state and federal missions.

Federal Mission

To provide manpower, material and equipment resources to conduct and complete combat search and rescue operations on a world wide basis.

To provide manpower, material and equipment to conduct and complete peacetime search operations.

State Mission (California Air National Guard)

To furnish trained personnel to respond to state emergencies, such as natural disasters, and to assist civil authorities in the enforcement of the law.

Our Motto

These Things We Do…That Others May Live, the motto of the Air Force Rescue community, is appropriately chosen, as it is the motivating force of those involved in our mission. Coupled with the 129th Rescue Wing's own motto of "in Pace et Bello, Noctem et Diem - In Peace and War, During Night and Day," these mottos serve as the 129th's guidelines and speak of our commitment: to serve at all times and under all circumstances.