



Williams Aviation Consultants

Long Beach Airport (LGB) Class C implementation potential impact issues

BACKGROUND

Williams Aviation Consultants, Inc. (WAC) has been tasked to prepare a written Potential Impact Statement of the Federal Aviation Administration's (FAA) proposal to establish Class C Airspace around Long Beach Airport and Revise Orange County (SNA) Class C Airspace. The Potential Impact Statement will identify possible adverse impacts to the residents of the City of Rancho Palos Verdes and other south bay coastal cities should the proposed Long Beach Class C airspace be implemented as currently proposed.

Our primary concern is that the FAA will determine this airspace change to be routine and in accordance with its' normal policy of declaring such changes to be "categorically Exempted" from any significant environmental review. Based on our initial analysis, we believe significant potential exists for impacts that have not been anticipated or analyzed by the FAA. These "Unintended Consequences" have potential significant adverse impact on the residents of the City of Rancho Palos Verdes and other neighboring communities in the south bay.

This document will provide a list of those impact issues identified by WAC and all other known entities that have developed data on the subject. The impact data provided by WAC is based on the significant experience of the consultants in the area of airspace design as well as familiarity with the Southern California airspace environment. The CVs of the primary authors of this document are attached. Due to time constraints, the validity of the data provided by others has not been verified.

The FAA Proposal

The FAA proposes to establish Class C airspace over and around Long Beach Airport (LGB). It has been widely circulated that the impetus for this airspace change was a request from Jet Blue Airlines. The request was generated by safety concerns associated with the number of Traffic Alert and Collision Avoidance System (TCAS) warnings Jet Blue aircraft were receiving on departure from LGB. The number and severity of these alerts is unknown. The FAA has not provided any data which would substantiate the need for this change.

LGB currently is served by Class D airspace which is significantly smaller and less restrictive to users than is Class C. The FAA's current Class D airspace surrounds LGB with a 5 mile radius. The arc of the radius of the FAA's current LGB Class D airspace barely extends past the 710 freeway to the west, barely past the 91 freeway to the north and just past the shoreline near the LA/Long Beach harbor area. **Figure 1** depicts the current Class D airspace.

The FAA's proposed LGB Class C airspace would extend west to the 110 Freeway (its western edge), north to the 91 freeway (its northern edge) and south over the ocean 3 to 5 miles nearly engulfing the entire LA/Long Beach harbor area. The FAA's proposed LGB Class C airspace would be about 3 times larger than the existing Class D airspace. **Figure 2** depicts the proposed Class C Airspace.

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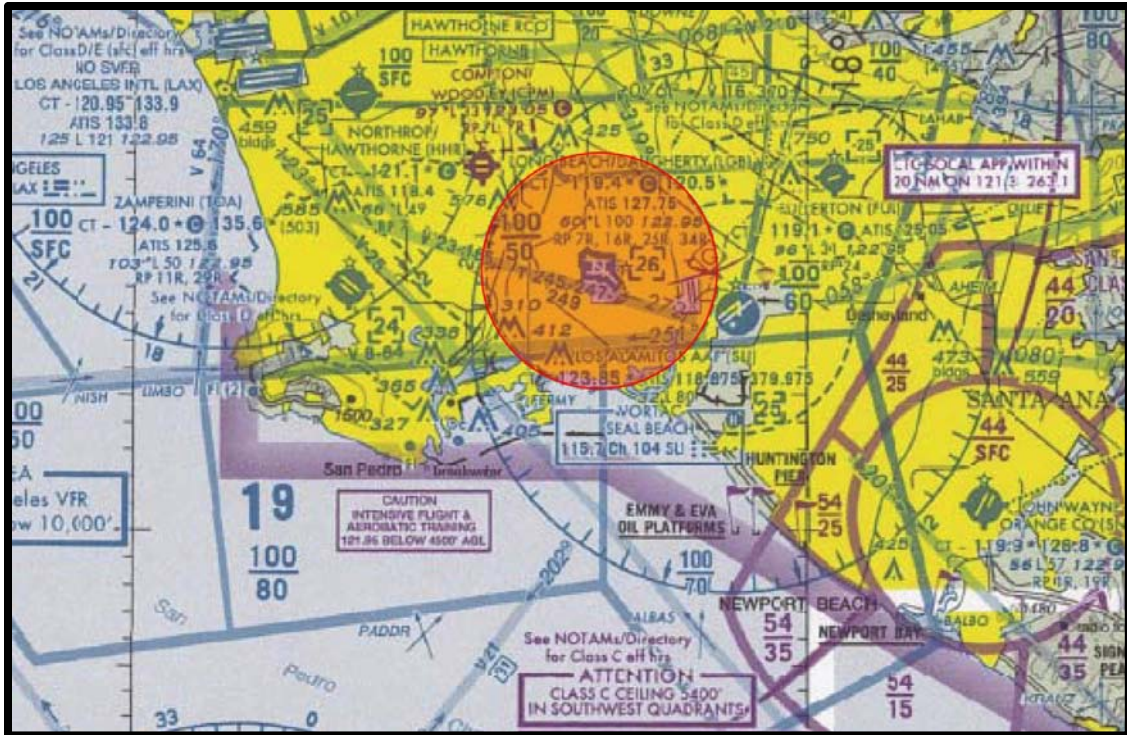


Figure 1, Current LGB Class D Airspace

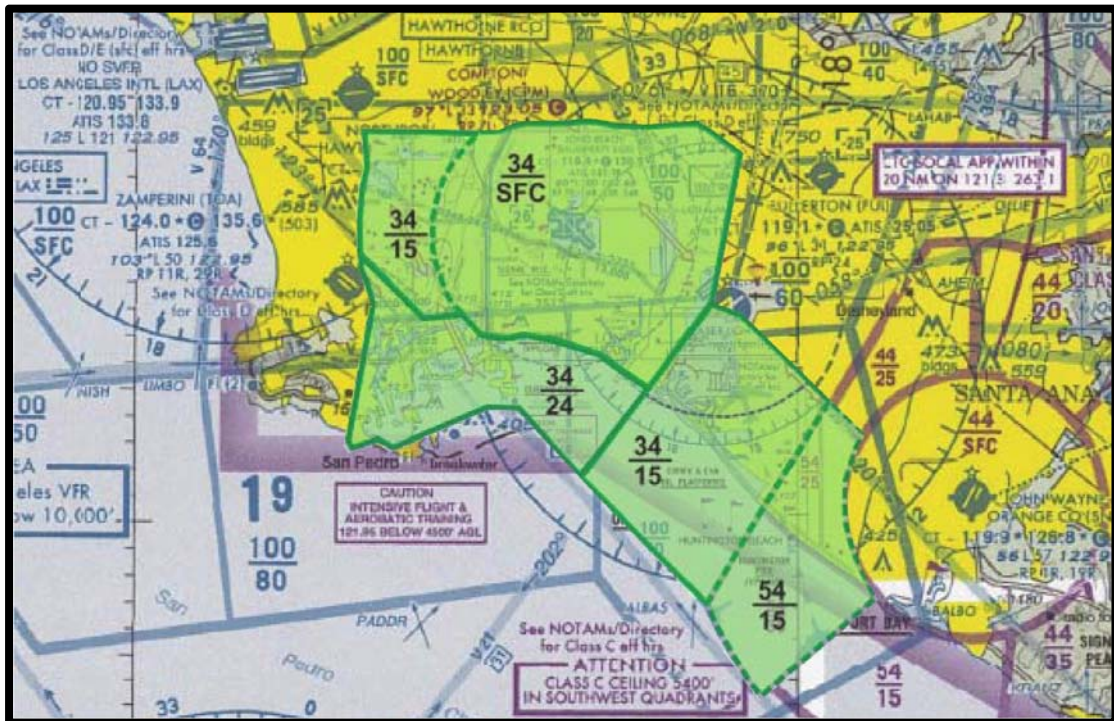


Figure 2, Proposed LGB Class C Airspace

The areas of airspace change that impact Rancho Palos Verdes and other coastal communities is depicted in **Figure 3**.

