National Transportation Safety Board
Office of Pipeline and Hazardous Materials Safety
Washington, D.C. 20594

Report Date: April 27, 1999

HAZARDOUS MATERIALS - SECURITY GROUP CHAIRMAN'S FACTUAL REPORT

A. Accident

Operator:	Trans World Airlines, Inc.
Aircraft:	Boeing 747-131, N93119, Flt. No. 800
Location:	East Moriches, Long Island, New York
Date:	July 17, 1996
NTSB No.:	DCA96MA070

B. Hazardous Materials-Security Group Members

Tom Lasseigne	NTSB-Accident Investigator Office of Pipeline and Hazardous Materials Safety Washington, D.C.
Mary Carol Turano	FAA- Manager, National K-9 Program Office of Civil Aviation Security Operations Washington, D.C.
David R. Kontny[1]	FAA- Manager, Canine and Explosives Branch Office of Civil Aviation Security Operations Washington, D.C.

C. Summary

On July 17, 1996, around 2031 EDT, Trans World Airlines Inc. (TWA) Flight 800, a Boeing 747-131, N93119, operating as a regularly scheduled international passenger and cargo flight from John F. Kennedy International Airport, Jamaica, New York to Charles De Gaulle International Airport, Paris, France crashed into the Atlantic Ocean about 8 miles south of East

[1] Did not participate as group member. Participation was limited to providing technical assistance and review of this report.

Moriches, Long Island, New York. There were 212 passengers and 18 crew members on board, no one survived. The aircraft was destroyed.

D. Details of the Investigation

1.0 Background/Scope

On September 20, 1996, an investigation of the FAA K-9 explosives detection program was undertaken after trace amounts of explosive residues were found on the interior surfaces of the cabin and cargo areas of N93119 and following disclosure that an FAA K-9 explosives detection team at Lambert-St. Louis International Airport had used this aircraft for training. On June 10, 1996, a dog handler on the K-9 explosives detection team had placed explosives on the aircraft to conduct a proficiency training exercise, and during this exercise explosive materials may have been released in the aircraft.

This investigation focused on FAA K-9 explosives detection program requirements for preventing contamination of aircraft and airport facilities and to ensure a reliable K-9 explosives detection program. This included reviewing procedures for handling, transporting and placing explosive training aids on board aircraft prior to scheduled flights.

Because many of the referenced documents contain sensitive security information, release of this information is subject to the provisions of ***14 CFR 191, Protection of Sensitive Security Information***. Therefore, referenced documents have been masked so as to not reveal sensitive security data involving specific explosive substances and quantities. Review of this report was coordinated with the FAA - Office of Civil Aviation Security Operations.

2.0 Sequence of Events

2.1 June 10, 1996 K-9 Training Exercise[2].

Around 9:30 am[3] on June 10, 1996, a St. Louis Airport Police Officer, who is assigned to the K-9 Explosives Detection Team as a Dog Handler, contacted the local TWA manager on Duty and requested access to an aircraft during layover to conduct K-9 proficiency training. The TWA manager reportedly advised that there was a 747 aircraft available at Gate 50, but the captain wants the aircraft to be ready for service by 11:30 am.

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[2] On September 22, 1996, group members interviewed personnel from the St. Louis International Airport Police Department K-9 Unit, Bureau of Support Operations, i.e. K-9 Trainer, Handler and Supervisor.

[3] All times included herein are local, St. Louis, MO - Central Daylight Time.

Around 10:15 am, the officer went to the airport explosives bunker and removed four containers that are routinely used for storing the explosive training aids. A fifth explosive container had been previously placed inside the police officer's vehicle. Around 10:25 am, the officer along with the FAA K-9 drove through the airport operations area (AOA) to TWA Gate 50. After he boarded N93119 and determined no one was on board the aircraft, the officer placed the five explosive containers on the serving counter in the galley near the **R1** exit.

Because the officer was alone throughout the proficiency exercise, he made two trips from the aircraft to his vehicle in order to place all five of the explosive containers on board. Similarly, in order to remove the explosive containers, the dog handler made two additional trips from the aircraft to his vehicle.

