THE SECRETARY OF TRANSPORTATION
WASHINGTON, D.C. 20590

February 22, 2011

Mr. William E. Reukauf
Associate Special Counsel
U.S. Office of Special Counsel
1730 M Street, NW, Suite 218
Washington, DC 20036

Re: OSC File No. DI-10-0680

Dear Mr. Reukauf:

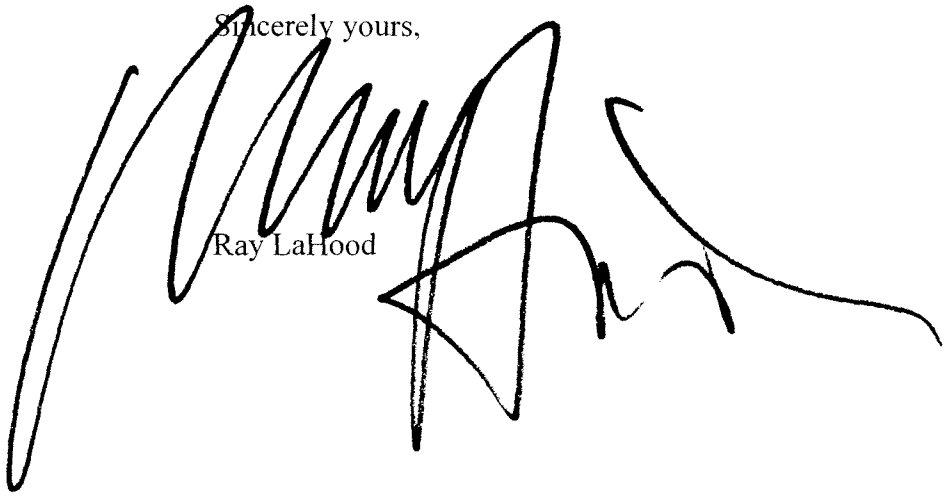
I am responding to your letter of February 18, 2010, which referred for investigation disclosures from Dean Iacopelli, an air traffic control specialist assigned to the Federal Aviation Administration's (FAA's) New York Terminal Radar Approach Control facility. Mr. Iacopelli disclosed that the Dalton Departure Procedure at New Jersey's Teterboro Airport (Teterboro) poses a safety hazard because (1) pilots are "confused" about the procedure and, as a result, exceed its 1,300-foot altitude restriction, and (2) aircraft departing from the airport are allowed to fly directly below, and in close proximity to, heavy jet aircraft on final approach to Newark Liberty International Airport (Newark) without providing protection for wake turbulence. I delegated investigative responsibility for this matter to the Office of Inspector General (OIG). Enclosed are the OIG's Report of Investigation and FAA Administrator Babbit's response.

In sum, OIG substantiated Mr. Iacopelli's disclosure that some pilots, because of unfamiliarity with the Dalton Departure Procedure, did not fly the procedure as designed. When this occurred, aircraft departing Teterboro were at risk of coming in contact with aircraft descending overhead on final approach for arrival at Newark. The OIG also found that controllers suggested the procedure to pilots who were unfamiliar with it and this contributed to pilots not flying the procedure correctly. The OIG, however, did not find substantial evidence that pilots flying the Dalton Departure Procedure experienced unsafe wake turbulence from Newark arrivals.

FAA Administrator Babbitt reviewed OIG's findings and FAA implemented safeguards associated with the Dalton Departure Procedure, including requiring controllers to cease suggesting the procedure to pilots. In addition, FAA has established controls to ensure pilots have a copy of the procedure before they fly it and facilitated training and awareness initiatives about the procedure for both pilots and controllers. Finally, in order to determine if any other safety steps are necessary, FAA plans to collect radar and audit data to determine the nature and extent of the risk associated with the procedure.

I appreciate Mr. Iacopelli's diligence in raising these concerns.

Sincerely yours,



Ray LaHood

Enclosures

U.S. Department of Transportation
Office of Inspector General

REPORT OF INVESTIGATION	INVESTIGATION NUMBER I10C000039SINV	DATE Jan. 21, 2011
TITLE Teterboro Airport, NJ, Dalton Departure Procedure	PREPARED BY: Joseph Garcia Investigator, and Mary E. Hanson, Senior Investigator Special Investigations, JI-3	STATUS FINAL
	DISTRIBUTION FAA AJO-1	APPROVED BY: JI-3 (rce/blb)

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BACKGROUND

On February 18, 2010, the U.S. Office of Special Counsel referred a whistleblower disclosure from a Federal Aviation Administration (FAA) air traffic control specialist at the New York Terminal Radar Approach Control (TRACON) to U.S. Secretary of Transportation Ray LaHood for investigation. The whistleblower disclosed that the Dalton Departure Procedure at New Jersey's Teterboro Airport (Teterboro), poses a safety hazard because (1) pilots are confused about the procedure and exceed its 1,300-foot altitude restriction, and (2) aircraft departing from the airport are allowed to fly directly below, and in close proximity to, heavy jet aircraft on final approach to Newark Liberty International Airport (Newark) without providing protection for wake turbulence. The Secretary delegated investigative responsibility to the Office of Inspector General. Attachment 1 describes the methodology of our investigation.

Teterboro is a general aviation and charter services airport located approximately 11 miles northeast of Newark. Designated as a "reliever" airport, Teterboro's focus is on removing the smaller and slower aircraft from the regional air traffic that would cause major congestion at area commercial airports. Newark is a commercial airline and cargo airport. Attachment 2 is a map of the two airports in relation to each other.

Aircraft using the Dalton procedure depart Teterboro on Runway 19 and operate at the same time and underneath aircraft that are on final approach to Runway 22 (i.e., descending to land) at Newark. Aircraft on final approach to Newark are operating in Class B airspace — the terminal airspace that is the most controlled and restricted within the National Airspace System. Aircraft departing Teterboro using the Dalton Departure Procedure are operating in Class D and E airspace, which are less restrictive than Class B airspace. For example, pilots operating in B and D airspace must establish two-way communications with air traffic control. No aircraft may enter Class B airspace without prior approval from air traffic control. Aircraft may enter Class D airspace without approval. VFR aircraft operating in Class E airspace may operate without establishing two-way communication with air traffic control. (In simple terms, Class B and D airspace is located over the top of airports and Class E airspace is located in between airports.)

SYNOPSIS

We found by a preponderance of the evidence that the Dalton Departure Procedure may pose a safety hazard, even though it is in compliance with air traffic safety regulations. Our review of aviation incident data related to this procedure disclosed that pilots often do not fly the procedure as designed. When this occurs, Teterboro aircraft may conflict with aircraft that are descending on final approach to land at Newark, posing a risk of collision. Over the last 11 years, the number of reported Aviation Safety Reporting

System (ASRS) incidents regarding this procedure has steadily increased from two in fiscal year (FY) 1999 to 11 in FY 2010 — a 450% increase. Also, four pilot deviations occurred between September 2007 and December 2010 where pilots did not fly the procedure as required and entered Class B airspace without approval at the same time aircraft were descending into Newark. The whistleblower provided an additional five incidents that occurred between April and May 2010 where pilots did not fly the procedure as designed. We found that a contributing factor to pilots not flying the procedure as designed was that controllers solicited the procedure to pilots who were not familiar with it.

During our investigation, FAA took several steps to address the safety hazards associated with the Dalton procedure. Specifically, it mandated that controllers stop soliciting the procedure and initiated training and education programs for pilots. FAA also committed to reviewing data to more fully understand the extent and nature of the risk.

However, we found no substantial evidence that pilots flying the Dalton procedure experienced safety issues as a result of wake turbulence from Newark arrivals. Our review of ASRS found no indication that pilots who flew the procedure were concerned about or experienced wake turbulence from Newark arrivals.

Below are the details of our investigation.

DETAILS

Allegation: The Dalton Departure Procedure at Teterboro poses a safety hazard because (1) pilots are routinely confused about the procedure and exceed its 1,300-foot altitude restriction, and (2) aircraft departing from the airport are allowed to fly directly below, and in close proximity to, heavy jet aircraft on final approach to Newark Liberty International Airport without providing protection for wake turbulence.

FINDINGS

Dalton Departure Procedure

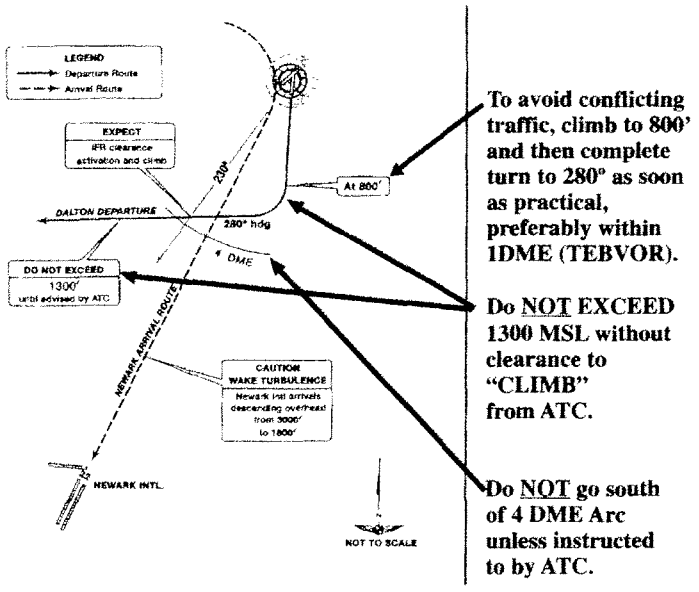
The Dalton procedure was established at least 20 years ago by FAA and the Teterboro Users Group (TUG) as a means to reduce departure delays at Teterboro due to the volume of aircraft arriving at Newark. (TUG is a non-profit organization comprised of diverse aviation industry professionals and companies that extensively utilize Teterboro.) During busy arrival periods at Newark, pilots requesting to depart Teterboro under Instrument Flight Rules (IFR-under the control of air traffic) must — to comply with FAA separation standards for IFR aircraft (e.g., 3 to 5 miles lateral depending on the size of the aircraft or 1,000 feet vertical separation) — wait for a 10 mile gap between Newark arrivals before they can depart. Without this procedure, pilots departing Teterboro IFR

may experience long delays before controllers can clear them for departure in between Newark arrivals and within FAA required separation standards for IFR aircraft under the control of air traffic.

The Dalton Departure Procedure is described in the Special Notices section of the FAA Northeast Airport/Facility Directory in a Terminal Area Graphic Notice. (Attachment 3) The Notice states that pilots should specifically request this procedure by its name; therefore, FAA considers it a voluntary procedure. The procedure allows pilots to depart Teterboro's Runway 19 (Class D and E airspace) under visual flight rules (VFR) at the same time aircraft are arriving at Newark Airport directly above them in Class B airspace. Under VFR rules, pilots operate under the "see-and-avoid" navigation and are responsible for maintaining safe separation from other aircraft.

As depicted in Figure 1, the Dalton Departure Procedure requires pilots to fly a Runway 19 heading until they reach an altitude of 800 feet and then turn right to a 280 degree heading within four nautical miles of Teterboro. Once the right turn is completed and the aircraft passes a certain point beyond the Newark arrival flight path, the pilot is given an IFR clearance and is thereafter under the control of air traffic. During the procedure, the aircraft must maintain an altitude at or below 1,300 feet until the pilot is otherwise instructed by air traffic control. In addition, the special notices graphic includes a note advising pilots: "Caution wake turbulence. Newark arrivals descending overhead from 3,000 feet to 1,800 feet."

Figure 1. Dalton Departure Procedure



Source: Extracted from placard developed by Teterboro Airport for its users.

Because flights operating under the Dalton Departure Procedure remain outside of Class B airspace and the pilot is responsible for maintaining safe separation from aircraft descending to Newark via VFR, FAA IFR separation standards do not apply, including those standards for wake turbulence. In Class B airspace, VFR and IFR aircraft (non-heavy/Boeing 757s [B757]) must be separated by 500 feet vertical or 1.5 miles lateral and for heavy/B757 aircraft (wake), must be separated using IFR separation standards, which in most cases requires 1,000 feet vertical or 5 miles lateral. However, FAA Order 7110.65T, Air Traffic Control, requires air traffic controllers to provide basic radar services (workload permitting) to include safety alerts, traffic advisories, and radar vectoring when requested by the pilot. It also requires controllers to issue wake turbulence cautionary advisories to VFR aircraft operating behind heavy or B757 aircraft regardless of the airspace.

Allegation 1: Pilots are Confused About the Dalton Departure Procedure and Exceed its 1,300-foot Altitude Restriction.