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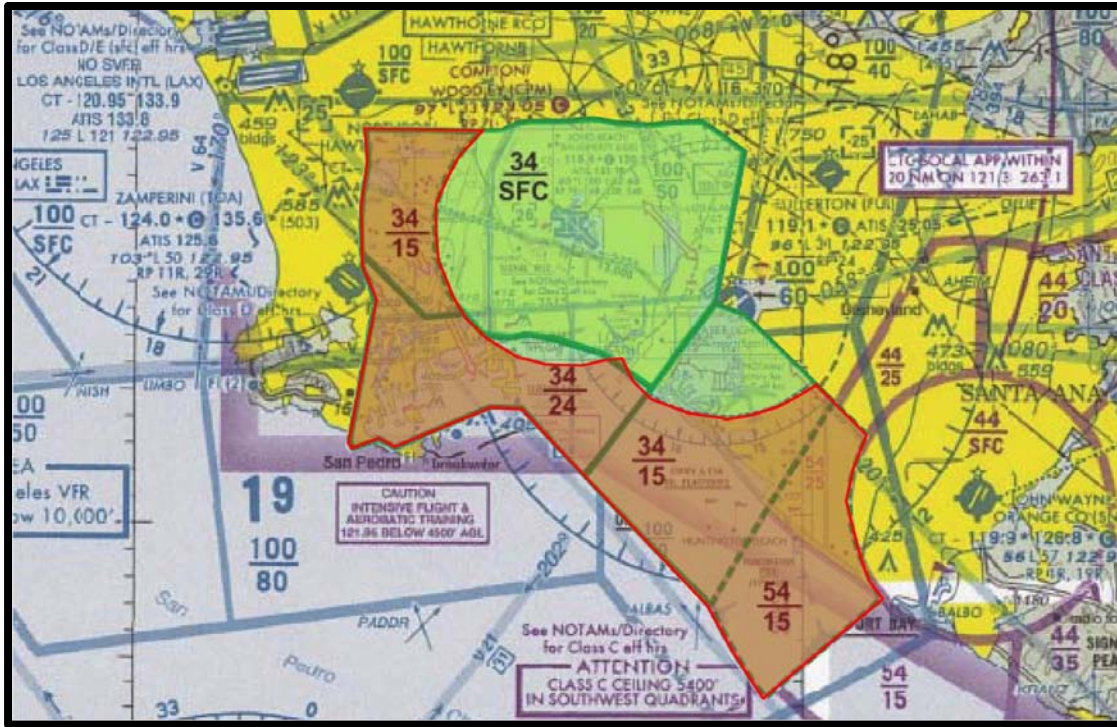


Figure 3, Class C Proposed Airspace outside the Current Class D depicted in Red

Of most concern to the residents of Rancho Palos Verdes and other coastal cities is the addition of restricted airspace east and south of LGB airport. **Figure 4** depicts one of two areas of greatest concern.

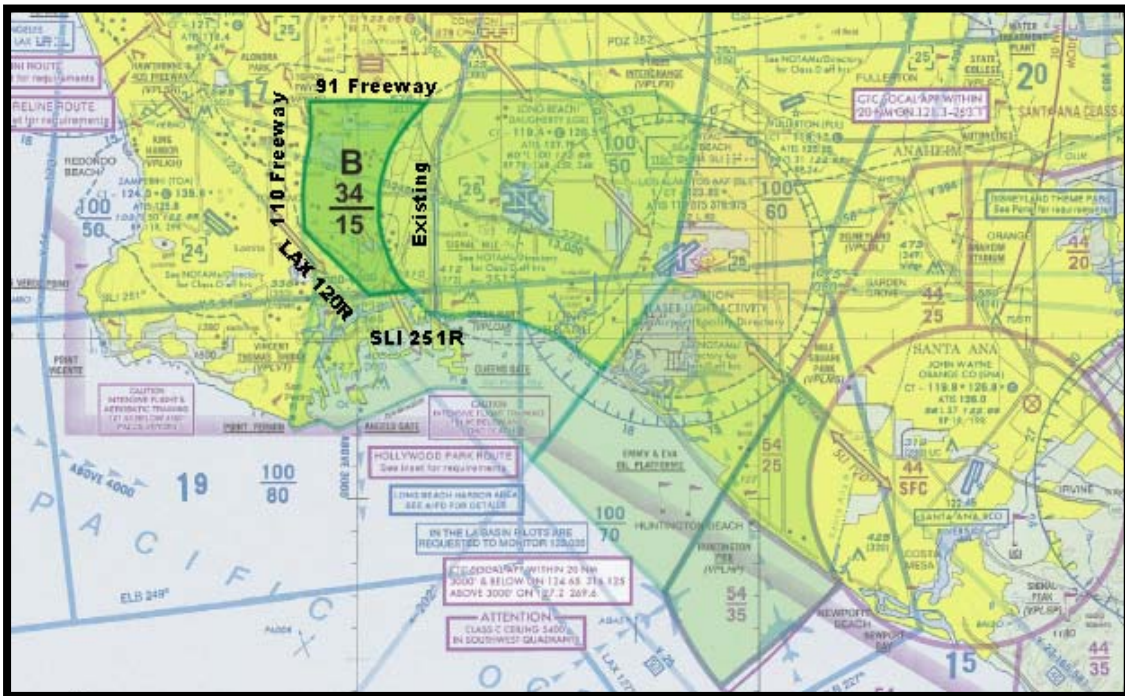


Figure 4¹

¹ Source: FAA Power Point Presentation, June 22 and 23, 2010.

Area B would compress traffic that was unable or unwilling to obtain clearance from ATC to enter Class C airspace. This compression would occur to the west of the 110 freeway or at very low altitude under Area B.

Of particular concern is the potential impact to aircraft utilizing the published “Mini Route” over LAX (**Figure 5**). Aircraft exiting the Mini Route southbound would be required to contact ATC immediately upon leaving the route and obtain a rapid clearance to enter Class C airspace or divert south or southwest bound to avoid inadvertent entry into the Class C airspace. This will place the majority of these aircraft west of the route currently used. The magnitude of the traffic and the distance west of normal is unknown.

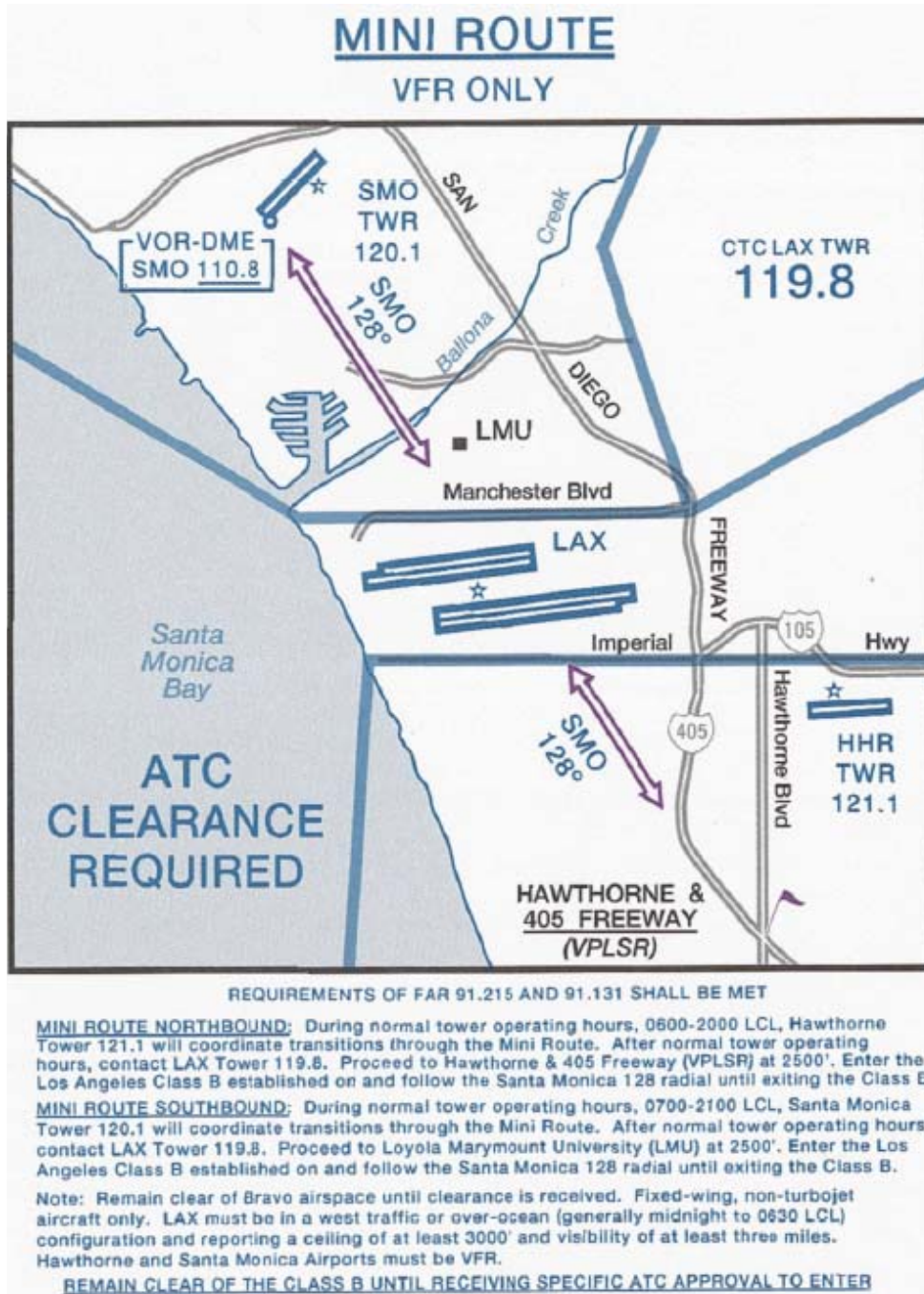


Figure 5

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The second area of significant concern is shown in **Figure 6**.



Figure 6

Area C extends south to the breakwater.