Around 10:45 am the officer began placing the individual explosive training aids throughout the forward section of the cabin. The officer placed a training aid in the center armrest compartment separating **Seat 1 and Seat 2 on Row 2.** The officer stated that while he handled the training aid he may have spilled a small amount inside the seat compartment between the seats. The officer stated that he could not distinctly determine how much explosive material may have been spilled.

Around 11:00 am, the officer next returned to the galley, removed the second training aid and placed it in a small closet at the rear of the upper deck of the aircraft. Next the officer returned to the galley and retrieved a third training aid and placed it at **Seat 9, Row 10,** inside the rear pouch of the seatback. Then he returned to the galley, removed the fourth training aid and placed it in the overhead compartment, above **Seats 1 and 2 on Row 20.** Finally, the officer removed the fifth training aid and placed it beside exit door, **R3.**

The dog handler stated that the St. Louis K-9 Team had received military explosive training aids in 1994 from the FAA and that over a period of several years of continuous use one of the training aids became cracked at 1-inch intervals along its entire length. Reportedly, the training aid had released small amounts of explosive ingredients whenever it was removed from storage container. The officer stated that over a couple years he estimated that more than 50% of its explosive ingredients had been lost.

After waiting in the front section of the cabin until around 11:15 am (for approximately 15 minutes in order for the explosive training aids "to set" and imprint their odors throughout the immediate area), the officer retrieved the FAA-K9 from his vehicle and returned to the aircraft. The officer stated that the proficiency exercise was successful in that the dog located all of the training aids within a 15-minute period. The officer next returned the FAA K-9 to the police vehicle, picked up all the training aids and returned the training aids to their respective storage containers.

By 11:30 am the training session was completed and all of the explosives were secured. The officer stated that everything was taken from the aircraft to his police vehicle and he checked

each explosive container to ensure that the contents were intact. The officer made two separate trips to remove the explosives from the aircraft. The officer stated that throughout the entire exercise he never saw anyone while he was at Gate 50 or onboard the aircraft. The police officer added that he did not notify anyone at TWA that the exercise had been completed.

The officer stated that throughout the entire proficiency exercise his activities were limited to the front half of the cabin, i.e. the K9 Team never went beyond Row 30, the aft section of the aircraft or inside the lower cargo deck.

2.2 August 26 thru Sept 19, 1996.

Following an August 23, 1996 public announcement that explosive traces were found on TWA Flight 800 wreckage, the FAA Explosives Unit developed plans to determine if FAA K-9's had conducted proficiency exercises onboard "any TWA 747's during the previous six months".

On August 26, 1996 key Federal investigative agencies were briefed on FAA plans and by August 28, 1996, TWA had identified all airports where N93119 had been on the ground for at least 4 hours during the period from January to July, 1996.

On August 29, 1996 FAA began checking K-9 training records at these airports to determine if FAA K-9s were involved. On Sept 5, the FAA St. Louis Security Office discovered that a local K-9 Unit had conducted training on board a TWA 747. The St. Louis K-9 Unit had conducted an explosive exercise on June 10, 1996 and this data was incomplete in that an aircraft tail number was not provided.

On September 18, 1996 the FAA Explosives Unit requested the FAA St. Louis office to obtain the trail number of the aircraft involved in the June 10, 1996 proficiency training exercise at St. Louis-Lambert Airport. After comparing the proficiency training records[4] with the TWA flight resume and aircraft maintenance records at St. Louis, the FAA St.Louis office was able to determine that N93119 had been used in the June 10, 1996 proficiency exercise. On September 19, 1996 key Federal investigative agencies were advised that a K-9 proficiency training exercise was conducted onboard N93119.

[4] The K-9 proficiency training records also contained information as to the time the proficiency exercise was conducted and gate number used by the aircraft at St. Louis Airport.

3.0 K-9 Explosives Detection Program

3.1 Lambert - St. Louis Airport Procedures

During proficiency training exercises, the K9 trainer normally accompanies the K9 handler. The K9 trainer oversees the handling and placement of the explosive training aids and works together with the K9 handler to make sure that all the explosive training aids are secured. However, on June 10, 1996 the K9 trainer was on vacation and the K9 handler conducted the proficiency exercise without the K9 trainer.