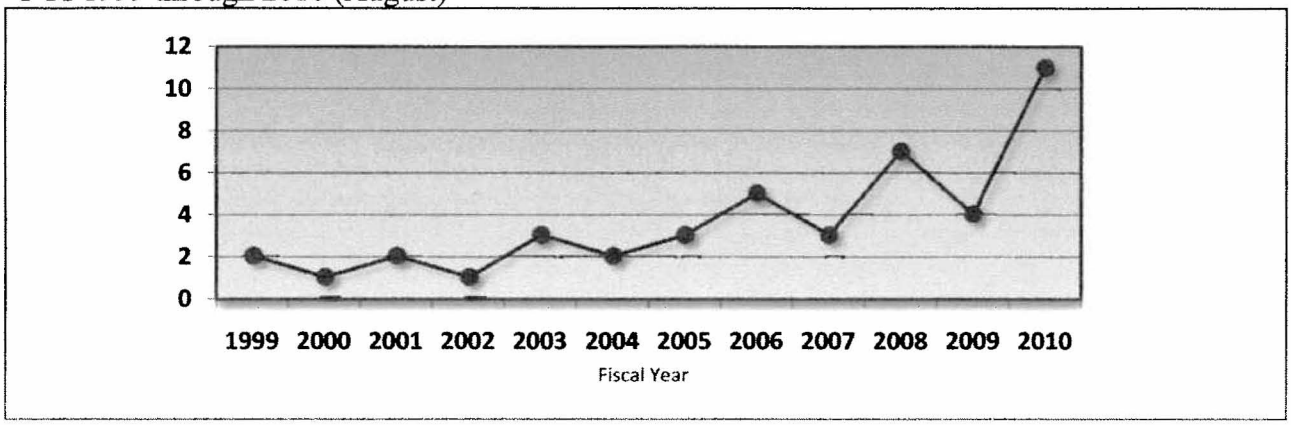
To evaluate whether the Dalton Departure Procedure posed a potential safety hazard, we analyzed the following aviation-related incident data: (1) National Aeronautics and Space Agency (NASA) Aviation Safety Reporting System (ASRS) reports, (2) operational errors and pilot deviations, and (3) whistleblower provided incidents. Our review of the data indicates that even though the procedure is in compliance with air traffic procedures, a potential safety hazard exists when pilots do not fly the procedure as designed. However, we found no evidence that the procedure has contributed to an accident. Nevertheless, during this investigation, FAA took several steps to address the safety of the Dalton Departure Procedure.

ASRS Reports

NASA maintains a database — the ASRS — that the aviation community uses to confidentially report aviation related safety issues. Our review of pilot and controller ASRS entries for the Dalton procedure indicated a safety hazard exists when pilots failed to fly the procedure as designed. The ASRS data reflected that air traffic controller solicitation of the Dalton procedure to pilots who were not prepared to execute it or were unfamiliar with it was a contributing factor in creating the hazard.

As shown in Figure 2, over the last 11 years the number of reported ASRS incidents regarding this procedure has steadily increased from two in FY 1999 to 11 in FY 2010, a 450% increase. The significant increase in incidents in FY 2010 is an indicator that the safety risk associated with the procedure has increased. The majority of these reports (8 of the 11) came from pilots.

Figure 2. Number of ASRS Reports Concerning the Dalton Departure Procedure — FYs 1999 through 2010 (August)



Our review of the 44 ASRS entries disclosed that, on 14 occasions, controllers solicited the Dalton Departure Procedure to pilots that were not prepared to execute it or were unfamiliar with it. The solicitation by controllers contributed to these pilots not flying the procedure as designed, thereby creating a safety hazard. Below are some examples of this phenomenon.

- March 2010: A pilot reported, "Upon receiving the initial ground clearance from clearance delivery, the instruction was to fly the Dalton Departure. I replied we did not have the Dalton in our database, and thus was issued the TEB6 departure. Once at Runway 19, Tower stated there could be a significant delay to depart on the TEB6, and asked if we wanted the Dalton for an expedited departure. Once again I stated we did not have it in our database. He stated he would give it to us verbally, which we copied. Part of the read was "Maintain VFR to 1300 feet", and as the departure altitude was 2000' not stated amended we believed it was VFR to 1300', and then under IFR control to 2000'. Once on Departure Control they had expected us to be at 1300', and stated there could have been a conflict."

- February 2010: A pilot reported, "On initial call for clearance I was asked if I could accept the Dalton Departure. I said I would have to locate a chart as it was not part of our normal Commercial Chart package. The Captain located the chart on line in PDF form and printed it off. I reviewed its contents with ATC and was confident we could comply. After departure ATC asked why we were turning and explained that we were not to start the initial turn until 800 AGL. I had misread the departure procedure."

- October 2009: A pilot reported, "We received the TEB 6 departure on initial clearance via PDC. The FMS was programmed for the TEB 6 departure Runway 19 and the altitude preselect was set to 2000 for the initial climb limit. When we contacted clearance delivery to verify squawk and receipt of PDC clearance, we were asked if we could accept and then we were assigned the Dalton Departure (VFR) Runway 19. The TEB 6 Departure was deleted from the FMS and the

Dalton Departure was reviewed. The departure was displayed on the MDU (electronic charts) and a paper copy was printed. Both crewmembers missed the initial altitude data block to maintain 1300 MSL for the new departure and we briefed an initial climb to 2000 MSL. After departure the Tower told us to contact departure and we climbed to 2000 and did not level at 1300 as assigned on the last cleared departure."

- May 2008: A pilot reported, "We were departing TEB arpt conducting a training flt for me a new coplt with the company. We were assigned the dalton dep which the crew had never done before. During the DEP the crew misread the DEP and dialed 13000 ft instead of 1300 ft. I checked in with DEP and advised them we were clbing to 13000 ft. ATC advised us of our altitude dev and we quickly dsnded .... Deps from these types of arpts are demanding as it is and with training a new person in this environment there is no teamwork."

In addition, in December 2009, a controller reported safety concerns about the procedure as follows: "C650 departed TEB on the DALTON Runway 19 departure climbed to 1,900 FT realized he climbed too high and put the aircraft into a dive, the low altitude alarm went off and the C650 leveled off at 1,200 FT. At the same time an air carrier aircraft was cleared for the ILS 22L to EWR. When I turned them onto the localizer I told them about the TEB departure and said "no factor" the next thing I said to them was "stop your descent!" Apparently they were watching the TEB departure and held off descending on the glide slope. So we have two aircraft in the most critical phase of flight one on departure climbout in a radical descent and the other on final approach well above the glide slope ... The DALTON 19 departure was originally designed for locally based aircraft whose pilots were familiar with the complexities of the area and were briefed on the procedure and signed a letter of agreement. Fast forward to today: the Dalton19 departure has morphed into a procedure to expedite traffic.... From what I understand the pilots are told that the Dalton departure is available for immediate takeoff or the IFR 19 departure can expect anywhere up to an indefinite delay. So the pilot familiarizes him/herself with the Dalton19 departure and requests it! This procedure leaves no room for error. So for a pilot to peruse the procedure and then fly it incorrectly jeopardizes his/her flight, the EWR arrival and people on the ground. This procedure should not be authorized for transients, it should revert back to locally based signatories of the letter of agreement. This is a catastrophe waiting to happen."

FAA Data Regarding Pilot Deviations and Operational Errors

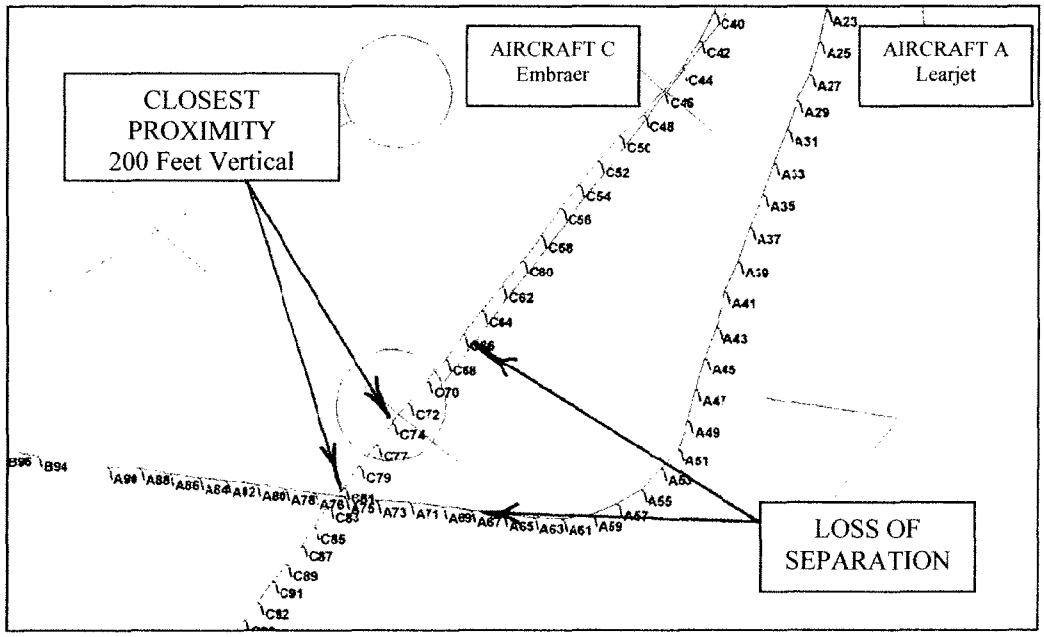
We reviewed FAA data regarding pilot deviations (an action by a pilot that violates the Federal Aviation Regulations) and operational errors (when the action of the controller results in a loss of separation between aircraft) related to the Dalton Departure Procedure. From September 19, 2007, to December 15, 2010, four pilot deviations, but no operational errors occurred while executing the Dalton procedure. (Note: operational error and pilot deviation records are maintained for only 2½ years. Therefore, when we

first requested this information in March 2010, records were only available back to September 19, 2007.)

In the four pilot deviations, pilots either exceeded the required altitude of 1,300 feet or flew past the 4-mile mark for the right turn and entered Class B airspace without authorization. Two pilot deviations also resulted in the violation of Class B separation standards for VFR and IFR aircraft. Additional details regarding these four pilot deviations are provided in Attachment 4.

Figure 3 illustrates the safety risk involved when pilots do not fly the procedure as designed. Specifically, on July 24, 2010, the pilot of a Learjet aircraft departing Teterboro (Aircraft A) made the right turn to a 280 heading about nine miles from Teterboro instead of four miles as required. At 1,200 feet the aircraft crossed in front of the arrival path of an Embraer aircraft (Aircraft C) on approach to Newark. The closest proximity between the two aircraft at this point was 200 feet vertical and 0.69 miles lateral, a violation of Class B VFR/IFR separation standards. Although the controller issued the Learjet pilot two traffic advisories, the pilot never reported seeing the Embraer. The Newark arrival passed the same point the Learjet had crossed its arrival path about 14 seconds later.

Figure 3: Air Traffic Control Radar Plot for Pilot Deviation PEAR-N90-10-038



Source: NY TRACON Quality Assurance Manager. (This is not an exact representation of the control position display.)

Whistleblower Provided Incidents

The whistleblower provided five incidents occurring between March 20, 2010, and May 28, 2010, where pilots did not follow the procedure as designed. To evaluate these incidents, we requested the New York TRACON's Quality Assurance Manager and a representative from FAA's Air Traffic Organization (ATO), Office of Safety to obtain additional information. Our review of this information disclosed that:

- In all five incidents, pilots exceeded the required 1,300 feet altitude.
- Four of the incidents occurred when aircraft were on arrival to Newark.
- In three incidents, pilots entered Class B airspace without authorization — a FAR violation. (One of these incidents was similar to an event reported in ASRS during the same time period.)
- Pilot deviations were not filed for any of the five incidents — an indicator that not all incidents related to the Dalton Departure Procedure are formally reported. Although the three incidents where pilots entered Class B airspace without authorization were clearly pilot deviations, FAA was unable to advise whether pilot deviations should have been filed for the other two incidents where the pilots exceeded the required altitude, but did not enter into Class B. In addition, controllers we interviewed indicated that other incidents have occurred, but unless they cause a conflict with another aircraft, they are not usually reported.

  (Additional details regarding these five incidents are provided in Attachment 5.)

FAA Actions to Address Concerns Related to the Dalton Departure Procedure

In April 2009, FAA's Air Traffic Safety Oversight (AOV) investigated similar allegations made by the whistleblower and recommended three actions to mitigate the risk of pilots not flying the procedure as designed. At that time, FAA took no action to implement these recommendations. However, in response to our investigation, FAA initiated several steps to address the potential safety risk associated with this procedure.

AOV Review of Whistleblowers Concerns. In AOV's 2009 review of the Dalton Departure Procedure, it found that: (i) Teterboro tower controllers were soliciting the procedure; (ii) pilots were not familiar with the procedure, or confused it with a similar IFR departure procedure and; (iii) controllers were concerned because IFR wake separation was not provided to aircraft using the Dalton procedure and were unsure what pilots would do in the event of a loss of communications. AOV recommended that (i) Teterboro cease controller solicitation of the procedure; (ii) training be provided to pilots based at Teterboro and that pilots certify they are familiar with the procedure before they are allowed to fly it; and (iii) the published procedure be modified to include additional information to the pilots regarding the lack of wake turbulence separation and loss of communication.