The proposed Class C airspace eliminates almost all the usable airspace north of the breakwater in the Long Beach/LA Harbor Flight Training Area. The FAA airspace change would likely cause flight instructional aircraft to move from the LA/Long Beach harbor “practice and instructional area” to the entire PV coastline. **Figure 7** depicts the Long Beach/LA Harbor and Palos Verdes published VFR Practice Areas.

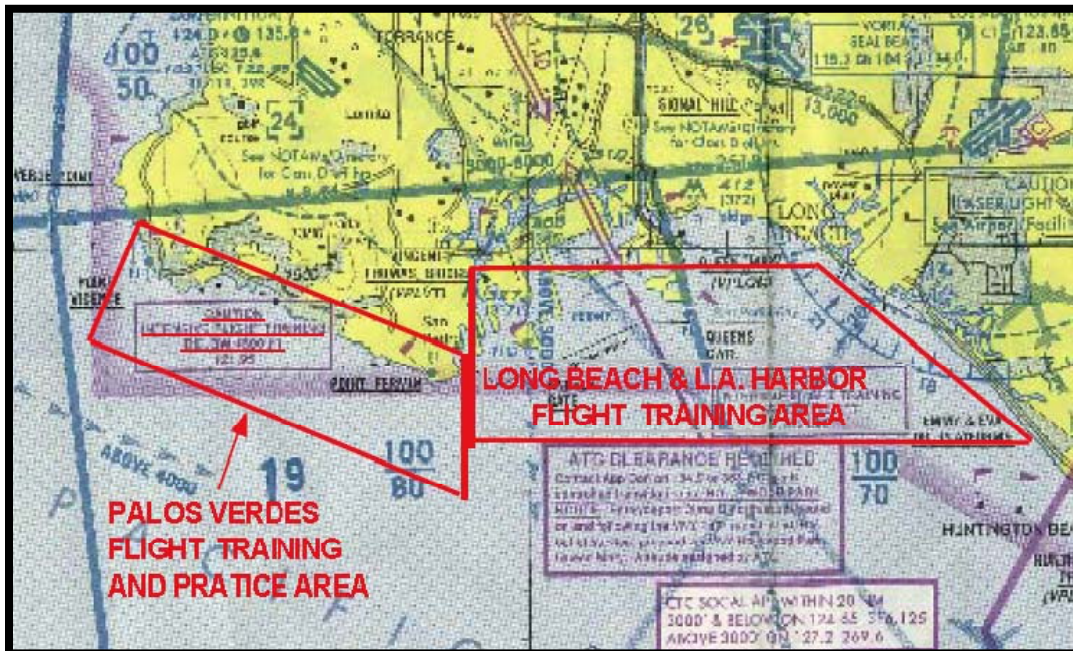


Figure 7²

² Source unknown

What will the FAA airspace change mean to South Bay cities?

The change from the current Class D airspace to the more restrictive and larger Class C Airspace will cause some, as yet unknown, change in aircraft routing. Some of these changes will be related to the fact that the Radar Approach Control facility in San Diego will be the controlling facility for some of the Class C Airspace. The normal result of the Radar facility establishing the initial landing sequence is that the sequencing takes place further from the airport than it does when the Tower is the controlling facility. This fact is evidenced by the much larger Class C airspace; over 3 times the size of the existing Class D.

Our primary concern is that the FAA will determine this airspace change to be routine and in accordance with its' normal policy of declaring such changes to be "categorically Exempted" from any significant environmental review. Based on our initial analysis, we believe significant potential exists for impacts that have not been anticipated or analyzed by the FAA. These "Unintended Consequences" have potential significant adverse impact on the residents of the City of Rancho Palos Verdes and other neighboring south bay communities. They include:

1. Increased safety risks resulting from a greater number of general aviation ("GA") aircraft flights compressed in flight areas;
2. Environmental impacts, especially increased aircraft noise and air pollution from piston-powered and turboprop aircraft;
3. Increase of GA aircraft flights across the entire PV Peninsula, as well neighborhoods in Redondo Beach, Hermosa Beach, Torrance and San Pedro; and
4. Increased workload of FAA traffic controllers, possibly impairing passenger flight safety.

Why would there be "unintended consequences"?

1. Today, GA pilots merely advise the LGB tower when entering its Class D airspace.
2. With the change, pilots would be required to obtain authorization from air traffic controllers prior to entering the FAA's proposed Class C airspace. Because controllers must manage passenger traffic as a priority during peak periods, GA pilots may not obtain authorization timely and divert their flight around or over the PV Peninsula, as well as neighboring communities.
3. The same controllers who manage passenger flights for the entire southern CA region, including LAX, San Diego's airport, John Wayne Airport and Burbank, would now take on responsibility for tracking GA aircraft flying within the FAA's extended LGB Class C airspace.

What would happen as a result of the proposed change?

1. Flight instructional aircraft from schools based at Hawthorne Airport, Compton Airport and Zamperini Field (Torrance) would likely move from the LA/Long Beach harbor "practice and instructional area" (a major portion of which would become restrictive Class C airspace) to the entire Palos Verdes coastline.
2. A greater number of general aviation aircraft departing from Zamperini Field (Torrance) will avoid the Class C airspace:
 - a. Departing west, turning south along the entire Palos Verdes coastline, over neighborhoods in Redondo Beach, Torrance (Torrance Beach), Palos Verdes Estates and Rancho Palos Verdes; or

- b. Departing west, turning 180 degrees right and flying along the northeastern and eastern edges of the Palos Verdes Peninsula over and near neighborhoods along the Western Avenue corridor, including Rolling Hills, Rolling Hills Estates, Lomita, San Pedro and Rancho Palos Verdes; or
 - c. Across the Palos Verdes Peninsula.
3. A greater number of general aviation aircraft currently flying over coastal southern California using the Mini-Route and visual flight rules (“VFR”) will divert around the Class C airspace, instead flying:
- a. Along the entire Palos Verdes coastline, over neighborhoods in Hermosa Beach, Redondo Beach, Torrance (Torrance Beach), Palos Verdes Estates and Rancho Palos Verdes; or
 - b. Along the northeastern and eastern edges of the Palos Verdes Peninsula over and near neighborhoods along the Western Avenue corridor, including Rolling Hills, Rolling Hills Estates, Lomita, San Pedro and Rancho Palos Verdes; or
 - c. Across the Palos Verdes Peninsula.

The area of impact which can be anticipated by the implementation of Class C Airspace at LGB is depicted in **Figure 8**. This graphic reflects the maximum potential area within which significantly altered flight activity will occur.

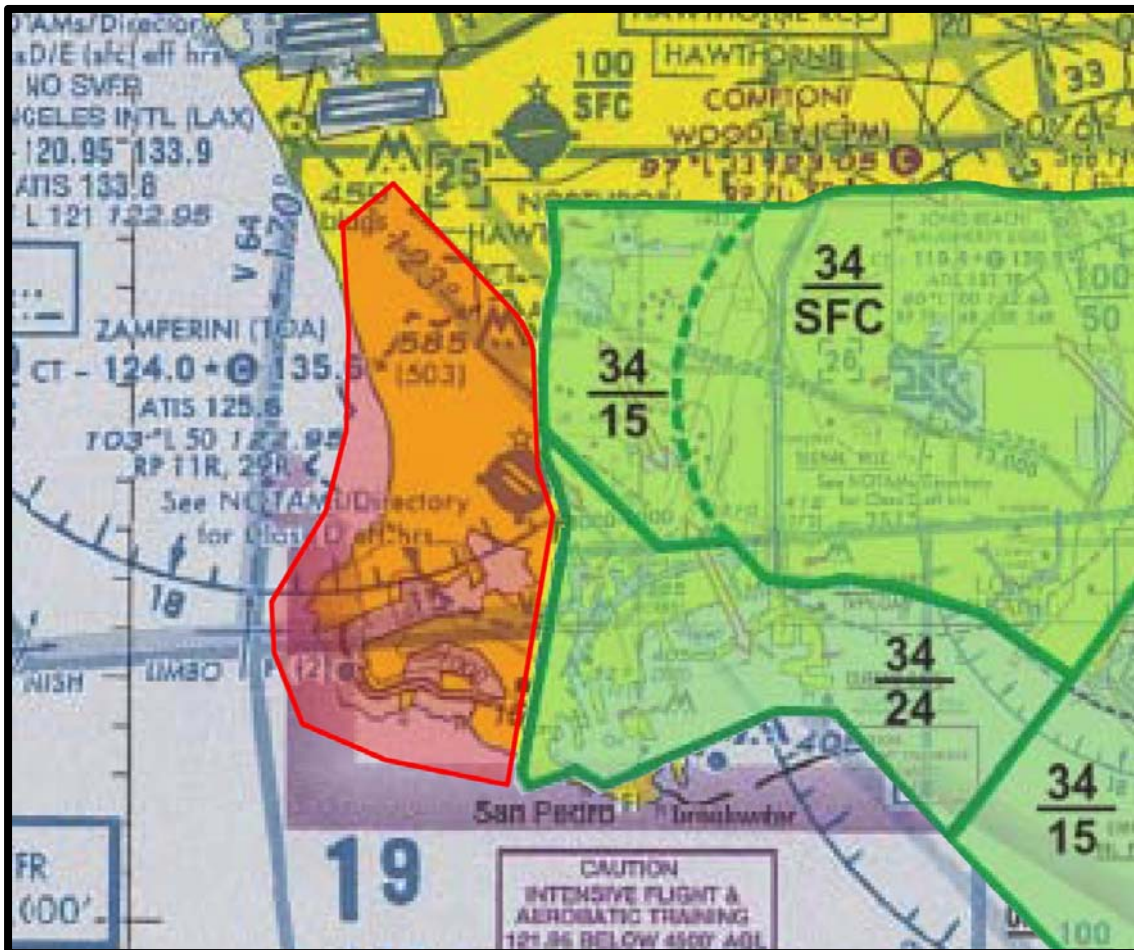


Figure 8, Impact Area Depicted in Red.