After completing the investigation, AOV representatives verbally briefed ATO's Office of Safety on their findings and provided it a copy of its report in September 2009. However, the Office of Safety did not further disseminate or take action on the recommendations in the report because: (i) the only recommendation with which it concurred with AOV was the requirement that air traffic control personnel not solicit the procedure and (ii) Terminal Services had stated that solicitation was already prohibited. Prior to AOV conducting its investigation, the Office of Safety had reviewed previous NATCA safety concerns about the procedure and met with Terminal Services and New York TRACON management to discuss them. At that time, Terminal Services and New York TRACON management indicated that Teterboro air traffic control did not solicit requests for this procedure.

ATO's Response to OIG Investigation. To assess the safety of the Dalton Departure Procedure, we asked ATO if it had performed a formal risk assessment. In response, the ATO indicated that since the Dalton Departure Procedure fully complied with air traffic procedures at the time it was implemented (over 20 years ago) and similar VFR departures were (and continue to be) allowed, it believed the procedure was a significant safety enhancement over VFR-only procedures. Therefore, because the procedure was considered a safety enhancement, no risk assessment was conducted. We further determined that the Dalton Departure Procedure long pre-dates the implementation of the Safety Management System (which requires safety risk analysis) and was accepted into the existing NAS in March 2005 (FAA Order 1100.161); therefore, no formal risk assessment would have been required.

The ATO believes the Dalton Departure Procedure adds an additional layer of safety because it is a charted procedure and includes air traffic control safety advisories, which would be unavailable if pilots elected to depart Teterboro VFR-only. Also, ATO believes that: (i) having a published procedure creates a more predictable flight path for the Teterboro and New York TRACON controllers than simply allowing VFR-only procedures; (ii) the risk of pilot deviations is lower utilizing the procedure than with VFR departures; and (iii) discontinued use of the procedure would increase the risk profile to the Teterboro/Newark airspace.

Nevertheless, ATO recognized that reports from various safety data sources suggest that the usage of the procedure requires additional scrutiny and that continued safe use of the procedure may require the development and implementation of additional corrective actions, over and above those already implemented. ATO also recognized that Teterboro-based pilots likely have greater awareness of the local air traffic flows, such as overhead Newark arrivals, than transient pilots who may not have previous experience with the procedure and airspace.

Therefore, as a result of this investigation, the ATO initiated several safeguards between May and September 2010 to address safety hazards related to the Dalton Departure Procedure. Specifically, the ATO clarified its definition of "solicitation," Teterboro ceased all controller solicitation of the procedure, and local and external checks were established to ensure compliance. In addition, controls were put in place to ensure pilots have a copy of the procedure before they fly it, and training and awareness initiatives were established for controllers and pilots. Attachment 6 provides additional details on these actions.

However, before ATO proposes or implements any additional actions, it plans to evaluate any proposed action's impact and effectiveness by conducting a detailed quantitative evaluation. Absent a more thorough analysis, ATO is concerned about potential unintended risks and adverse consequences associated with fundamental changes in the current procedure. In the meantime, ATO will collect radar and audit data to quantify the risks identified from the various FAA safety-related data and more fully understand the extent and nature of the risk.

Allegation 2: Aircraft Using the Dalton Departure Procedure are Allowed to Fly Directly Below, and in Close Proximity to, Heavy Jet Aircraft on Final Approach to Newark Liberty International Airport Without Providing Protection for Wake Turbulence.

Although the whistleblower and other controllers we interviewed believe wake turbulence poses a safety hazard, our review of ASRS pilot reports and whistleblower provided incidents found no substantial evidence that pilots flying the procedure experienced safety issues as a result of wake turbulence from Newark arrivals.

FAA Guidance

According to FAA Advisory Circular (AC) 90-23f, Aircraft Wake Turbulence, wake turbulence is caused by a pair of counter-rotating vortices trailing from the aircraft wing-tips. The wake of these large aircraft can impose rolling moments exceeding the control authority of aircraft that fly into it or if encountered at close range can damage aircraft components or equipment and cause personal injuries. The AC states that pilot must learn to envision the location of the vortex wake generated by larger (transport category) aircraft and adjust his/her flight path accordingly.

The application of IFR wake separation for VFR aircraft is dependent on the type of airspace the operation being conducted is utilizing even though the operations may be similar. For IFR aircraft (those under the control of air traffic), FAA Order 7110.65T, paragraph 5-5-4e, requires controllers to separate aircraft operating directly behind heavy aircraft by five miles laterally unless the trailing aircraft is 1,000 feet or more below the aircraft. In addition, paragraph 7-9-4, requires these same wake separation standards be

applied between VFR and IFR aircraft in Class B airspace. However, because aircraft departing Teterboro are operating under VFR rules in Class D or E airspace, the IFR wake separation standards do not apply.

However, FAA Order 7110.65T, paragraph 2-1-20 requires controllers to issue wake turbulence cautionary advisories and the position, altitude (if known), and direction of flight of the heavy jet to VFR aircraft operating behind heavy jets regardless of the airspace. This paragraph also references AC 90-23 paragraph 12, Pilot Responsibility. Paragraph 12 indicates that it is the VFR pilot's responsibility for avoiding wake turbulence.

Whistleblower and Controller Concerns

The whistleblower and NY TRACON controllers we interviewed believe that wake turbulence poses a safety risk to aircraft flying the Dalton Departure Procedure because IFR wake separation standards are not required. In addition, two of the three controller-only ASRS reports cited concerns about the lack of wake turbulence separation.

The whistleblower contends that the Dalton Departure Procedure is, in reality, an IFR operation because pilots are given an IFR clearance for the latter part of the procedure, at which point air traffic becomes responsible for the aircraft. In contrast, for VFR-only operations, pilots are responsible for all phases of the entire flight from their departure from Teterboro to their destination airport. The whistleblower alleges FAA is allowing the first part of the procedure to be "VFR" for the sole purpose of not having to afford pilots IFR wake turbulence separation to accommodate efficiency instead of safety.

ASRS Pilot Reports

To determine if pilots have reported wake turbulence as a safety hazard, we evaluated the 41 pilot-reported ASRS records regarding the Dalton Departure Procedure for the 11-year period from FY 1999 to FY 2010. We found no specific pilot reports of wake encounters from Newark arrivals during the procedure. We also queried the ASRS database specifically for "wake vortex encounter" (a specific event category tracked in ASRS) for the same 11-year period for both Teterboro and Newark. We found only one report (July 2010) from a pilot who was "transitioning" through the Teterboro airspace related to wake turbulence and it did not appear to be related to a Dalton Departure flight from Teterboro.

Whistleblower Provided Incidents

The whistleblower provided nine incidents, in which aircraft that departed Teterboro using the Dalton Departure Procedure were behind a Newark heavy aircraft arrival and did not have IFR wake separation. To evaluate these incidents, we requested the New

York TRACON's Quality Assurance Manager and a representative from ATO's Office of Safety to obtain additional information about these occurrences.

Our review of these nine incidents disclosed that for:

- Six, we could not independently verify the details of the incidents because radar data or other records were not available.
- Two, IFR wake separation was not maintained between the aircraft. However, because the aircraft were VFR in Class D or E airspace, wake separation was not required. TRACON controllers did not issue wake turbulence advisories and it was not known if Teterboro tower controllers issued the advisories.
- One, IFR wake separation was maintained because the Teterboro aircraft was 1,000 feet or more below the Newark arrival.

(Additional details regarding these nine incidents are provided in Attachment 5.)

Providing the wake cautionary advisory is key for ensuring pilots are aware of the potential for wake and can take appropriate actions to avoid it, if needed. During our investigation we were told that if the Teterboro controllers are aware of a heavy aircraft on arrival, they will issue the advisory. However, we found nothing in writing requiring this. A letter of agreement between New York TRACON and Teterboro dated April 20, 2000, requires Teterboro controllers provide traffic advisories to traffic on the Dalton Departure Procedure on Newark arrivals to Runways 22L/R. However, it is silent on wake cautionary advisories.

Furthermore, one technical expert told us that wake turbulence cautionary information provided to pilots in Class B airspace is more informative and the pilot is more aware of the situation which allows better planning for the pilot. Whereas for the Dalton Departure, the wake turbulence advisory is given just prior to, or at the same time, the take off clearance is given, providing less time for the pilot to contemplate the impact of the wake turbulence. In addition, ATO Safety representatives told us that NY TRACON controllers are in a better position to provide the wake advisories because they can better identify the position of the heavy aircraft to the Dalton Departure as required by FAA Order 7110.65T, paragraph 2-1-20.

Additional Concern

During our interview with the whistleblower, he expressed a concern regarding the possibility of aircraft losing radio communications with air traffic controllers when flying the Dalton Departure Procedure. The whistleblower indicated it was not clear whether the aircraft would consider itself IFR and start climbing or VFR and go back to Teterboro airport. When it conducted its review in 2009, AOV also found that controllers were unsure of what pilots would do in the event of a loss of communications.

However, we found that the Federation Aviation Regulations provide requirements for this situation. Specifically, 14 CFR 91.185, "IFR operations: Two-way radio communications failure" requires the following for operations under VFR conditions (which is a requirement for the Dalton Departure Procedure): "If the failure occurs in VFR conditions, or if VFR conditions are encountered after the failure, each pilot shall continue the flight under VFR and land as soon as practicable."

Therefore, as required by the FAR, controllers should expect the pilot to remain VFR and not take their IFR clearance to climb. Only under IFR conditions, would the pilot continue its assigned route (i.e., climb). In addition, pilots are instructed to set their transponder code to 7600 which alerts controllers that the aircraft's radio is not operating.

ATTACHMENT 1: METHODOLOGY OF INVESTIGATION

We analyzed, among other things, FAA correspondence and emails, FAA regulations and orders, FAA incident reports and supporting documentation, AOV Reports, NASA ASRS reports, and TUG information. In addition, a representative from ATO's Safety office assisted us. We also interviewed and obtained information from various witnesses, including:

New York TRACON Representatives

- Dean Iacopelli, Air Traffic Control Specialist, Facility NATCA Representative
- Jeffrey Clarke, Air Traffic Manager
- Edward Garlick, Support Manager for Quality Assurance
- John Lucia, Operations Manager
- John Chianese, Front Line Manager
- Steven Ryan, Front Line Manager
- Robert Clarke, Air Traffic Control Specialist, NATCA Representative for Newark Area
- John Conklin, Air Traffic Control Specialist, Newark Area
- Timon Kalpaxis, Air Traffic Control Specialist, Newark Area

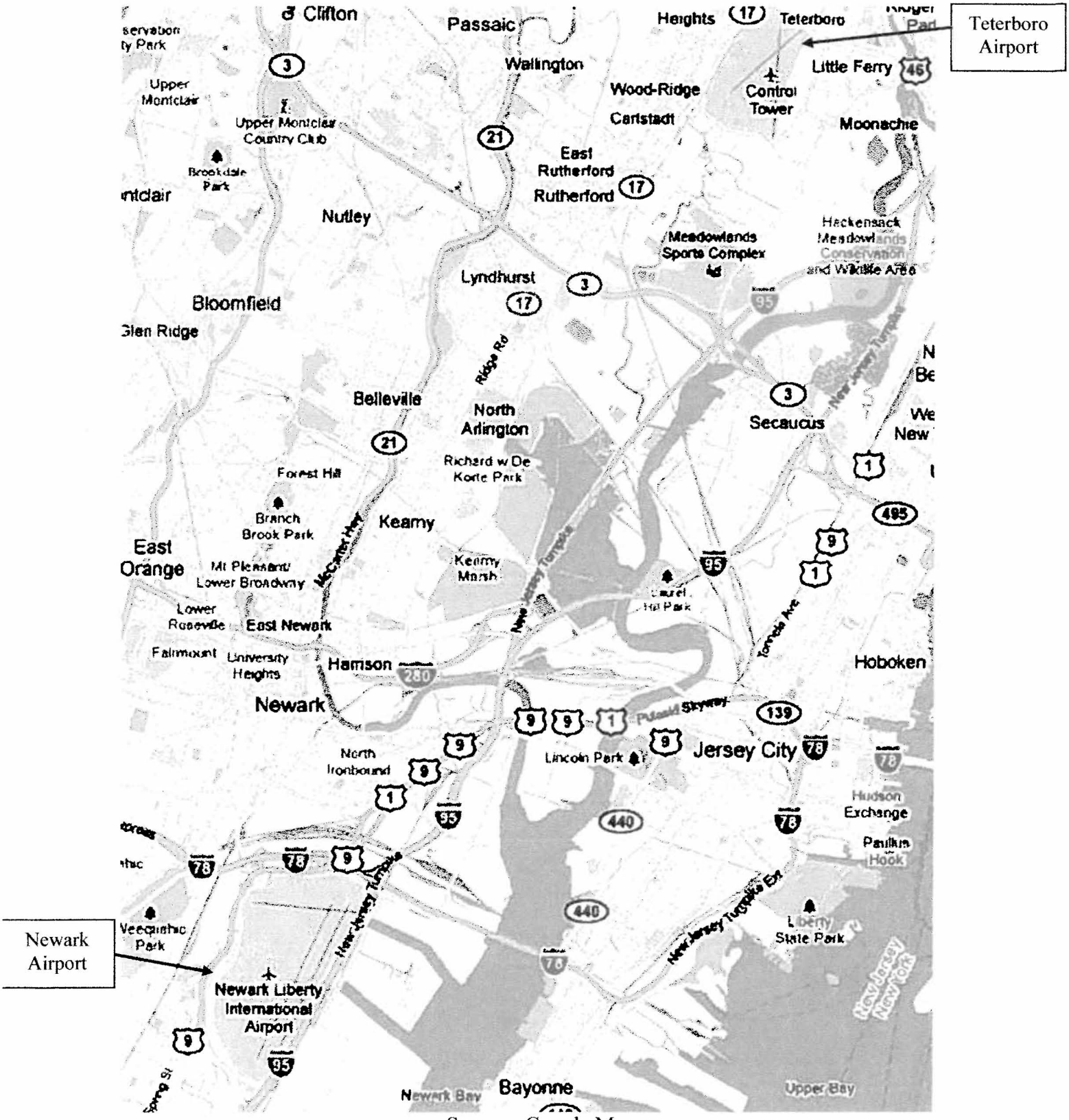
Teterboro Air Traffic or Airport Representatives

- Gary Palm, Air Traffic Manager, Teterboro
- Peter Bellini, Manager, Airport Delay Reduction Program, Port Authority NY&NJ
- Joseph P. Ritorto, TUG Senior Advisor

Other FAA Representatives

- Carmine Gallo, Eastern Regional Administrator,
- James C. Bedow, Director, Quality Assurance, ATO
- Scott R. Proudfoot, ATSAP Lead Analyst, ATO/former investigator for AOV
- Mark Ward, Manager, Operations Support, Eastern Service Center, ATO
- Barry Knight, Team Manager, System Support, Operations Support, Eastern Service Center, ATO

ATTACHMENT 2: MAP OF TETERBORO AND NEWARK AIRPORTS



Source: Google Maps

ATTACHMENT 3: FAA SPECIAL NOTICE FOR THE DALTON DEPARTURE PROCEDURE

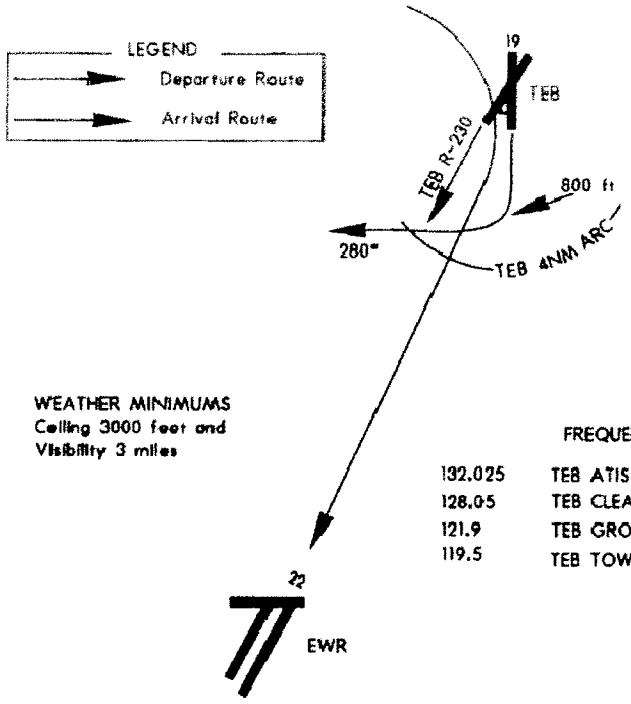
360 SPECIAL NOTICES

TERMINAL AREA GRAPHIC NOTICE
(Not to be used for Navigation)

Teterboro (TEB) Airport Runway 19 VFR Departure Procedure with Transition to an IFR Clearance when Newark is landing Runway 22 and Teterboro is departing Rwy 19.

"DALTON DEPARTURE PROCEDURE"

PILOTS SHOULD SPECIFICALLY REQUEST THIS PROCEDURE USING THE ABOVE NAME.



WEATHER MINIMUMS
Ceiling 3000 feet and
Visibility 3 miles

FREQUENCIES

132.025	TEB ATIS
128.05	TEB CLEARANCE DELIVERY
121.9	TEB GROUND CONTROL
119.5	TEB TOWER

FLY RUNWAY HEADING UNTIL 800 FEET, THEN TURN RIGHT HEADING 280. COMPLETE THE TURN RIGHT WITHIN 4 DME FROM TEB. MAINTAIN VFR AT OR BELOW 1,300 FEET; DO NOT EXCEED 190 KNOTS. IF UNABLE, ADVISE.

EXPECT A CLIMB CLEARANCE AFTER CROSSING THE TEB R-230. THE CLIMB CLEARANCE CONSTITUTES IFR ACTIVATION AND PILOTS ARE EXPECTED TO RESUME NORMAL AIRSPEED. EXPECT CONTROL INSTRUCTION TO A DEPARTURE FIX AS DESCRIBED IN THE PUBLISHED TEB STANDARD INSTRUMENT DEPARTURE.

NOTE: CAUTION WAKE TURBULENCE. NEWARK ARRIVALS DESCENDING OVERHEAD FROM 3000' TO 1800'.

NE, 13 JAN 2011 to 10 MAR 2011

Source: FAA's Northeast Airport/Facility Directory obtained from http://aeronav.faa.gov/pdfs/ne_rear_13JAN2011.pdf

ATTACHMENT 4: SUMMARY OF PILOT DEVIATIONS OCCURING DURING THE DALTON DEPARTURE PROCEDURE

Pilot Deviation Report Number PEAR-N90-	Date	Altitude	Foreign Pilot	Summary Description
08-022	5/5/08	2,200	No	Pilot misread the required altitude as 13,000 feet instead of 1,300 feet. Pilot climbed to 2,200 feet when a controller advised aircraft to stay at 1,300. At 1,900 feet the aircraft (Learjet) crossed 2.19 miles directly behind a Newark arrival (B757).*
09-007	1/22/09	2,300	Yes	Pilot took a clearance for another aircraft to climb to 3,000 feet. Pilot climbed to 2,300 feet when a controller instructed pilot to descend immediately back to 1,300 and maintain separation from Newark arrival. At 2,100 feet the aircraft (Falcon) crossed in front of the flight path of a Newark arrival (de Havilland Dash 8) within 500 feet vertical and 0.96 miles lateral separation.
09-077	12/7/09	1,800	Yes	Pilot climbed to 1,800 feet when the controller advised aircraft it should be at 1,300 feet. After descending back to 1,300, aircraft (Cessna) crossed in front of the flight path of a Newark arrival (Embraer) within 1,600 feet vertical and 0.87 miles lateral separation.
10-038	7/24/10	1,300	Yes	Pilot did not turn to a 280 degree heading within 4 miles as required and continued 9 miles, entering Class B airspace. At 1,200 feet the aircraft (Learjet) crossed in front of the flight path of a Newark (Embraer) arrival within 200 feet vertical and 0.69 miles lateral separation.*

* These two pilot deviations also resulted in the violation of Class B separation standards for VFR and IFR aircraft. Pilot deviation 08-022 in class B airspace required wake separation of 5 miles lateral or 1,000 feet vertical. Pilot deviation 10-038 in class B airspace required standard separation of 1.5 miles lateral or 500 feet vertical. These two incidents are also similar to ASRS reports filed about the same time.

ATTACHMENT 5: SUMMARY OF WHISTLEBLOWER PROVIDED INCIDENTS

Date	Description as provided by the Whistleblower	OIG Review Results
Wake Separation Incidents-Unable to Review		
3/20/2010	Aircraft ended up directly behind a H/B767 (less than 1 mi.) and vertical separation was about 700-800 ft. The call signs on this one were UAL35 and N806AC (G-5). This incident occurred at approx. 1811Z.	Could not review due to lack of radar voice/45 day retention or other records.
4/1/2010	Incident 1: 1530z: VNR134 1-2 miles directly behind H/767, less than 1000ft	
4/1/2010	Incident 2: 1540z: PRBRS 3 miles behind 757 within 400ft.	
4/1/2010	Incident 3: 1612z: EJA498 4 miles behind H767 within 400ft.	
4/1/2010	Incident 4: 1630z: EJA705 2 behind B757 within 400ft	
4/6/2010	1352z: EJM 745/G4 200ft and 1.6 miles behind a EWR arrival COA475 a H/B757. (Note: a second incident was provided for this date but it was a missed approach not the Dalton so it was excluded)	
Wake Separation Incidents-Accurate/No Wake Advisory Issued		
5/11/2010	1439z FSR103 LJ35 departed on the Dalton and passed behind COA39 a B757, separation 400ft and 2.5 miles.	Report appears accurate but N90 controller only issued "radar contact" and never gave a wake turbulence advisory as required.
5/11/2010	1450z JLG421 a LJ35 passed 4 miles, 0ft behind COA106 a H B767.	Report appears accurate but N90 controller only issued "radar contact" and never gave a wake turbulence advisory as required.
Wake Separation Incident-Not Validated		
5/6/2010	1244L EJA687, Citation a Dalton departure came within 2.5 mi and 500ft of COA97 a B757 (citation passed behind)	EJA687 was 1000 ft below and 3.47 miles when it passed behind the B757. Therefore met IFR separation (1000 ft).

Date	Description as provided by the Whistleblower	OIG Review Results
Incidents-Not Following Procedure As Designed		
3/20/2010	Corporate aircraft climbed to 2000' in front a commuter aircraft inbound to EWR. The end result was a loss of separation approximately 1.1 mi. and 400ft. The [FAA] employee working the aircraft was traumatized and filed an on the job injury report.	N90/Teterboro ATCT reviewed this incident on the same date. Also reviewed by Eastern Service Quality Control Group. FIV432 C525 climbed up to 1,900 ft (Class B). CJC3223 DH8D passed thru its projected course. Separation was 800 vertical/.90 lateral. Not a loss of separation for Class B VFR (500 ft or 1.5 mi). No Pilot Deviation filed because Teterboro had solicited the procedure.
4/29/2010	0800L N3669A BE36, a Dalton departure climbed to 2000ft. Directly above N3669A was MES3510 CRJ an EWR ILS 22L arrival beginning descent out of 3000ft. The aircraft were less than 1000ft and 3mi lateral. MES3510 received a CA/RA and turned off the localizer to go behind N3669A then rejoined to continue with the approach	Call sign should have been N3699A. Wake advisory issued but not a traffic advisory. Altitude not available for N3699A but MES3510 was at 3,000 and deviated east in response to traffic. No Pilot Deviation filed even though most likely entered Class B.
4/30/2010	1121z CGCIX, HS25 a Dalton departure climbed to 2000ft in front of BTA2006, E145 a Newark Arrival. Separation lost no action taken. Not sure if the FLM was notified	CGCIX climbed to 1,600 on 240 heading when BTA was at 2,100ft descending. Separation was 500 ft and 1.97 miles when BTA passed through projected course of CGCIX.
5/1/2010	1251z LXJ537, CL30 a Dalton departure climbed up to 3000. No EWR was overhead.	LXJ537 reported in to controller at 3,000 (Class B) but controller did not catch. Controller later informed pilot it was not correct. No Pilot Deviation filed.
5/28/2010	8:49L CGRBZ a C60(?) departed Dalton 19 and climbed through 1300. He was told to remain at or below 1300. CGRBZ reached 1700ft before descending back to 1300ft. CJC 3324 was overhead Teterboro cleared below 3000ft on the ILS 22L.	CGRBZ checked in with N90 "going back down", mode C indicated the aircraft climbed to 1,500 before going back to 1,300. Traffic overhead was at 3,300 descending.

ATTACHMENT 6: DETAILED SUMMARY OF FAA ACTIONS TAKEN TO ADDRESS POTENTIAL SAFETY HAZARDS ASSOCIATED WITH THE DALTON DEPARTURE PROCEDURE

During the OIG investigation, ATO initiated the following safeguards between May and September 2010 for the Dalton Departure Procedure to address controller solicitation and pilot unfamiliarity.