Is the FAA's proposed airspace change necessary?

The request to the FAA to change the LGB Class D airspace to the more restrictive Class C was made by Jet Blue Airlines. The purported reason for this request was concern over the number of Traffic Alert and Collision Avoidance System (TCAS) alerts pilots had received on departure from LGB. The number and severity of these alerts is unknown. The FAA has not provided any information as to the reason they are proposing to make this change.

According to NTSB accident data there has not been an Air carrier Accident reported in the past 30 years. Several General Aviation accidents have occurred in the past 15 years with four of them resulting in fatalities.³ A synopsis of the NTSB findings on the fatal accidents is contained in **Appendix 1**.

Based on the excellent safety record at LGB and the lack of any contrary data from the FAA, there appears to be no compelling reason to change airspace classification.

³ Data obtained from the NTSB web site.

POTENTIAL IMPACT ISSUES

The following potential impact issues were developed based on our analysis of the proposed change and our experience working in the Air Traffic Control system in Southern California for over 30 years. Some of the issues identified are based on input from other interested groups such as the Aircraft Owners and Pilots Association (AOPA) and the Torrance Airport Association. Subsequent review may reveal our disagreement with some of these comments but at this stage of the effort all viewpoints will be presented.

The addition of Class C airspace to the west and south of the existing Class D Airspace has the potential to significantly alter VFR flight patterns over communities west and northwest of LGB airport. This occurs because:

1. The more stringent two-way communications requirement is moved some 2 to 3 miles west and northwest of the current location. This will result in aircraft holding at low altitude 8 to 10 miles west of LGB awaiting ATC approval to enter the Class C Airspace.
2. The current Long Beach/LA Harbor Flight Training and Practice Area will be rendered virtually useless if the Class C airspace is implemented as currently proposed. The area north of the breakwater will have all airspace between 2,400 and 3,400 feet MSL rendered unusable as the controlling facility cannot accommodate the volume of traffic normally using the area. Those aircraft that require the amount of airspace currently available, will conduct operations elsewhere. The most logical area these aircraft will relocate to is the Palos Verdes Flight Training and Practice Area. Unfortunately this area is only about half the size of the Long Beach/LA Harbor area. This may force some pilots to use other off shore airspace west and north of Palos Verdes.
3. Aircraft flying over LAX southbound utilizing the published "Mini Route" exit the route approximately 2 miles from the proposed Class C Airspace. This route is flown at 2,500 feet MSL. The Class C Airspace is between 1,500 and 3,400 feet. It is unlikely the controlling facility can identify and authorize entry into the Class C Airspace in the short time available. The most logical scenario is that these aircraft will routinely turn to the west or southwest to avoid inadvertent entry into the Class C Airspace. These aircraft will overfly the cities along the beach south of LAX as well as on the Palos Verdes peninsula.
4. VFR aircraft departing Torrance Airport to the northwest will routinely make a left turn after takeoff. The proximity of the Class C airspace to the airport severely limits the airspace available for a right turn. This will increase overflight activity of those cities north and west of the airport.

Issues Identified by others (included in unedited form for information only)

1. East/west traffic between 2500 feet MSL and 3400 feet MSL north of Long Beach must pass through a corridor approximately one nautical mile wide between the northern border of the new Class C (areas A & B) and south of LAX Class B. The resulting traffic compression significantly increases the probability of violations due to inadvertent penetration of the Class B and new Class C airspace.
2. It is not clear how the boundary end-points of the Class C airspace are going to be defined. Use of the 91 and 110 Freeways as boundaries can only apply when VFR conditions apply from the surface up. There are many times in the Los Angeles area where conditions are suitable for safe VFR flight but do not permit reliable use of VFR waypoints. With no VOR radial boundaries, VFR flight in the proximity of the new Class C airspace below 3400 feet MSL will be limited to aircraft with GPS driven moving map displays or will require vectors from ATC.
3. The adoption of a new Class C airspace that extends well beyond the present LGB Class D airspace will have significant ecological impact on the region resulting from changes to the operations of all VFR aircraft operating out of general aviation airports south of KLAX and west of KSNA. The ecological impacts include increased aircraft engine noise and air pollution brought about by the need for

operating at higher than normal power levels to climb above the new Class C airspace or noise exposure in neighborhoods not now impacted by aircraft circumnavigating the airspace. Incorporating the eastern part of the 110 freeway VFR flyway into the Class C airspace has the effect of moving VFR traffic to the west over Torrance and Palos Verdes residential areas increasing noise pollution for local residents. All of these changes in local VFR flyways require that an environmental impact study be performed prior to adopting the proposed Class C airspace.

4. There will be significant adverse impact to operations at Los Alamitos Army Airfield (AAF) since Area A of the proposed LGB Class C extends to the surface over the entire southern end of runways 22 R & L preventing southbound departures without immediately penetrating the Class C airspace. This change in the airspace does not appear to be in the national interest since the utility of an important US Army training facility will be compromised.
5. There is a significant adverse impact to the VOR approach to FUL since both charted inbound legs penetrate Areas A, C and/or D of the proposed LGB Class C. Additionally, the published missed approach procedures for all FUL approaches penetrate Areas A and D of the proposed LGB Class C. This will either require handoffs between SOCAL and LGB controllers increasing the workload of LGB controllers or it effectively eliminates the FUL approaches as viable training options for Southern California pilots.
6. According to the Los Angeles Times, an FAA spokesman stated "it is not going to change air routes... ", however, it appears that the new controlled airspace noted as Areas C and D will significantly impact the north/south VFR flyway depicted on the Los Angeles Terminal Area Chart to the East of the 110 Freeway and West of the current LGB Class D. The VFR flyway will be eliminated, forced up in altitude so that it will be above the ceiling of new LGB Class C, or moved to the West and increased in altitude to overfly TOA airspace.
7. In 1991, the FAA withdrew a NPRM that would have established an ARSA over LGB. The FAA stated that " ... the establishment of the Long Beach ARSA would increase the overall airspace complexity in the Los Angeles Basin. Currently, the Los Angeles Basin airspace is composed of 1 terminal control area, 6 airport radar service areas, 25 control tower facilities, and 4 military facilities. The amount and complexity of this airspace dictate a need to modify the entire Los Angeles Basin airspace to make it more compatible with the increasing amount of general aviation and air carrier activity." Without question the Los Angeles Basin airspace is more complex and congested than it was in 1991. Rather than address issues in isolation, AOPA requests that the FAA take a comprehensive approach to the entire Los Angeles area. The airspace over Los Angeles is so complex that a solution cannot be successful without taking the surrounding airspace into account. Despite the FAA's recommendation that the LGB airspace should not be reclassified without a much broader review of the Los Angeles airspace area, a comprehensive review has never been conducted and the FAA has failed to follow its own guidance in a very complex terminal airspace that would benefit from a comprehensive review.
8. To date, the FAA has not released any documented evidence of a safety risk due to Traffic Collision Avoidance System (TCAS) events in the Long Beach area. The purpose of a TCAS system is to alert pilots to potential threats of a midair collision - something that should never happen between two aircraft under Air Traffic Control direction in controlled airspace such as the existing LGB Class D. The safety threat is not in the number of TCAS events but the procedures used by Air Traffic Controllers in and around the LGB Class D and the possible need for amended operating procedures by commercial operators arriving and departing LGB. According to TCAS data obtained through a Freedom of Information Act (FOIA) request, there were 22 TCAS events in the LGB area during a 5 month period. Of these events, 1 occurred within the LGB Class D airspace, 9 occurred outside of the proposed Class C airspace, and 10 were corporate operations that could not be substantiated. Using this data as justification for establishing Class C airspace is flawed and Class C airspace would not resolve the conflicts that are occurring in existing controlled airspace. Rather, ATC procedures along with a review of

pilot training and standard operating procedures would have an immediate, positive impact on the number of TCAS events. Considering the lack of a substantiated hazard, the establishment of Class C airspace over LGB is a solution looking for a problem.