Solicitation:

- The ATO clarified that non-solicitation is considered the absence of a controller "implying, advising, or informing users with regard to the availability" of the procedure.
- Controllers ceased providing a verbal reading of the procedure to pilots over frequency.
- Controllers ceased any on frequency solicitation, implying, advising, or informing pilots of the availability of the procedure.
- Teterboro air traffic management will conduct periodic spot checks to verify compliance with the non-solicitation requirement. The first spot check conducted in October 2010, found controllers were in full compliance with the non-solicitation requirement.
- ATO's Office of Safety and Terminal's Safety and Operational Support will conduct joint periodic audits to ensure compliance with the non-solicitation requirement. The first audit conducted in December 2010, found no indication controllers solicited the procedure.

Unfamiliarity:

- Pilots must specifically request the procedure by name and have a hard copy on hand.
- Pilots are informed that alternate departure procedures are published in the Airport Facility Directory and available from their Fixed Base Operator.
- A statement in Teterboro Airport's Construction Update report which suggested pilots request "the Runway 19 Dalton Departure on initial contact with Clearance Delivery," whenever Runway 24 is closed was deleted.
- Informational posters were created by the Port Authority of New York and New Jersey and posted at Fixed Base Operators. Copies of the procedure were distributed to the Fixed Base Operators and availability will be periodically verified by Airport Operations.

Training:

- Teterboro controllers and managers received in-person briefings regarding prohibition of solicitation. The briefing also included recognition of the need to reduce the errors that have occurred by pilots unfamiliar with the procedure and the critical flight restrictions required by the procedure.
- TUG was provided briefing and radar replay of incidents involving the Dalton Departure Procedure and a training package/briefing was developed for pilots.
- The National Air Transportation Association maintains an on-line "Teterboro Airport Flight Crew Briefing" that includes discussion of the procedure.
- Teterboro management will provide, on a continuous basis, education and information of safety concerns and specific requirements of the procedure to the Port Authority of New York and New Jersey, airport management, and Fixed Base Operators.

ATO has committed to or is considering the following actions:

- Office of Safety and Terminal Services will collect radar and audit data to quantify the risks identified from the various FAA safety related data and more fully understand the extent and nature of the risk.
- Terminal Safety and the ATO's Office of Safety are considering annual familiarization and training for the air traffic staffs at Teterboro and New York TRACON on the potential risk associated with the procedure.
- Terminal Safety is considering requiring Teterboro and New York TRACON pre-coordinate flight transponder code when a pilot desires to use the procedure which will make the flight active and auto-acquire its information immediately following radar identification.

Federal Aviation Administration

Memorandum

Date: FEB 4 2011

To: Ronald Engler, Director, Special Investigations

From: J. Randolph Babbitt, Administrator

Subject: Response to the Office of the Inspector General (OIG) Investigation Case No. # I10C000039SINV, Re: Teterboro Airport (TEB) NJ, Dalton Departure Procedure – ref: your report dated Jan. 21, 2011

The Federal Aviation Administration (FAA) appreciates the efforts of the Department of Transportation, Office of Inspector General (DOT OIG) in conducting a very thorough investigation at the request of the Secretary of Transportation in response to a safety referral from the Office of Special Counsel (OSC). Throughout the course of your inquiry, you have shared your preliminary findings and teamed with our Air Traffic Organization (ATO) in the search for enhancements to the safe use of the Dalton Departure Procedure at the Teterboro Airport (TEB).

We appreciate the OIG's recognition that the FAA did not wait until the conclusion of this investigation to implement significant safety enhancements. After our own thorough evaluation, we have concluded that the continued utilization of the Dalton Procedure at TEB provides a higher margin of safety than the abolition of the procedure, which would increase the number of visual flight rules (VFR) departures conducted in the complete absence of air traffic guidance in very complex airspace.

Our responses to the OIG investigation of the OSC allegations are provided below:

OSC Allegation 1:

"The Dalton Departure Procedure at Teterboro Airport, New Jersey poses a safety hazard because pilots are routinely confused about the procedure and exceed its 1,300-foot altitude restriction."

FAA Response: The FAA concurs with the OIG's findings as written, which did substantiate instances of pilot confusion but did not substantiate that such confusion was "routine" as specified in the OSC allegation. As highlighted in your investigation, the FAA has proactively implemented numerous actions to enhance the safety of the Dalton Departure Procedure. The ATO recognizes that the safety data on Dalton usage from various sources merit additional scrutiny, and the continued safe use of the procedure may still point to the need to develop and implement additional safety enhancements.

On Dec. 14, 2010 the ATO delivered their initial findings based on an audit of radar and voice data from Nov. – Dec. 2010. The ATO found no indication that TEB air traffic control personnel are soliciting the users to request the Dalton Departure based on a limited time period available to audit. During this same audit period ending Dec. 5, 2010, no aircraft using the Dalton Departure were found to have exceeded the 1,300 foot altitude restriction.

However, the ATO recognizes that the first audit was limited and will conduct another audit concluding with a site visit to TEB and the New York Terminal Radar Approach Control (TRACON, N90) during late Mar. 2011. The site visits will permit an accurate review of logs containing VFR departures from TEB, radar and audio replays, training records, and interviews. The ATO will utilize radar and audit data to quantify the risks identified from the available reports (Air Traffic Safety Action Program – ATSAP & Aviation Safety Reporting System – ASRS) and more fully understand the extent and nature of the risk. ATSAP is a primary method that controllers may utilize to report system risks, and ASRS is a preferred venue for filing pilot safety reports.

While the ATO is concerned about potential unintended adverse consequences associated with fundamental changes in the current procedure, the FAA will continue to pursue additional measures to mitigate the risk when/if such measures are validated as safety enhancements. An updated report following our site visits will be provided to the OIG.

The FAA will conduct a review of reported pilot-deviations (PD) when an aircraft flying the Dalton Departure exceeds the 1,300 foot altitude restriction. We also understand that the OIG is concerned that even though an "excursion" from the approved procedure may not meet the technical definition of a "pilot deviation," there is merit in ensuring that those data are also collected as a means of identifying future safety enhancements. N90 is currently logging such excursions, but will place an added emphasis on capturing those data.

OSC Allegation 2:

"The Dalton Departure Procedure at Teterboro Airport, New Jersey poses a safety hazard because aircraft departing from the airport are allowed to fly directly below, and in close proximity to, heavy jet aircraft on final approach to Newark Liberty International Airport without providing protection for wake turbulence."

FAA Response: The FAA concurs with the findings of the OIG investigation, which did not substantiate that pilots flying the procedure experience safety issues as a result of wake turbulence from Newark arrivals. However, the FAA plans to continue monitoring all reported safety events involving departures from TEB, arrivals to Newark Liberty International Airport (EWR), and the transition of aircraft from VFR to instrument meteorological rules (IFR) in the TEB-EWR area. The ATO has committed to regular audits of TEB operations that will include audits of radar and audio records to validate that training is occurring and solicitation is not occurring. The next audit will conclude during Mar. 2011.

When the on-site visits to TEB and N90 are conducted, the ATO will verify that wake turbulence cautionary advisories are emphasized in annual training and quality audits. The letter of agreement (LOA) between New York TRACON (N90) and TEB (Apr. 20, 2000), requires TEB controllers provide traffic advisories to traffic on the Dalton Departure Procedure on Newark arrivals to Runways 22L/R.

An additional focus of our site visits will be additional training and awareness of controllers on lost communications procedures pilots must utilize should radio contact be lost while executing the Dalton Departure. Additional efforts will be made to communicate these lost communication procedures to the pilot community.

In order to further increase our efforts to educate the pilot community, the Air Traffic Manager (ATM) from TEB will attend all Teterboro User Group (TUG) meetings and address the pilot-controller responsibilities. Monthly airport manager's meetings also offer the ATM an opportunity to address the Dalton Departure with fixed-base operators and other TEB-based users. In addition, the Air Traffic Safety Organization will continue to pursue new venues in which to improve knowledge and awareness of the Dalton Procedure in the pilot community.

In summary, the FAA has planned deliberate safety reviews in response to the OIG investigation. Audits of data from TEB and N90 will include pilot and controller reports, radar and audio recordings, training records, policies and procedures, and will culminate with on-site visits Mar. 2011. Following our on-site visits, the ATO will consider additional risk mitigation measures.

If additional information is needed please contact Clay Foushee, Director, Office of Audit and Evaluation at (202) 267-9440.

Attachments:

Office of Safety (AJS) memo to AAE dated Dec. 14, 2010
AAE memo to OIG dated Oct. 27, 2010
Office of Safety (AJS) memo to OIG dated Sep. 3, 2010
Office of Safety (AJS) memo to OIG Investigator dated Aug. 6, 2010
Terminal Services (AJT) memo to OIG Investigator dated May 18, 2010

cc: Director, Office of Audit & Evaluation (AAE)
Senior Vice President, Operations (AJN)
Vice President, Office of Safety (AJS)

Federal Aviation Administration

Memorandum

Date: DEC 14 2010

To: Clay Foushee, Director, Office of Audits & Evaluations, AAE-1

From: for Robert O. Tarter, Vice President, Office of Safety, AJS-0

Subject: Teterboro (TEB) Dalton Departure Radar and Audio Reviews

Background:

The purpose of this on-site visit and radar data review of operations at Teterboro (TEB) was to determine operational compliance with facility and Service Center initiatives to cease solicitation of the DALTON departure procedure following an OIG investigation, and to complete analysis of the operation as committed in a Memorandum dated October 27, 2010 from Clay Foushee, Director, Audits & Evaluations to Ronald Engler.

On December 1, 2010, the Office of Safety, Quality Assurance and Terminal Safety & Operations Support performed an on-site audit using a combination of Continuous Data Recording (CDR) Player Plus (radar replay tool) and Digital Audio Legal Recorder (DALR) (voice recordings replay tool) spanning a period of 26 days from November 1 to November 26, 2010. The data reviewed consisted of voice recordings of over 110 clearances given by the TEB Airport Traffic Control Tower (ATCT) and a recorded radar of over 300 departures from Runway 19 at TEB. Additionally, a desk audit using Performance Data Analysis and Reporting System (PDARS) was conducted. The objective of this PDARS desk audit was to determine whether any losses of seperation (per FAA Order 7110.65, *Air Traffic Control*) occurred between TEB runway 19 DALTON departures and EWR runway 22 arrivals. The PDARS audit consisted of an anaylsis of 45 days, from October 22 to December 5, 2010.

Additionally, Mandatory Training Briefing Items were reviewed and interviews of facility staff were conducted to assist in determining facility nonsolictation compliance.

Findings:

1. Solicitation: There is no indication that TEB personnel are participating in the solicitation of the DALTON departure procedure. The data reviewed indicates full compliance by TEB ATCT and revealed that all aircraft that departed TEB via the Dalton Departure Procedure did so at the specific request of the pilot.

2. Separation between TEB DALTON departures and EWR runway 22 Arrivals: There were 631 TEB runway 19 departures during the 45 days reviewed. Of these, PDARS analysis showed approximately 340 west bound departures. Of these west bound departures, 118 aircraft flew underneath the EWR 22 arrival course at or below 1,500 feet (the floor of Class B airspace) and appear to be DALTON departures. Of these 118 DALTON departures, there were only 4 aircraft that came within 3 miles and 500 or less feet of a EWR runway 22 arrival. None of these violated any separation standards per FAA order 7110.65. Three of the four instances involved non-heavy EWR arrivals with DALTON departures passing behind. In the one instance involving a heavy EWR arrival and a DALTON departure less than 500 feet below, the DALTON departure remained VFR below the floor of class B airspace until past the EWR arrival course.

If additional information is needed, please contact James C. Bedow, Director, Quality Assurance at (202) 385-4777.

Federal Aviation Administration

Memorandum

Date: October 27, 2010

To: Mr. Ronald Engler, Director, Special Investigations, Office of Inspector General

From: Clay Foushee, Director, Office of Audit & Evaluation

Subject: Response to OIG Follow-up Questions Regarding Dalton Departure Procedure at Teterboro NJ

This memo is in response to your Aug. 17, 2010 request for additional information on the FAA's investigation of the Dalton Departure procedure at Teterboro Airport (TEB) NJ. The Air Traffic Organization (ATO) recognizes that reports from various data sources suggest that usage of the Dalton Departure requires additional scrutiny and that continued safe use of the procedure may require the development and implementation of additional corrective action(s), over and above those already implemented. Before proposing and implementing any additional safeguards, it is essential that the ATO evaluate their impact and effectiveness, by conducting a detailed, quantitative evaluation. Absent more thorough analyses, ATO is concerned about the risk of potential unintended, and adverse, consequences associated with fundamental changes in the current procedure. This strategy will allow the ATO to fully evaluate all possible measures that could enhance the safety of the Dalton Departure procedure at TEB.

Incident data pertaining to use of the Dalton procedure come from various safety databases and consist of hazard reports, reported losses of separation, near-miss reports, and voluntary safety reports from Aviation Safety Reporting System (ASRS) and the Air Traffic Safety Action Program (ATSAP). Our just completed review of ASRS and ATSAP revealed fifty four (54) reports containing operational safety concerns related to the Dalton Departure procedure at TEB. Reports have been submitted by both air traffic controllers and pilots. In order to more fully understand the extent and nature of the risk, AJS and AJT are in the process of collecting radar and audio data to quantify the risks identified in these reports.

Responses to the additional OIG questions and requests for information are provided below:

1. a. **Question:** Please provide any information that supports the conclusion that the procedure is "safe" when properly followed. Is this statement based on opinion or fact, such as a formal risk or safety assessment? Was there a safety or risk assessment conducted to address the safety of this procedure when it was originally implemented? Has such an assessment been performed to address the change in the mix of traffic since the original procedure was implemented (i.e. increase in jet aircraft)? If so, please provide the detail and a copy of any such assessments.

FAA Response: The Dalton Departure procedure is flown only in visual meteorological conditions by Instrument Flight Rules- (IFR) certified pilots, using established, charted flight procedures. The same routes and altitudes may be flown by basic Visual Flight Rules- (VFR) certified pilots without approval or assistance by air traffic controllers in remaining clear of Class B airspace and the overhead Newark Liberty International Airport (EWR) arrival traffic. Thus, the Dalton Departure procedure adds an additional layer of safety (i.e., charted procedures and air traffic control safety advisory services), which would be unavailable to pilots who may elect to depart TEB airport utilizing VFR procedures. Having the Dalton Departure published, creates a more predictable flight path for the TEB and N90 controllers than simply allowing VFR-only procedures for a similar departure. ATO is convinced that the risk of pilot deviations is lower utilizing the Dalton procedure than with VFR departures, and discontinuing use of the procedure would increase the risk profile in the TEB/EWR airspace.

During 2009, when Runway 24 was closed due to construction, Runway 19 was the only runway available when winds required departures to the south. During 2010, Runway 19 was closed for extended periods of construction and therefore the Dalton Departure has been utilized less frequently during the past few months. When both Runways 19 and 24 are available, it is estimated that 5% of all (south-bound) departures will request the Dalton Departure. On busy traffic days, as many as 20 aircraft might be expected to utilize the Dalton Departure.

Since the Dalton procedure fully complied with ATO procedures at the time it was implemented, and since similar VFR departures were (and continue to be) allowed, it was evident that the procedure was a significant safety enhancement over VFR-only procedures. Because the Dalton Departure was considered a safety enhancement, no risk assessment was conducted. Subsequent to the initiation of the current investigation, and in light of the changing risk profiles associated with increased corporate jet aircraft traffic, safety assessments are now in progress, and additional safeguards will be evaluated.

1. b. **Question:** Has Terminal Services instructed TEB air traffic officials to establish initiatives to educate local pilots on the Dalton Departure? If so, please provide documentation of this instruction and for any plans that local air traffic officials may have to education pilots.

FAA Response: Yes. Please see the attached memorandum dated August 25, 2010 subject "TEB Dalton Departure procedure (IG Review)." In addition, under a grant from the FAA, the National Air Transportation Association maintains an online "Teterboro Airport Flight Crew Briefing" that includes discussion of the Dalton Departure procedure (the briefing may be viewed at http://www.airportflightcrewbriefing.com/Teterboro/)

2. c. **Question:** Have TEB personnel been briefed on the non-solicitation of the procedure? If so, please provide documentation to show what TEB personnel have been briefed on and a copy of any associated documentation. Has there been any follow-up review to ensure controllers are complying with this instruction, such as tape reviews or other quality assurance reviews.

FAA Response: All air traffic control specialists and front line managers at TEB have completed a face-to-face briefing regarding immediate halting of on-frequency solicitation of the Dalton Departure procedure. All briefings were completed on or before September 27, 2010. The briefings included recognition of the need to reduce the errors that have occurred by users unfamiliar with the Dalton Departure, the critical restrictions required by

the procedures and certain controller responses, should a user ask what can be done to reduce their delay.

In compliance with the mandatory briefing item, TEB air traffic controllers do not specifically solicit, inform or instruct users on the departure procedure. To ensure compliance, the TEB air traffic manager has conducted spot checks of the flight data/clearance delivery frequency, conducted personal observation of controllers' performance and verified compliance with front line managers. Additionally, the Eastern Quality Control Group will conduct joint, periodic audits of TEB voice recordings to ensure compliance with this prohibition on Dalton Departure solicitations.

d. **Question:** Also, please clarify how the non-solicitation was defined.

FAA Response: "Non-solicitation" is considered the absence of an air traffic controller "implying, advising, or informing users with regard to the availability of the Dalton Departure procedure."

e. **Question:** Do controllers still advise pilots of the availability of the procedures when encountering delays, or do the controllers wait for the pilot to specifically request the procedure?

FAA Response: Per required briefing as described in 2c, above, controllers will not be allowed to advise pilots of the availability of the Dalton procedure.

3. f. **Question:** Please explain this statement, "...there is a difference between local familiarity with the procedure and that by transient traffic..." and provide examples.

FAA Response: This statement was simply meant to recognize that TEB-based pilots would be expected to have more familiarity with the procedure through repeated use and greater awareness of the local traffic flows such as overhead Newark arrivals than transient pilots that may not have previous experience with the procedure and airspace.

4. g. **Question:** Please advise what publication, date, or provide a copy of the article. Does the FAA opine that such a publication is sufficient to provide familiarity to the general pilot community on a continuous basis, even 2 years after the article?

FAA Response: The article referred to was by J. Mac McClellan in *Flying* magazine (please see enclosed copy). The procedure was also covered by Jack Elliot in an April 2005 edition of *Aviation International News* (please see enclosed copy). The FAA did not intend to suggest that these publications are acceptable methods of distributing procedural information. However, the air traffic manager at TEB routinely engages all fixed base operators at TEB, the Port Authority of New York and New Jersey, TEB airport management and the TEB Users Group to provide monthly briefings on the safety issues of the Dalton Departure and the responsibility of the users to individually request the procedure. Additionally, under a grant from the FAA, the National Air Transportation Association maintains an online "Teterboro Airport Flight Crew Briefing." The website provides users access to critical safety information about the airport, including its location, layout, operations, regulations, and security procedures. Users can review the Dalton Departure procedure and see the briefing on how to avoid common errors while using the procedure. Finally, all fixed base operators reproduce and make available to users paper copies of the Dalton Departure.

5. **Question:** Are there any other air traffic control towers in the National Airspace System that has a procedure similar to TEB's Dalton Departure procedure?

   FAA Response: The FAA is aware of similar departure procedures in use at least three other airports: the "Sheridan Departure" at Hollywood/North Perry (HWO) in Florida; the "CABAA Visual Departure" at Chicago Executive (PWK) in Illinois; and the "Seneca Departure" at Bowman Field (LOU) in Kentucky.

In summary, the ATO is committed to evaluating alternative measures that will improve the safety when the Dalton Departure is utilized. The FAA will consider a number of corrective actions to enhance the use of the procedure. However, two of the more immediate changes Terminal Services is considering are:

a)TEB and N90 will pre-coordinate the desired transponder code when a pilot desires to use the Dalton Departure; using the correct code off the ground at TEB will make the flight active and auto-acquire immediately following radar identification.

b) Terminal Safety and Operations Support will request an annual familiarization and training initiative for the air traffic staffs at TEB and N90 on the potential risks and actual safety reports associated with the Dalton Departure.

Terminal Safety & Operations Support (AJT-2) and the Office of Safety (AJS-3) will conduct radar and audio replay reviews during November 2010. A report of findings and appropriate corrective action(s) to improve safety when aircraft use the Dalton Departure will be provided to my office (AAE) by December 10, 2010.

If additional information is needed, please contact me at (202) 267-9440.

Attachment:
Memo from ATM TEB ATCT to AJT-23, dated Oct. 22, 2010
Mandatory Briefing Item 10-070, dated Sep. 16, 2010
Memo from ATM TEB ATCT to All TEB ATCS', dated Sep. 14, 2010
Memo from ESA Director to TEB Air Traffic Manager, dated Aug. 25, 2010
Memo from ESA Director to AJT-2, dated Aug. 25, 2010
Aviation International News article - TEB Users Group, April 2005
Flying article – There is Plenty of Airspace

cc: Vice President, Office of Safety (AJS)
Vice President, Terminal Services (AJT)

Federal Aviation Administration

Memorandum

Date: October 22, 2010

To: Gary Schaffer CSSI, Brett Faulker AJT-23, Dianne Sanders AJV-E130, Mike McCollum AJV-E130

From: Gary A. Palm ATM TEB ATCT

Subject: **Runway 19 Dalton Departure (Procedures/Solicitation)**

An MBI was drafted and executed on September 14, 2010 in accordance with the ETSA Director's letter dated August 25, 2010. All ATCS' and FLM's received a face-to-face briefing and all briefings were completed on or before September 27, 2010.

All personnel were instructed to implement the guidance immediately upon receipt of their briefings and have been fully compliant since.

As a follow-up to ensure compliance, the ATM has conducted spot checks (monitored) of the Flight Data/Clearance Delivery (FD/CD) frequency, personally observed controllers' performance and verified compliance with FLM's.

Furthermore, we continue to work closely with the PANYNJ, Airport Management and FBO's to educate/inform our customers of the specific requirements of the Runway 19 Dalton Departure procedures and safety concerns with the following:

> Monthly briefings at Teterboro Users Group(TUG), Airport Management & Port Authority meetings.
> Copies of the RWY 19 Dalton Departure procedure have been distributed to all FBO's. (periodic verification of availability will be completed by Airport Operations).
> Information Posters have been created (by PANYNJ) and posted at FBO's.

PRIDE.....PROFESSIONALISM.....PERFECTION

TRAX ENTRY (Y) N

MANDATORY BRIEFING ITEM

As a result MBI 10-061

10-070

REFRESHER ☐ SUPPLEMENTAL ☒ 9/16/2010

Topic: Runway 19 Dalton Departure

Crew 1	Initial here		Date	Crew 2	Initial here		Date
P. JAY	PJ	PJ	9/16/10				
J. Freitas	JF	JF	9/21/10	M. Brennan	MI	MI	9/11/10
J. Papa	JP	JP	9-16-10	L. Frascella	LG	LG	9/16/10
S. Rizvi	SR	SR	9/16/10	M. Martinez	MZ	MZ	9/16/10
C. Denham	CJ	CJ	9/24/10	M. Mangan	MM	MM	9/24/10
R. Gambale	RG	RG	9/16/2010	J. LESSER	JL	JL	9-17-10
K. Carvan	KC	KC	9-16-10	J. Fabozzi	FJ	FJ	9/16/10
C. Wyre	OC	OC	9/16/10				
K. Jones	JS	JS	9/16/10				
				Crew 3	Initial here		Date
Staff	Initial here		Date	H. Aronson	HA	HA	9/20/10
L. Brady	LB	LB	9/16/10	M. Guarnieri	GM	GM	9/16/10
R. Schmid	RS	RS	9-21-10	S. McMorris	MS	MS	9/20/10
D. Moore	DM	DM	9/16/10	R. Vilinsky	RV	RV	9/27/10
				K. Zavilowitz	ZK	ZK	9/28/10
D. Moore	DE	✓	N/A	J. Moncion	JM	JM	9/16/2010
				E. Granton	NY	NY	9/15/2010

Federal Aviation Administration

Memorandum

Date: September 14, 2010

To: All

From: Gary A. Palm ATM TEB ATCT

Subject: **19 Dalton Departure Procedures**

In an effort to reduce the errors that have occurred by users unfamiliar with the 19 Dalton Departure and the critical restrictions required by the procedure, all controllers shall immediately halt any on frequency solicitation, implying, advising or informing users of the availability of the Dalton Departure. In order to implement the Dalton Departure, pilots must specifically request the procedure.

Since users often ask what they can due to reduce their delays, a simple statement may be made such as: "alternate departure procedures are published in the AFD and available from their FBO". Additionally, the follow up question often asked: Will that get me out sooner? I would suggest a response such as: "it may help reduce your delay."

Additionally, all FBO's, the PANYNJ, Airport Management and TUG have been briefed and will be re-briefed as to the safety issues involved with the Runway 19 Dalton Departure and the responsibility of the users to individually request the procedure. ATC will not specifically solicit, inform or instruct users on the departure procedure.

Future updates on the TEB & NADA web sites will be published to educate the users. All FBO's will make hard copies of the 19 Dalton Departure available to their customers.