9. The establishment of Class C airspace over LGB will not cause a substantial reduction in the number of critical TCAS alerts. However, improvements to departure and arrival procedures can be implemented immediately), with a positive impact on safety. According to paragraph 16-1-2 of FAA Order JO 7400.2G, before initiating rulemaking actions to establish Class C airspace, the FAA is required to exhaust *all* nonrulemaking alternatives that provide for an acceptable level of safety. Airspace actions can take two or more years, while improvements to procedures can be implemented today. Formal suggestions by the Southern California Airspace Users Working Group (SCAUWG) to alter the departure course of airlines departing LGB have been dismissed without consideration. These improvements would route LGB departures west over Palos Verdes, bringing them into the protection of LAX's Class B airspace more quickly. At a minimum, all potential procedural and pilot training initiatives should be exhausted as part of a more comprehensive airspace review of the entire Los Angeles metroplex area.
10. Beach Boulevard west of John Wayne airport represents a prominent visual landmark used by pilots transitioning between Fullerton Airport and the Visual Flight Rules (VFR) practice areas off the coast. Under the proposed airspace plan, traffic operating on this route would be compressed to less than 1,500 feet of vertical space when operating south of Los Alamitos (SLI). With less than 1,500 feet of altitude available and just 2 miles of lateral separation between the surface areas of John Wayne and Los Alamitos, the separation of opposite direction traffic would be reduced to dangerous levels, increasing the likelihood of a mid-air collision.
11. Pilots transitioning east-west in the area north of LGB currently fly above 2,600 feet and utilize the Riverside Freeway to remain clear of the LGB Class D airspace, If the proposed Class C airspace is implemented, these operators would be forced to climb above 3,400 feet, placing them in direct conflict with aircraft operating south of LAX on the Mini Route and the LAX Special flight Rules Area (SFRA). Alternatively, pilots would be compressed into a 1 mile wide corridor between LGB's Class C airspace and the LAX Class B airspace. A 1 mile wide corridor is a trap for airspace violations and creates an unsafe situation. This area will have a significant funneling effect and will increase the likelihood of a mid-air collision between general aviation traffic attempting to remain clear of the Class B & C airspace.
12. General aviation pilots at Compton (CPM), particularly training nights, depart CPM and proceed south along the Harbor freeway to reach the practice areas over San Pedro Harbor. These operators would be forced to altitudes below 1,500 feet which is not sufficient for opposite direction traffic. Pilots who request to fly through controlled airspace will likely be held over Alondra Park until they can be accommodated. Alondra Park is surrounded by controlled airspace and is extremely congested with aircraft climbing or descending for the Mini Route and LAX SFRA and east-west traffic operating north of LGB. The proposed Class C airspace will compound this congestion and decrease the amount of airspace available to operators in this area.
13. Section 6 of FAA Order JO 7400.2G provides requirements for the Informal Airspace Meetings. Paragraph 2-6-3 contains a requirement to "describe the proposal in sufficient detail, including charts, if necessary, to enable interested persons to prepare comments *prior to the meeting.*" No such description was ever provided in the Federal Register or in local media outlets and multiple requests for the information were declined. By failing to provide details about the proposal ahead of the informal airspace meetings, the FAA denied the public an opportunity to develop arguments for or against the proposal. AOPA questions the value in soliciting comments just minutes after disclosing the details of the proposal. We request that in future airspace actions, the FAA adhere to the mandates of FAA Order JO 7400.2G and provide complete details of the proposal well in advance of the informal airspace meeting.

Issues already under consideration by the FAA:

The following items have been recognized by the FAA and are under consideration. They may still be appropriate for inclusion in any discussions with the FAA on this issue. Some of these issues may also be included in the impact issues contained in this report.

1. The assigned altitude for the TOA ILS 29R LOC approach between DRIFY and the Final Approach Fix (FAF) at BASON is 2000 feet msl. TOA IFR traffic using the ILS depart DRIFY at 2000 feet msl until they intercept the TOA ILS and cross BASON at or above 1895 feet msl. The base of area C in the newly proposed LGB Class C that lies above the flight path between DRIFY and BASON is 2400 feet msl, only 400 feet above TOA LOC IFR traffic and 505 feet above descending ILS IFR traffic at BASON. Arriving and departing commercial aircraft flying within the proposed LGB Class C just above the base of area C represent a significant wake turbulence hazard to TOA arriving IFR traffic. As a very minimum, the base of the Class C in this area needs to be raised so that commercial traffic will remain at least 1000 feet above TOA approach traffic to reduce the hazard of wake turbulence.
2. Lowering the bottom of existing SNA Class C airspace labeled E from 3500/2500 Ft. to 1500 ft has the effect of severely impacting VFR arrival procedures for pilots arriving from the Southwest that can now fly at safe altitudes and remain outside SNA Class C airspace until North of SNA. The proposed changes to LGB and SNA airspace either increases the SNA workload by forcing pilots to enter SNA Class C south of the airport, or forces them to fly dangerously low under SNA Area E or LGB Area D, or alternatively forces them to stay above 3400 feet over LGB Area D. Please provide the justification for these changes to VFR operations.
3. VOR radial marked LAX 135R on map appears to be plotted incorrectly. The plotted radial is approximately LAX 118R. Is it intended to expand the Class C to LAX 135R or is this simply an error in notation?
4. The base of areas B and D of the proposed LGB Class C airspace is given as 1500 MSL. That is too low for safe VFR transition flights in this area (FAR Part 91.119) thereby changing access routes to the practice areas for airports north and east of LGB.
5. ATC must provide traffic advisories for all VFR traffic and conflict resolution between IFR and VFR traffic within Class C airspace while Class D does not require conflict resolution advisories and only provides traffic advisories as work load permits (Jeppesen Airways Manual, Enroute US-6). FAA personnel stated no addition controllers will be required when LGB becomes Class C. What is the justification for this statement in light of the additional workload required?
6. Extending the western boundary of the LGB airspace to the 110 Freeway while raising the ceiling from 2600 feet to 3400 feet and changing it from Class D to Class C adversely impacts TOA and HHR VFR traffic. What, if any, mitigating procedures are proposed to reduce the impact?
7. Eastbound departures from TOA will require additional coordination between TOA, LGB and SOCAL controllers, increasing the workload of TOA and LGB tower personnel and increasing the wait time for departing TOA pilots. What, if any, mitigating procedures are proposed to reduce the impact?
8. It is impossible to determine the true impact on VFR and IFR general aviation traffic originating in and transitioning through the south bay area without an understanding of commercial aircraft traffic flow to and from entry and exit points from the proposed LGB Class C air traffic area. Please provide any proposed changes to commercial arrival and departure flyways for the proposed LGB Class C airspace.
9. Present LGB Class D tower service hours are 1415Z to 0745Z, other times the airspace is Class G. Will the tower service hours remain the same under Class C and will the airspace continue to revert to Class G after the tower service hours?
10. East/west traffic between 2500 feet msl and 3400 feet msl north of Long Beach must pass through a corridor approximately one nautical mile wide between the northern border of the new Class C (areas A

& B) and south of LAX Class B. The resulting traffic compression significantly increases the probability of violations due to inadvertent penetration of the Class B and new Class C airspace.

11. It is not clear how the boundary end-points of the Class C airspace are going to be defined. Use of the 91 and 110 Freeways as boundaries can only apply when VFR conditions apply from the surface up. There are many times in the Los Angeles area where conditions are suitable for safe VFR flight but do not permit reliable use of VFR waypoints. With no VOR radial boundaries, VFR flight in the proximity of the new Class C airspace below 3400 feet msl will be limited to aircraft with GPS driven moving map displays or will require vectors from ATC.
12. Why does Area D of the proposed LGB Class C extend more than 3nm offshore? VFR flight below area D is probably not possible to accomplish safely and thus may not be possible to accomplish without violating FAR 91.119. Lowering the floor of this airspace has the effect of forcing TOA inbound traffic from FUL and areas to the East to stay above 3400' msl until clear of Area D to the south 3 nm offshore, then descending approximately 1100' over water to get below 2400' to duck below area C. The alternative for the VFR pilot is to increase the workload of LGB Class C ATC personnel by requesting transition through the Class C airspace.
13. The adoption of a new Class C airspace that expands well beyond the present LGB Class D airspace will have significant economic impact on all aircraft operating out of general aviation airports south of KLAX and west of KSNA. The impact stems from increased flight times for aircraft circumnavigating the airspace and operation of aircraft engines at higher than presently required power levels to reach the altitude required to fly over the airspace resulting in higher fuel consumption and increased engine wear. Please provide justification for this added impact on the general aviation flying community.
14. The adoption of a new Class C airspace that extends well beyond the present LGB Class D airspace will have significant ecological impact on the region resulting from changes to the operations of all VFR aircraft operating out of general aviation airports south of KLAX and west of KSNA. The ecological impacts include increased aircraft engine noise and air pollution brought about by the need for operating at higher than normal power levels to climb above the new Class C airspace or noise exposure in neighborhoods not now impacted by aircraft circumnavigating the airspace. Incorporating the eastern part of the 110 freeway VFR flyway into the Class C airspace has the effect of moving VFR traffic to the west over Torrance and Palos Verdes residential areas increasing noise pollution for local residents. All of these changes in local VFR flyways require that an environmental impact study be performed prior to adopting the proposed Class C airspace.
15. Since 1991, acting on a court order, the City of Long Beach Municipal Code (Chapter 16.43 Airport Noise Compatibility) restricts aircraft with a maximum takeoff weight (MTOW) over 75,000 pounds to a daily maximum of 41 slots (a slot is one arrival and one departure). All scheduled passenger or cargo airplanes certified under FAR Part 121,125 or 135 using LGB fall within this restriction. No increases in airline traffic at LGB can occur without an ordinance change. FAA statistics for KLGB airport operations show a slow yearly growth from 430,000 to 500,000 between 1991 and 1999 and a decline to 300,000 operations by 2009. Please provide publicly available verifiable data justifying the change from Class D to Class C airspace in light of safe and efficient operation for the last 20 years and that commercial airline traffic has been and will remain constant and total airport operations are expected to continue to decline.
16. There will be significant adverse impact to operations at Los Alamitos Army Airfield (AAF) since Area A of the proposed LGB Class C extends to the surface over the entire southern end of runways 22 R & L preventing southbound departures without immediately penetrating the Class C airspace. This change in the airspace does not appear to be in the national interest since the utility of an important US Army training facility will be compromised.