PRIDE.....PROFESSIONALISM.....PERFECTION

Federal Aviation Administration

Memorandum

Date: 08 25 2010

To: Gary Palm
Peterboro Air Traffic Manager

Thru: Leo Prusak
District Manager, New York

From: for John McCartney
Director, Eastern Terminal Service Area

Prepared by: David S Johnson, Operations Support Group Specialist

Subject: Dalton Departure Procedures Solicitations by PEB Controllers

Due to the complexity of the Dalton Departure and the risk of human error associated with the unfamiliarity of its procedure, PEB ATCT must immediately halt any on frequency solicitation, implying, advising, or informing users the availability of the Dalton Departure procedure. In order to implement the Dalton Departure, pilots must specifically request the procedure by name and have a hard copy on hand.

A briefing to all controllers must be completed as soon as possible. To keep on file, please provide a copy of completed briefing and compliance by all controllers to the Operation Support Group.

Periodic review will be done to check for compliance.

Federal Aviation Administration

Memorandum

Date: 08 25 2010

To: Tony Mello

Acting Director, Terminal Safety and Operations Support

From: John McCartney

Director, Eastern Terminal Service Area

Prepared by: David S Johnson, Operations Support Group Specialist

Subject: TEB Dalton Departure procedure (IG Review)

To comply with initiatives set by IG, the following procedures and programs are currently in use or are being developed:

Initiated May 14 2010. TEB ATCT briefed all controllers to halt providing a verbal reading of the Dalton Departure procedures to the pilots over the frequency. A controller must inform the pilot to obtain a hard copy of the Dalton prior to departure.

August 17 2010. TEB ATCT halted inclusion of the statement on the TEB Construction Update. *"Whenever Runway 24 is closed, pilots should request the Runway 19 Dalton Departure on initial contact with Clearance Delivery."*

Teterboro Users Group received briefing and radar replay of incidents involving aircraft on the Dalton Procedure.

A training package and briefing will be developed to educate pilots on the Dalton Departure for the September 16, 2010 Teterboro Users Group meeting.

A Memo from Director Eastern Terminal Service Area will inform TEB ATCT they must stop any solicitation, implying, advising, or informing about the availability of the Dalton Departure.

TEB ATCT will be required to brief all controllers to halt on frequency solicitation of the Dalton Departure.

QCG will perform periodic checks to verify compliance.

TEB users group aims to improve airport safety

By: Jack Elliott

Aviation International News >> April 2005
Airports, Safety

At a February meeting of the Teterboro Users Group (TUG), held just a couple of weeks after the Challenger 600 accident at the New Jersey airport, safety issues were the chief items on the agenda. The association briefed members on runway incursions and departure procedures and the steps the airport is taking to address those issues.

First on the agenda were runway incursions, which have been on the NTSB's list of most wanted safety improvements since 1990. There were three at the airport last year. Bill DeGraaff, regional runway safety manager for the FAA's eastern region, told the group that a major factor in such incidents was runway crossings necessitated by airport layouts.

The Port Authority of New York and New Jersey, operator of Teterboro, is correcting one such situation by building a full-length parallel taxiway for Runway 6-24 to reduce runway crossings and simplify and speed up movements on some taxi routes. DeGraaff said that another cause of incursions was the fact that pilots do not always follow taxi directions, even when they read them back correctly.

Departure Procedures

The second issue of concern was non-compliance with departure procedures. The departures in question are designed to separate Teterboro's departing traffic from Newark Liberty International Airport's arrivals on Runways 22 right and left. The majority of incidents occur on the Teterboro 5 departure on Runway 24, said Jack Grogan, manager of the Teterboro FSDO. Most violations involve transient pilots unfamiliar with the airport departures. Teterboro also has a special departure, the Dalton Departure, that can be used only in VFR weather and must be requested, although a controller can ask a pilot if he is familiar with that departure if there are delays. The Dalton Departure permits a pilot to take off VFR and pick up the IFR clearance in the air.

On the Dalton Departure for Runway 19, pilots are required to maintain runway heading until 800 feet and then turn right to a heading of 280 degrees, completing the turn before reaching 4 DME TEB, and then they must maintain VFR at or below 1,300 feet.

Rudy Steinthal, the airport noise abatement officer, is preparing a flyer to illustrate these departures in both diagrams and text. The most pertinent

aspects of the departures will be printed in red. TUG plans to have these distributed to all arriving pilots as they leave their aircraft. They will also be distributed in each of the airport's FBOs.

Airport manager Lanny Rider gave members an update on the February 2 Challenger 600 accident and said that runway arrester beds will be installed on Runway 6-24. The cost will be between $4 and $6 million. He said that on the day of the accident a new piece of equipment called a "snozzle" helped extinguish the fire in the cabin. The snozzle is a nozzle designed to penetrate an airliner's skin so firefighters can spray foam inside without having to enter the aircraft. It doused the flames in seconds.

The association is working to get another tower frequency and a low-level wind-shear alert system.

There Is Plenty of Airspace

By J. Mac McClellan

ColumnArt_Web

Enlarge Photo

It was a nice VFR Friday afternoon in early summer when I was returning home to Westchester County Airport just north of New York City. In other words, it was just about as bad as air traffic - or ground traffic, for that matter - gets in the Northeast. Summer and a Friday add up to going nowhere fast.

Before being handed off to the sector that actually controls airplanes in and out of Westchester, a New York Approach controller told me to expect delaying vectors. Not a hold, but just assigned headings that would take me in at least one big 360-degree loop. No surprise there. Vectors are more common around New York than real holds, and delays of any type are to be expected at rush hour. I pulled the power back as far as possible. No point going fast with the tail pointed at the destination.

But just as I was slowing down the controller told me to speed up, intercept the localizer to Runway 16 and change frequency to the final approach control sector. The delays vanished and I was cleared for a visual approach - number four in line - as soon as I had the traffic ahead in sight.

When I was handed to the tower the controller was busy fielding "how much longer" questions from airplanes waiting to take off. Two crews reported that they had to shut down engines or get out of line and go back for more fuel. The tower controller barely had time to respond to those of us calling in on final approach for all the queries and carping coming from the taxiway. What's going on?

The answer from the tower controller to everyone was that New York Approach decided to clear out its airspace and was leaving no breaks in the stream. Airplanes were being handed to the tower no more than two to three miles apart in an unbroken conga line. As I crossed the numbers I counted 19 jets of all sizes, plus a smattering of piston airplanes, lined up on both

sides of the runway waiting to go. Okay, I finished the count on rollout and taxi because it was hard to count and flare at the same time.

The point of this - other than the obvious, that New York is a pain in the butt at rush hour - is that pavement, not airspace, is the fundamental congestion problem. There was plenty of space in the air, but only one airplane could use the runway at a time, and it was being used for landings. If Westchester had a parallel runway, takeoffs could have been conducted as soon as the landing airplane was down and rolling. Without that extra runway, there was no way capacity could be increased. Pilots were doing an excellent job of spacing themselves on the visual approach, and the airplane ahead was turning off the runway as the next one was nearing the numbers. Only formation landings could have increased capacity, and nobody is ready for that.

Every pilot knows that it is concrete, not airspace, that puts the final limit on capacity, but to hear the airlines argue for new fees and limits on business aviation, you would think it is the opposite. And the FAA sides with the airlines. The administrator has repeatedly said that without an overhaul of the airspace system, and without implementation of a new automatic dependent surveillance system based on GPS, air travel will become impossible. I, too, favor the precision of an ADS-B airspace system, but I know that it can't solve the real problem, which is lack of runways where we need them.

To show you how flexible and innovative our present airspace system can be in the face of almost impossible runway conflict and congestion, look at Teterboro Airport just west of New York City. Teterboro's Runway 19 points almost directly at Newark, and the airports are only a few miles apart. When wind direction dictates that Runway 19 be used at Teterboro, the same wind means the parallel Runway 22s will be active at Newark. The stream of airliners crossing Teterboro on final for Runway 22 at Newark are so low they don't allow enough room for standard IFR separation for Runway 19 departures from Teterboro.

The solution for Teterboro departures, at least when the weather is 3,000 foot overcast with three miles visibility or better, is the unique Dalton departure. Pilots who ask for the Dalton - it cannot be assigned without pilot request - take off on Runway 19, but are actually departing VFR. At 800 feet in the climb a pilot flying the Dalton turns right to 280 degrees and continues the climb to 1,300 feet with a maximum speed limit of 190 knots. As soon as the turn is completed and the controllers issue a clearance to climb above 1,300 feet, the flight is automatically converted from VFR to IFR and everything is back to normal ATC procedures.

The Dalton is a bit of a rule beater because it puts the burden to maintaining separation on the pilot departing Teterboro for the first few miles because an airplane approaching Newark may not always have the full 1,000-foot vertical separation IFR standards require. But it's no different than a visual approach where traffic separation obligation transfers to the pilots, and

it gets airplanes out of Teterboro without having to wait for a gap in the stream of Newark arrivals.

All manner of similar procedures are being designed around the world to take advantage of the precise navigation that flight management systems (FMS) have been delivering for years. These procedures have different names, but can be lumped under the category of required navigation performance (RNP) and they are more common in Europe now than in the United States. RNP procedures will allow pilots to follow the precise guidance already available in most airplanes to remain clear of other arriving or departing traffic, something that is not possible with controller assigned headings that are the common form of departure or arrival guidance.

The majority of airplanes using busy IFR airspace could meet RNP standards right now, if there was a reason to do so. But the FAA has been slow to implement RNP procedures that could be done now, apparently waiting for some silver bullet coming in the form of an entirely new air traffic control system. Meanwhile, the real problem of lack of runways, and of runway configurations that prevent simultaneous operations, is not mentioned.

Perhaps the FAA realizes that runways are not going to be added or reconfigured in the most congested areas of the country, so it chooses to focus on issues in the air. I, too, am resigned to the fact that no new airports are going to be built or runways added where congestion is greatest, but I'm not willing to sell the traveling public or pilots a bill of goods that the answer to congestion relief is in the air. The FAA and airlines are really perpetrating a fraud on the traveling public by promising that a new airspace system can remove all or most delays. The only time we don't have enough air to go around is when thunderstorms fill the spots airplanes want to fly in, and no ATC system is going to move a thunderstorm.

I wish that the FAA would stop complaining about the new taxes it needs from business aviation and go to work finding more immediate solutions like the Dalton departure. We need to squeeze every last drop of capacity out of the runways that exist in the Northeast, South Florida, Southern California and the other places where new airport construction is not going to happen. ADS-B, or any other new ATC system, can be an improvement, but it won't be a solution to the lack of pavement on the ground.

Facing Up to Carbon Pollution

My arms are not wrapped around a tree as I write this. In fact, after one of the most severe pollen plagues in the Northeast this spring and early summer, I'd like to take a chainsaw to most of the trees that surround my house. But it is time to face up to the small amount of carbon dioxide emissions our airplanes create and do something about it. Now there is a way.

By any measure aviation engines release a tiny amount of the world's total emission of carbon dioxide into the atmosphere. Aircraft engines burn fuel with very high efficiency, and there

just aren't that many airplanes compared to homes, factories, automobiles and all the other sources of CO_2 emissions.

But the fact that we are small potatoes in total CO_2 pollution doesn't matter because aviation is extremely high profile, particularly private aviation. It is the nature of societies to attack small, manageable issues and ignore the big, unsolvable problems. Airplanes, and the people who fly them and fly in them, are easy targets for all types of restriction and regulation, and CO_2 emissions are on that list.

The industry has made great strides in increasing the efficiency of all types of aircraft engines because lower fuel burn makes everything better, including greater range, larger payloads and shorter runways. So we really can't accelerate our drive for greater efficiency to a higher level than it already is only to help control pollution. But we can pay for the unavoidable CO_2 gases we create through carbon offsets.

Carbon offsets are already big in other industries and are the norm in Europe and much of the rest of the world. The concept is that activities which unavoidably create CO_2 emissions pay proportionally to have carbon emissions reduced from other activities. By trading these "carbon credits" aviation can reduce or eliminate the amount of total CO_2 emissions created by all fuel burning.

For example, a carbon credit that an airplane operator pays may go to the construction of a wind farm that generates electricity without emissions, or to research in alternate fuels or to help reduce emissions from other sources. I know this sounds like a lot of "feel good" charity, but it works in the sense that it is accepted here in the United States and internationally. Carbon credits are traded like other commodities on major markets.

Carbon Neutral Plane Program has been founded by Jeffrey Witwer, who is a longtime pilot and airplane owner and also has a background in energy and environmental work. Under this program an airplane operator pays an annual membership fee that covers the amount of CO_2 released based on fuel burned. The Carbon Neutral Plan Program acts as a buyer's cooperative, buying high-volume carbon offsets on the open market that equal the amount of carbon emitted by its member airplanes.

There are two programs, one for business operations and another for personal airplane owners. The bottom line is that your airplane can be certified to be carbon neutral; in other words, all CO_2 it generates is offset by programs that reduce emissions elsewhere. Being able to demonstrate that your flying activities add nothing to the total CO_2 emissions because of the offsets has obvious benefits in many situations, particularly in Europe now, and soon everywhere.