17. There is a significant adverse impact to the VOR approach to FUL since both charted inbound legs penetrate Areas A, C and/or D of the proposed LGB Class C. Additionally, the published missed approach procedures for all FUL approaches penetrate Areas A and D of the proposed LGB Class C. This will either require handoffs between SOCAL and LGB controllers increasing the workload of LGB controllers or it effectively eliminates the FUL approaches as viable training options for Southern California pilots.
18. The utility of the flight training area south of LGB and north of the breakwater over Long Beach and Los Angeles harbors will be adversely affected by Area C of the proposed LGB Class C. The base of the Class C will compress the training area by limiting the upper altitude to 2400 feet msl and tend to force more fixed wing aircraft to share the area below 1000 feet msl that is normally heavily used by rotary wing aircraft at present.
19. According to the Los Angeles Times, an FAA spokesman stated "it is not going to change air routes. . .", however, it appears that the new controlled airspace noted as Areas C and D will significantly impact the north/south VFR flyway depicted on the Los Angeles Terminal Area Chart to the East of the 110 Freeway and West of the current LGB Class D. The VFR flyway will be eliminated, forced up in altitude so that it will be above the ceiling of new LGB Class C, or moved to the West and increased in altitude to overfly TOA airspace.

APPENDIX 1

NTSB Identification: **WPR09FA248A**

14 CFR Part 91: General Aviation

Accident occurred Monday, May 18, 2009 in Long Beach, CA

Probable Cause Approval Date: 3/3/2010

Aircraft: CESSNA 172N, registration: N738NN

Injuries: 3 Fatal.

A Cessna 172N and a Cessna 310P collided in flight in a common practice area for airwork. A witness was flying on a southerly heading within the immediate area of the collision and noticed a silhouette of an airplane, which appeared to be a Cessna 172 at his 10 to 11 o'clock position. The airplane appeared to be performing maneuvers and making turns in a counter-clockwise direction, followed by a turn in a clockwise direction. The witness stated that he noticed another airplane entering the area from the west, traveling at a high rate of speed on an easterly heading. He added that he was unable to see what kind of airplane it was and only saw a "black object" due to the sun being almost on the horizon. The witness continued to watch both airplanes and noted the fast moving airplane was continuing on an easterly heading while the Cessna 172N was still performing maneuvers on a southerly heading around the same altitude. The witness observed both airplanes collide, disintegrate into small pieces, and fall to the ocean below. Review of recorded radar data revealed that the Cessna 310P was maneuvering within a common practice area about 5 miles south of the shoreline at various altitudes. The data depicted the Cessna 172N on a southerly course at an altitude of 3,000 feet msl while conducting a series of shallow left and right turns prior to performing a left 360-degree turn to a southerly heading. The Cessna 310P was on an easterly heading at an altitude of 3,000 feet msl for about 2 minutes prior to the collision. The radar data depicted the two airplanes converging nearly perpendicular to one another about five miles south of the shoreline. During examination of the recovered wreckage, transfer marks were identified consistent with the radar-derived collision angle. Both airplanes were operating under visual conditions when they collided.

The National Transportation Safety Board determines the probable cause(s) of this accident as follows:

The failure of both pilots to see and avoid each other's aircraft.

NTSB Identification: **LAX01FA101A**
Accident occurred Thursday, February 15, 2001 in Long Beach, CA
Probable Cause Approval Date: 3/30/2004
Aircraft: Cessna 152, registration: N68763
Injuries: 4 Fatal.

A midair collision occurred between the Cessna 152 and a Cessna 172, which were flying between 800 and 1,000 feet above the ocean in an established student training practice area. The flight instructors and their respective students lost control of their airplanes, which descended into the ocean and sank. An eyewitness in a ship observed the airplanes seconds prior to the collision. The witness stated that "one plane appeared to bank and turn directly into the other plane." Another witness, who was airborne in a helicopter, reported that before the impact he had observed one of the airplanes performing counterclockwise orbits, like a turn about a point ground reference maneuver. This airplane had completed several circles when it collided with another airplane that was flying in a westerly direction. Neither the Cessna 152's empennage nor the Cessna 172's engine was recovered. Radar tracks for the airplanes could not be determined. The collision occurred in a near head-on trajectory, based upon the severity of the impact damage to the leading edge of the Cessna 152's right wing, the lack of impact damage in the Cessna 172's aft fuselage and empennage, the witness statements, and the locations where the airplanes were found (the Cessna 152 was west of the Cessna 172).

The National Transportation Safety Board determines the probable cause(s) of this accident as follows:

The failure of the flight crews of both airplanes to maintain adequate visual lookout for traffic.

NTSB Identification: **LAX96LA001** .

The docket is stored in the Docket Management System (DMS). Please contact Records Management
Division

Accident occurred Sunday, October 01, 1995 in LONG BEACH, CA

Probable Cause Approval Date: 7/3/1996

Aircraft: Mooney M20E, registration: N79820

Injuries: 1 Fatal, 2 Minor.

While flying over the ocean, the pilot reported to the radar sector controller that the engine lost power. Then the pilot said that the engine restarted, but didn't sound good. Moments later he reported that the engine lost power and that he was going to ditch the airplane in the ocean. The sector controller immediately initiated search and rescue procedures. The two passengers were rescued. Neither the airplane nor the pilot was recovered. A fixed-base operator reported that on the evening before the accident, the airplane's right fuel tank was almost full; the left fuel tank was between 1/4 and 1/2 full. The pilot had purchased the airplane about 2 weeks before the accident; it could not be determined if the pilot received any instruction or a check-out in the airplane.

The National Transportation Safety Board determines the probable cause(s) of this accident as follows:

A loss of engine power for undetermined reasons.

NTSB Identification: **LAX94FA256** .

The docket is stored in the Docket Management System (DMS). Please contact Records Management Division

Accident occurred Wednesday, June 15, 1994 in LONG BEACH, CA

Probable Cause Approval Date: 9/24/1995

Aircraft: FOUGA CM 170, registration: N344FM

Injuries: 2 Fatal.

A FORMER FRENCH AIRFORCE FOUGA CM 170 JET TRAINER LOST POWER IN BOTH ENGINES AND COLLIDED WITH TERRAIN AFTER TAKEOFF ABOUT 2,000 FEET FROM THE DEPARTURE END OF THE RUNWAY. THE PILOT REPORTED A LANDING GEAR PROBLEM AND REQUESTED CLEARANCE TO RETURN TO THE AIRPORT. WITNESSES REPORTED HEARING THE AIRPLANES'S JET ENGINES 'SPOOL DOWN' DURING THE TAKEOFF CLIMB ABOUT 600 FEET ABOVE THE GROUND (AGL). THE AIRPLANE DESCENDED TO ABOUT 300 FEET AGL WHEN THE LEFT WING DIPPED, FOLLOWED BY THE RIGHT WING DROPPING RAPIDLY. ANOTHER PILOT WHO WITNESSED THE ACCIDENT STATED THE AIRPLANE APPEARED TO STALL. THE AIRPLANE THEN DESCENDED UNCONTROLLED, COLLIDING WITH TERRAIN OFF THE AIRPORT BOUNDARY. THE AIRPLANE HAD BEEN RECENTLY IMPORTED TO THE UNITED STATES DISASSEMBLED AND DEFUELED. THE DESIGN OF THE AIRCRAFT FUEL SYSTEM DOES NOT ACCOMMODATE PREFLIGHT FUEL SAMPLING FROM THE RUBBER BLADDER FUEL CELLS IN THE FUSELAGE. WATER AND SMALL PARTICLES WERE OBSERVED IN A FUEL SAMPLE DRAINED FROM THE FUEL LINES AFTER THE ACCIDENT. THE PILOT'S LANDING GEAR WARNING LIGHT ILLUMINATES ANY TIME ENGINE RPM DROPS BELOW 18,000 RPM AND ANY ONE OF THE THREE LANDING GEAR IS RETRACTED.

The National Transportation Safety Board determines the probable cause(s) of this accident as follows:

A loss of power to both engines due to fuel contamination and, the pilot-in-command's failure to maintain an adequate airspeed during the subsequent emergency, which resulted in an inadvertent stall. Factors in the accident were: 1) the manufacturer's inadequate design of the airplane's fuel system, which does not facilitate fuel sampling during preflight inspections or routine normal maintenance; 2) the lack of a fuel drain valve in the fuel system for fuel sampling purposes.

APPENDIX 2

George Dennis Williams

PROFESSIONAL HISTORY

1999 to Present President & CEO, Williams Aviation Consultants, Inc.
1999 to Present Analyst, G & C Home and Office Organization, Inc.
1998 to Present Owner, Williams Aviation Consultants, Inc.
1998 to Present Senior Aviation Consultant, G & C Aviation Consulting, Inc.
1999 to 1999 Director of Air Traffic Control, America West Airlines
1998 to 1999 Senior Director, Systems Operations, America West Airlines
1998 to 1998 Director, Air Traffic Control, America West Airlines
1996 to 1998 Manager, Air Traffic Division, Western-Pacific Region
1992 to 1996 Manager, En Route System Engineering Division, FAA Technical Center
1988 to 1992 Manager, Los Angeles Air Route Traffic Control Center
1986 to 1988 Assistant Manager, Chicago Air Route Traffic Control Center
1985 to 1986 Area Manager, Chicago Air Route Traffic Control Center
1984 to 1985 Specialist, Requirements Division, Washington, DC
1983 to 1984 Area Supervisor, Phoenix TRACON
1980 to 1983 Assistant Manager, Phoenix Tower
1977 to 1980 Air Traffic Manager, Goodyear Tower
1975 to 1977 Area Supervisor Las Vegas Tower/TRACON
1972 to 1975 Instructor, FAA Academy, Oklahoma City
1967 to 1972 Air Traffic Control Specialist, O'Hare Tower/TRACON, Dallas-Fort Worth TRACON, El Paso Tower/TRACON, Phoenix TRACON
1965 to 1967 Farmers Insurance Group, Metropolitan Life
1965 to 1965 Flight Data Aid, Chicago Air Route Traffic Control Center
1961 to 1965 United States Air Force, Air Traffic Controller, Kincheloe Air Force Base

SYNOPSIS OF EXPERIENCE

George Williams is a retired member of the Federal Aviation Administration's (FAA) Senior Executive Service. His background includes experience as an air traffic controller, supervisor, and manager in many of the United States' largest air traffic control facilities. He has both Air Route Traffic Control Center (ARTCC) and Terminal RADAR approach control (TRACON) expertise.

Mr. Williams served as Division Manager for the FAA Automation Software Development Division, ATR-400, at the FAA's Technical Center in Atlantic City, NJ. He also served as Division Manager for the En Route Operational Support Division, which was responsible for the development, implementation and maintenance of all automation and hardware used in controlling aircraft in the En Route air traffic control system.

He was Acting Director of the Operational Support Service, which included the En Route, Terminal, Flight Service, and the Communication and Surveillance Divisions. Mr. Williams has experience in the development, distribution, integration, and commissioning of the majority of our nation's aviation systems. His division developed replacement software and hardware for the FAA's HOST air traffic control system, as well as the FAA's Oceanic Air Traffic Control equipment.

Mr. Williams taught air traffic control at the FAA's Air Traffic Academy in Oklahoma City and worked in the FAA Requirements Division in Washington, DC where he developed training requirements for the FAA's National Airspace Plan. He retired from the FAA as Division Manager of the Western-Pacific Region. He also served as Director of Air Traffic for a major airline, as well as Acting Senior Director for their Systems Operations Center.

Mr. Williams has been a principal in Williams Aviation Consultants, Inc., GEOCRIS Consultants, Inc., and G & C Aviation Consulting, Inc. since retiring from the FAA in March of 1998.

SPECIAL TECHNICAL QUALIFICATIONS

While serving as Manager of the FAA's Air Traffic Division, Western-Pacific Region, Mr. Williams managed payroll, equipment and operational budgets in excess of \$25M and oversaw approximately 3,200 air traffic personnel in the division, two En Route air traffic control centers, a Center Radar Approach Control, and approximately 140 air traffic control facilities in Arizona, California, Nevada, Hawaii, the territory of Guam, and the majority of the Pacific Islands.

His other responsibilities included, but were not limited to: Human Resource management, financial management, budget formulation and execution, project management, project costing, strategic planning, union management relations, team-building, action team-building facilitator, terminal and En Route air traffic control specialist, management experience supervising and managing En Route and terminal facilities, and management experience in the development, maintenance and repair of hardware and software systems for the FAA terminal and En Route air traffic control facilities.

He also conducted public hearings on noise and environmental issues, facilitated and chaired citizen workgroups, provided mentoring and fostered employee development activities. By combining the Air Traffic Requirements Service and the Airway Facilities Service Maintenance Divisions, he created the Operational Support Service, which had responsibility for all hardware and software throughout the nation's air traffic control system. He is also experienced in Airway Facilities first- and second-level maintenance support activities.

SIGNIFICANT CAREER ACCOMPLISHMENTS

- Mr. Williams completed Candidate Development for the United States (U.S.) Government's Senior Executive Service (SES) program and was selected and confirmed into the SES as Air Traffic Division Manager for the Western-Pacific Region. Selection into the SES qualified him to serve as a Senior Executive in any organization within the Federal Government, regardless of the agency or function.
- He was appointed by the Director of Air Traffic and the Administrator of the FAA to head a task force in Los Angeles, CA to review air traffic operations and flight patterns in the Southern-California area. He formed and led a workgroup consisting of FAA representatives, airport officials, pilots, airline officials, the Air Transport Association, congressional representatives, and state and community representatives from all areas of Southern California. The task force's objective was to address environmental issues of the communities and review airspace and procedures in an effort to ensure better quality of life for surrounding communities. As a result, several positive steps were taken to reduce noise and over-flight intrusions by aircraft utilizing airports in the Los Angeles Basin. (*Air Traffic Division, Western-Pacific Region*)

Williams Aviation consultants, Inc.

- Mr. Williams was again appointed by the Director of Air Traffic to lead an evaluation team to assess the state of air traffic training for the En Route air traffic control option. The team consisted of 12 senior managers from all parts of the U.S. Team members visited each of the En Route centers and evaluated effectiveness of the training contractor and success of the developmental controllers who were being trained to journeyman- level proficiency. A lengthy report was presented to the Director of the Air Traffic Service recommending a number of initiatives to enhance training and improve success rates of developmental controllers. A number of these suggestions were incorporated into the National Air Traffic Controller Training Program. *(Air Traffic Division, Western-Pacific Region)*
- George directed establishment of a flow-control system at Las Vegas Tower to make more effective use of runways for arrivals and departures into McCarran International Airport. This included funding and overall division-level management for the implementation of the LAS 2000 airspace project. *(Air Traffic Division, Western-Pacific Region)*
- He formed a task force of federal, state, military, and business leaders to address user and citizen concerns in the Las Vegas area. The taskforce evaluated civil and military traffic flows for the seven-area airports. Operations, at the time, were not compatible due to the procedures in use at the primary airport. Additional routes and procedures were developed, which allowed military controllers at Nellis Air Force Base to handle traffic to and from the North Las Vegas Airport when runway configurations at McCarran International Airport rendered satellite airport-departure routes ineffective. *(Air Traffic Division, Western-Pacific Region)*
- Mr. Williams provided the overall management strategy, requirements, funding and negotiations with the air traffic controller's union, for implementation of a dual-arrival initiative for Los Angeles International Airport (Dual Civet Arrival). This required a realignment of airspace and routes between the Los Angeles ARTCC and the Southern California TRACON. The successful initiative included political negotiations, congressional briefings, environmental and rule-making decisions. Upon implementation, the Air Transport Association recognized the Dual Arrival project as the Outstanding Accomplishment in the Western- and Northwest-Pacific Regions for 1997. *(Air Traffic Division, Western-Pacific Region)*
- He coordinated a complete overhaul of the Oakland ARTCC oceanic and domestic route structures and worked with managers and union officials to identify required oceanic sectors, equipment and personnel needs, training programs, and schedules. He gained approval for the airspace restructuring between Northern California TRACON (NCT), Bay Approach Control, Sacramento TRACON, and other facilities to staff the NCT facility; he also gained approval for movement of En Route sectors into the terminal environment for increased terminal efficiency and capacity. *(Air Traffic Division, Western-Pacific Region)*
- Mr. Williams was responsible for development and strategic management for the Display System Replacement (DSR) initiative for all En Route air traffic control centers. This was a contingency plan for the Initial Sector Suite System (ISSS) development effort by IBM to modernize the nation's air traffic control system. DSR was developed to ensure software expertise would be available to support new systems in future years. The expertise on earlier systems had been lost through attrition within the workforce. *(FAA Technical Center, NJ)*