The cost of the carbon credits at today's fuel prices equal about 5 cents per gallon. You could say it is a tax, and you would be correct, but at this point it is still a voluntary one. Paying for carbon offsets is more akin to supporting your local community, but in this case the ramifications are global.

I don't know if human activity is the cause of climate change, and I haven't the foggiest idea if we can in any way deflect the inexorable variations of the atmosphere that we fly through. But that doesn't matter. Most of the governments of the world, and the people they regulate, believe it, and that makes it a reality for airplane operation. This is a case of better to join the carbon reduction bandwagon than fight a losing battle. For information on Carbon Neutral Plane go to carbonneutralplane.com. But don't bother to hug a tree.

Federal Aviation Administration

Memorandum

Date: September 3, 2010

To: Mr. Robert Westbrooks, Acting Assistant Inspector General for Special Investigations and Analysis

From: James C. Bedow, Director, Quality Assurance, Office of Safety

Subject: Response to OIG Follow-up Questions Regarding Dalton Departure Procedure at Teterboro NJ

Thank you for your response on Aug. 17, 2010 regarding our recent memorandum containing information on the internal investigation of the Dalton Departure at Teterboro NJ. This memorandum includes responses to each of your follow-up questions.

1. a. **Question:** Please provide any information that supports the conclusion that the procedure is "safe" when properly followed. Is this statement based on opinion or fact, such as a formal risk or safety assessment? Was there a safety or risk assessment conducted to address the safety of this procedure when it was originally implemented? Has such an assessment been performed to address the change in the mix of traffic since the original procedure was implemented (i.e. increase in jet aircraft)? If so, please provide the detail and a copy of any such assessments.

FAA Response: The Dalton Departure procedure is flown only in Visual Meteorological Conditions by Instrument Flight Rules certified pilots, using established charted flight procedures. The same routes and altitudes may be flown by basic Visual Flight Rules (VFR) certified pilots without approval or assistance by air traffic controllers in remaining clear of Class B airspace and the overhead Newark arrival traffic. The Dalton Departure procedure therefore adds additional layers of safety, i.e., charted procedures and air traffic control safety advisory services, which would be unavailable to pilots who may elect to depart Teterboro (TEB) airport VFR.

The Dalton Departure procedure was in existence prior to 1997 and was accepted as part of the NAS baseline on March 14, 2005 when ATO implemented the Safety Management System process. Safety assessment requirements were not required for baseline, i.e., existing, procedures. There is no requirement to conduct periodic or follow-up assessments of baselined procedures and none is planned at this time for the Dalton Departure.

1. b. **Question:** Has Terminal Services instructed TEB air traffic officials to establish initiatives to educate local pilots on the Dalton Departure? If so, please provide documentation of this instruction and for any plans that local air traffic officials may have to education pilots.

FAA Response: Yes. Please see the attached memorandum dated August 25, 2010 subject "TEB Dalton Departure procedure (IG Review)." In addition, under a grant from the FAA, the National Air Transportation Association maintains an online "Teterboro Airport Flight Crew Briefing" that includes discussion of the Dalton Departure procedure (the briefing may be viewed at http://www.airportflightcrewbriefing.com/Teterboro/)

2. c. **Question:** Have TEB personnel been briefed on the non-solicitation of the procedure? If so, please provide documentation to show what TEB personnel have been briefed on and a copy of any associated documentation. Has there been any follow-up review to ensure controllers are complying to this instruction, such as tape reviews or other quality assurance reviews.

FAA Response: Yes. Please see the attached memorandum dated August 25, 2010, subject "Dalton Departure Procedures Solicitations by TEB Controllers." When these required briefings have been completed, the Office of Safety and Terminal Services will conduct joint, periodic audits of TEB voice recordings to ensure compliance with this prohibition on solicitations.

d. **Question:** Also, please clarify how the non-solicitation was defined.

FAA Response: "Non-solicitation" is considered the absence of an air traffic controller "implying, advising, or informing users the availability of the Dalton Departure procedure."

e. **Question:** Do controllers still advise pilots of the availability of the procedures when encountering delays, or do the controllers wait for the pilot to specifically request the procedure?

FAA Response: Per required briefing as described in 2c, above, controllers will not be allowed to advise pilots of the availability of the procedure.

3. f. **Question:** Please explain this statement, "...there is a difference between local familiarity with the procedure and that by transient traffic..." and provide examples.

FAA Response: This statement was simply meant to recognize that TEB-based pilots would be expected to have more familiarity with the procedure through repeated use and greater awareness of the local traffic flows such as overhead Newark arrivals than transient pilots that may not have previous experience with the procedure and airspace.

4. g. **Question:** Please advise what publication, date, or provide a copy of the article. Does the FAA opine that such a publication is sufficient to provide familiarity to the general pilot community on a continuous basis, even 2 years after the article?

FAA Response: The article referred to was by J. Mac McClellan in *Flying* magazine (please see enclosed copy). The procedure was also covered by Jack Elliot in an April

2005 edition of *Aviation International News* (please see enclosed copy). The FAA did not intend to suggest that these publications constituted pilot training on the procedure.

5. **Question:** Are there any other air traffic control towers in the National Airspace System that has a procedure similar to TEB's Dalton Departure procedure?

FAA Response: We are not aware of another procedure similar to the Dalton Departure that provides a charted VFR transition to an IFR flight plan.

If additional information is needed, please contact me at (202) 385-4777.

Attachment:
Memo to from ESA Director to TEB Air Traffic Manager, dated Aug. 25, 2010
Memo to from ESA Director to AJT-2, dated Aug. 25, 2010
Aviation International News article - TEB Users Group, April 2005
Flying article – There is Plenty of Airspace

cc: Vice President, Office of Safety (AJS)
Vice President, Terminal Services (AJT)

Federal Aviation Administration

Memorandum

Date: AUG 0 6 2010

To: Joseph Garcia, Investigator, Office of Inspector General, JI-3

From: James C. Bedow, Director, Office of Safety, AJS-3

Subject: Review of Air Traffic Safety Oversight Service (AOV) Internal Investigation Report Concerning Dalton Departure Procedure

On September 4, 2009, Dianne Bebble, Manager of AOV's Air Traffic Operations Oversight Division, AOV-100, provided Office of Safety by email a copy of their internal investigations report concerning the Dalton Departure Procedure at Teterboro Airport (TEB). The email stated only that AOV was sharing the report and no request for response was included. Prior to sharing their written report, the two AOV personnel largely responsible for the report briefed the Office of Safety.

Before AOV conducted their April 2009 report, the Office of Safety had participated in a telcon discussion with the Manager of Terminal Services Operations and Procedures, and members of the N90 management team to discuss concerns voiced by local members of the National Air Traffic Controllers Association (NATCA) at New York TRACON (N90) concerning the safety and compliance with existing air traffic procedures.

Terminal Services and N90 management has emphasized several times that the Dalton Departure Procedure was strictly voluntary on the part of the pilot and that TEB air traffic control personnel did *not* solicit requests for the procedure. Because the procedure specifically instructs pilots to "maintain VFR (Visual Flight Rules)" and that their Instrument Flight Rules (IFR) clearance is not activated until air traffic control personnel issues a climb clearance "after crossing the TEB R-230," it was the consensus of all air traffic control personnel in the discussion that the Dalton Departure Procedure was essentially an abbreviated method for pilots to communicate the request to air traffic control personnel to "depart VFR at or below 1,300 feet and activate IFR clearance after airborne."

Because aircraft on the Dalton Departure are VFR, there is no provision for air traffic control personnel to apply separation between them and IFR flights, such as heavy arrivals into Newark Liberty International Airport (EWR) on the ILS Runway 22 approach. The airspace in which the Dalton Departure is flown is *below* the New York Class B Airspace where the floor in the vicinity is 1,800 feet. Any VFR pilot is authorized to fly below 1,800 feet in that area without even contacting air traffic control personnel. VFR aircraft that do request radar services from air

traffic control personnel in that area, such as those on the Dalton Departure, are provided "Basic Radar Service" which may include safety alerts, traffic advisories, and radar vectoring when requested by the pilot, but does *not* include separation from IFR traffic (see FAAO 7110.65, section 7-6-1). Because aircraft using the Dalton Departure are VFR and considered to be requesting headings, the requirements of FAAO 7110.65, section 5-6-1, were considered to be met as the altitudes were not being "assigned by air traffic control personnel."

The Office of Safety considered the following policies and procedures during our review:

- FAA Order (FAAO) 7110.65, *Air Traffic Control*, sections 5-6-1, *Vectoring Application*, and/or, 7-6-1, *Basic Radar Service to VFR Aircraft-Terminal Application*, and
- FAAO 7110.65, 5-5-4e, *Radar Separation Minima Wake Turbulence Application.*

AOV made three recommendations in their report.

1. TEB air traffic control personnel "cease the solicitation of the Dalton Departure Procedure." The Office of Safety has been repeatedly assured by Terminal Services that solicitation is not authorized by air traffic control personnel.
2. "FAA should establish a training program for the Dalton Departure Procedure." As AOV notes in their report, the Dalton Departure Procedure was in fact developed by "the Teterboro Users Group (TUG), in conjunction with the FAA." Local pilot familiarity with the procedures is surely different than transient pilot familiarity, but a national aviation magazine article recently covered the Dalton Departure. We are not aware of a pilot training program for the Dalton Departure.
3. "The depiction of the Dalton Departure Procedure should be modified to include. . . information such as, 'no wake turbulence separation is provided from traffic over TEB descending into EWR'." It is not apparent that such information would enhance pilot awareness beyond that of the current note, "Caution Wake Turbulence. Newark Arrivals Descending Overhead from 3000' to 1800'." Pilot and controller responsibilities for such operations are already clearly described in the FAA's Aeronautical Information Manual, Chapter 5, *Air Traffic Procedures*, section 5, *Pilot/Controller Roles and Responsibilities.*

After a meeting with Terminal Services, we received the following email from the Executive Director of Terminal Services: "Terminal Services believes the TEB Dalton Departure is a safe and reliable procedure when aircraft operators properly follow as designed and published. The procedure provides a safe alternative when TEB departures face delays due to Newark Liberty Airport (EWR) arrival demand. Therefore, it is mutually beneficial that TEB operators are familiar with TEB Dalton Departure. To that end, Terminal Services supports and encourages local air traffic initiatives to educate the local pilot community on the details and advantages of TEB Dalton Departure. Due to the need to properly follow the TEB Dalton Departure, Terminal Services does not condone solicitation from controllers to pilots to fly TEB Dalton Departure."

In summary, Office of Safety took no action to further disseminate or take action on the internal AOV report because the only issue with which we concurred with AOV was the requirement that air traffic control personnel not solicit the procedure, and Terminal Services has stated that solicitation was already prohibited.

Federal Aviation Administration

Memorandum

Date: MAY 18 2010

To: Joseph Garcia, Investigator, Office of Inspector General, JI-3

From: Tony Mello, Acting Director, Terminal Safety and Operations Support, AJT-2

Subject: OIG Email Request Response

We have reviewed your request for the FAA's position on FAA Order (FAAO) 7110.65T, Paragraph 5-5-4, as it relates to the Dalton Departure Procedure used at Teterboro Airport (TEB), Teterboro, New Jersey.

In response to the specific questions asked, we offer the following:

Question:
Is the Dalton Departure Procedure in violation of FAAO 7110.65T, Paragraph 5-5-4?

Answer:
FAAO 7110.65T, Paragraph 5-5-4 is not applicable to the Dalton Departure Procedure. Paragraph 5-5-4 applies to instrument flight rules (IFR) radar identified aircraft as well as to visual flight rules (VFR) aircraft receiving basic radar services. The aircraft which depart TEB airport are not IFR until they receive their IFR clearance and are not radar identified until that point as well. There is no separation responsibility for aircraft operating outside of Class B airspace and not under radar control.

Question:
Does the Dalton Departure Procedure address the safety of the aviation community in regard to wake turbulence as outlined in 7110.65T, Paragraph 5-5-4.

Answer:
Again, FAAO 7110.65T, Paragraph 5-5-4 is not applicable to the Dalton Departure Procedure. The requirements of the Dalton VFR departure; where the turn is to begin and the altitudes to not climb above, establish the VFR aircraft clear of airspace defined as Class B airspace. It is also clear on the Dalton departure procedure chart that aircraft which comply with the procedure and restrictions will remain clear of the arrivals into the Newark Airport.

Question:
Does the Dalton Departure Procedure attempt to absolve the FAA from the legal requirements associated with an accident involving wake turbulence?

Answer:
The Dalton Departure Procedure is **not** attempting to absolve the FAA of legal requirements associated with wake turbulence. Paragraph 5-5-4 would not pertain to this specific situation. The FAA is not aware of any accidents involving wake turbulence and the Dalton Departure Procedure.

If you have any questions or desire further information or clarification pertaining to this issue, please contact Robert Reed, Operations and Procedures Group, at (202) 385-8627