- He also planned and implemented the interim solution for seven of the air traffic control centers and managed development of the air traffic control system used in the control of oceanic air traffic in the Pacific and Atlantic Oceans. His solution effectively combined two dissimilar air traffic display languages into one congruent display. (*FAA Technical Center, NJ*)
- As Manager of the Los Angeles ARTCC, he planned and executed recovery plans for the Center's air traffic system. He reduced the facility's overtime expenditures by more than \$700,000 per year and increased the number of qualified air traffic controllers by more than 100 without degrading service. (*Los Angeles ARTCC, CA*)
- George implemented the Southern Terminal Airspace Realignment (STAR) in Southern California, which provided the basis for transitioning several facilities into the TRACON. STAR delegated En Route airspace to terminal facilities in Southern California, in order to enable the application of reduced longitudinal separation and a more direct route structure. He also introduced team action for staff and managers at the Center and introduced participative management techniques to managers, supervisors and union leaders throughout the Western-Pacific Region. (*Los Angeles ARTCC, CA*)
- As Director of Air Traffic for America West Airlines, he developed an off-load procedure for Phoenix, Las Vegas and Los Angeles that facilitated a reduction in specific runway demand when departing to eastern U.S. destinations. He also performed service evaluations in Phoenix, Las Vegas, and Los Angeles and made significant recommendations that improved on-time performance.
- Mr. Williams evaluated America West's efficiency at their largest hubs and recommended changes in local operations that saved time and money. He developed a tracking system, which accounted for delays by type and traced delays from source to conclusion. He also developed ramp tower procedures for the Phoenix Sky Harbor Airport.
- He formulated America West's strategic plan, growth plan, compliance documents, routes, and schedules. He also enlarged the airline's Operations Center to better accommodate airline growth and realigned managers within System Operations Control (SOC). He implemented a fleet-management concept and developed an organization that addressed aircraft fleet issues with specific SOC managers. He also prepared cost analyses for the SOC and recommended several money-saving strategies.
- George served on teams addressing America West's compliance with federal regulations and worked on the FAA's Flight Standards team to address air traffic and dispatch issues. Daily, he and his staff performed efficiency evaluations at the Las Vegas and Phoenix HUBs. Together, they submitted recommendations for efficiency and capacity improvements, which related to ground and air operations, tracked on-time performance, and provided management with reasons for variances. He also negotiated with airline station managers, airport managers and the FAA to achieve operational advantages for the airline.

AWARDS AND HONORS

Outstanding Performance Ratings - Multiple
Sustained Superior Performance Awards – Multiple
PMRS Monetary Awards – Multiple
Manager and Supervisory Awards – Multiple
Letters of Commendation – Multiple

SENIOR EXECUTIVE SERVICE

Completed Senior Executive Service Executive Development Program, December 13, 1992
SES Retirement Grade: Executive Service Level III

EDUCATION

Bachelor of Science Business, Oklahoma City University, OK

Thomas S. Kamman

PROFESSIONAL HISTORY

2008 – Present: Senior Vice President of Operations, Williams Aviation Consultants, Inc.

2008 – Present: Vice President of Operations, GEOCRIS Consultants, Inc.

1999 – 2008: Vice President of Operations, Williams Aviation Consultants, Inc.

1998 – 1999: Aviation Consultant

1997 – 1998: Manager, Airspace Project Office, FAA, Western-Pacific Region

Supervised and conducted airspace design reviews for all facilities within the Federal Aviation Administration's (FAA) Western-Pacific Region, which included California, Nevada, Arizona, Hawaii, Guam and the Pacific Islands. Tasks in the design reviews included capacity modeling, demand and efficiency studies, air traffic simulation, and testing of conceptual designs for proposed facilities.

Assisted in the Environmental Review process for the entire Region, including all initial noise screening processes performed by air traffic facilities and Environmental Impact Statement (EIS), Environmental Impact Review (EIR), and Environmental Assessment (EA) preparation. Represented the FAA in customer meetings to discuss and negotiate environmental impacts and mitigation measures.

Assisted field facilities in determining equipment requirements associated with airspace changes and validated proposed airspace changes for efficiency and safety. Supervised all regional airspace analysis projects, airspace design changes and procedural modifications taking place within the Region to ensure compliance with National and Regional FAA orders and directives. Validated airspace proposals and assessed impacts of change on other Regional air traffic facilities to ensure no inefficiencies developed as a result of changes in routes not compatible with the remainder of the air traffic system.

Served as the Region's expert on airspace and airspace development issues, including modeling, efficiency, and airport demand and capacity analysis. Oversaw implementation of airspace and procedural changes at Los Angeles International Airport (LAX), which resulted in first-year savings to the Air Carrier community in excess of \$20 million dollars.

Coordinated activities between facilities, management, and the National Air Traffic Controllers Association (NATCA) throughout the Region as they related to airspace design and analysis. Represented the FAA at hearings dealing with airspace issues in the Federal Court system.

1991 – 1997: Manager, San Diego Air Traffic Hub, FAA, Western-Pacific Region

Managed air traffic operations at San Diego Lindbergh (SAN), San Diego Brown (SDM), Gillespie (SEE), Montgomery (MYF), and Palomar (CRQ) airports. Served as liaison between FAA Regional Headquarters personnel and Airport Management in matters related to aviation and air traffic control.

Responsible for sight location, design approval, equipment placement, and construction oversight of a new Control Tower at SAN airport. Project cost exceeded \$15 million dollars. Provided management oversight of new administrative and operational communications systems installation in the Control Towers at SDM, SEE, MYF, and CRQ airports, and D-Brite Radar system installation at SDM and SEE airports. Developed special airspace and procedural changes associated with the Super Bowl, Americas Cup Yacht Race, World Series, and X Games.

1990 – 1991: Assistant Manager, Ontario Terminal Radar Control (TRACON), FAA Western-Pacific Region

Responsible for operational oversight of approximately 50 air traffic control personnel. Coordinated the internal and external changes required by the installation of an ASR-9 Radar system. Responsible for safety and efficiency of air traffic operations, including air space and procedures development necessary to optimize air traffic equipment. Assisted in management of personnel, budget, labor contracts, spending, budget preparation, and administration.

1989 – 1990: Air Traffic Evaluations Specialist, FAA Western-Pacific Region

Conducted evaluations of air traffic control facilities to assure compliance with all applicable regulations and directives. Evaluations covered controller performance, equipment performance, location and type, as well as training and administrative support. Additional items included airspace design, airspace efficiency, interpretation of FAA procedures and policies, and analysis of air traffic incidents, accidents and other news-worthy events occurring within the FAA Region. Handled day-to-day operation of Regional quality assurance functions including operational error and deviation incidents, accidents, and pilot violations. Also provided assistance with liaison duties to the National Transportation Safety Board (NTSB), as well as military and civil authorities.

1983 – 1989: Assistant Manager for Plans, Procedures, and Automation, San Diego TRACON, FAA Western-Pacific Region

Responsible for development and implementation of all airspace and procedural changes, as well as automation and equipment modifications, for the San Diego area. Responsible for design of current Class B airspace and attendant procedures. Developed and managed installation of four new operational positions within the TRACON and a new state-of-the-art administrative phone system. Served as military liaison for the FAA Western-Pacific Region and FAA Headquarters on matters dealing with the San Diego area's military airspace and procedural matters, as well as special military missions and the use of Special Use Airspace. Assisted in preparation of international Letters of Agreement with Mexican Air Traffic Control System officials and worked closely with states bordering the U.S. Provided assistance and support to U.S. Customs Service for drug interdiction efforts, as well as assistance to other agencies requiring interface and coordination with the FAA.

1980 – 1983: Area Manager, San Diego TRACON, FAA Western-Pacific Region

Managed activities of an air traffic control and supervisory personnel team, providing air traffic control services to a number of airports in the San Diego area. Responsible for the training, proficiency, and certification of air traffic personnel.

1976 – 1980: Area Supervisor, Coast TRACON, FAA Western-Pacific Region

Supervised and assisted a team of air traffic control specialists.

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1975 – 1976: Area Supervisor, Tucson TRACON, FAA Western-Pacific Region

Supervised and assisted a team of air traffic control specialists. Served as liaison between the facility and other FAA entities on all procedural matters.

1973 – 1975: Plans and Procedures Specialist, Phoenix TRACON, FAA Western-Pacific Region

Responsible for design and implementation of all airspace, procedural, and equipment changes.

1972 – 1973: Air Traffic Control Specialist, Phoenix TRACON, FAA Western-Pacific Region

1968 – 1972: Air Traffic Control Specialist, Sacramento TRACON, FAA Western-Pacific Region

1960 – 1967: Air Traffic Control Specialist, U.S. Air Force

Assigned to a mobile air traffic control organization whose mission was to set up temporary air traffic control towers, ground control approach (*GCA*) radar facilities, and mobile radar approach controls (*RAPCON*) as required by the military.

AWARDS

Outstanding Performance Ratings
Quality within Grade Performance Awards
Performance Management Recognition System Awards
Sustained Superior Performance Awards
Letters of Commendation

EDUCATION

Undergraduate Pre-Med Program, University of South Dakota