The K9 trainer is also assigned the responsibility to complete a monthly form verifying types and amounts of military and commercial explosives in the explosives storage bunker at the St. Louis Airport. Rather than use a "daily log" at the explosives bunker to sign explosives in and out, the explosives log sheet is up dated on a monthly basis. Review of these forms indicates that the month to month inventory was up to date and all explosive items were accountable.

Prior to the accident, the last major exchange of FAA provided explosive training aids was in June, 1994. The military explosives were replaced with more recently manufactured explosives, and hand receipts/documentation were provided by FAA personnel to St. Louis Airport Police. Commercial explosives used for training are exchanged with a local supplier.

Presently, St. Louis Airport has modified their proficiency training to include documentation of tail numbers of aircraft involved in proficiency training exercises and daily logging of explosives in their bunker.

3.2 FAA Oversight

Managed by the FAA Office of Civil Aviation Security Operations, the FAA K-9 Explosives Detection Team Program was created in 1972 as an innovative means to provide trained, certified explosives detection K-9 teams to respond to threats against civil aviation. Almost 25 years later, participation in this program has grown from 20 locations with 40 teams to over 30 location with more than 100 teams. Participants are law enforcement agencies and airport authorities throughout the country, who enter into an agreement with the FAA to provide this vital service.

Recently, the White House Commission on Aviation Safety and Security placed a renewed emphasis on the importance of explosives detection K-9 teams at our nation's airports. Congress showed its support for these detection K-9 teams through the Omnibus Consolidated Appropriations Act of 1997 (Public Law 104-208), which provides for the expansion of the FAA K-9 program to even more locations throughout the country.

Through interagency coordination[5] between the Department of Defense, FAA and local law enforcement agencies at various public airports, the FAA-procured K-9's remain the property of the FAA and are used exclusively under FAA authority. The dogs are assigned to cities on a priority basis which is based of the needs of the program as determined by the FAA National Program Manager. Currently, the FAA K-9 handlers are trained at a DOD Military Working Dog School.

3.3 Other Information

The FAA Technical Center, Atlantic City International Airport, NJ has conducted research into the deterioration of sea water on blast deposited explosive material. **(See Attachment 19.)**

Tom Lasseigne

[5] Under Letter of Agreement, responsibilities and mandatory requirements are established for each local law enforcement entity or airport authority for participation in the Federal Aviation Administration K-9 Explosives Detection Team Program.

D. LIST OF KEY REFERENCES[6]

The following is a list of documents reviewed by the members of the Hazardous Materials-Security Group:

1. Interview on September 23, 1996: K-9 Handler, St. Louis International Airport Police Department, Bureau of Support Operations..

2. Interview on September 23, 1996: K-9 Trainer St. Louis International Airport Police Department, Bureau of Support Operations.

3. Interview on September 23, 1996: Supervisor, St. Louis International Airport Police Department, Bureau of Support Operations.

4. Interview on September 23, 1996: Supervisor FAA CASFU and Federal Security Manager, Lambert-St. Louis International Airport.

5. Interview on September 24, 1996: FAA Aviation Explosives Unit Specialist on site at Morriches, Long Island.

6. Annual Evaluation for the K9 Team on July 22, 1996 at St. Louis Airport.

7. St. Louis Airport Police Department K-9 Unit, Canine Explosives/Narcotics Training Record, June 10, 1996.

8. St. Louis Airport Police Department K-9 Unit, "Records for Dog" (Computer-generated sheet).

9. Diagram of 747-100 layout: location of training aids planted on June 10, 1996.

10. CC:mail message, August 28, 1996 from Supervisor FAA CASFU STL to the field reference: if any proficiency training was conducted by teams in the FAA K-9 Explosives Detection Team Program on any TWA 747s during past 6 months.

11. CC:mail message, September 4, 1996 from FAA Exploisve Unit Specialist to the field, reference: List of airports visited by N93119 since January 1, 1996.

12. St. Louis Airport Police Department K-9 Unit, "Records for Dog" (Computer-generated sheet).

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[6]Because many of the referenced documents contain sensitive security information, release of this information is subject to the provisions of *14 CFR 191, Protection of Sensitive Security Information*. Therefore, many of the referenced documents could not be copied, retained or otherwise publicly disclosed.

13. Information faxed to FAA Explosives, dated September 19, reference TWA 747's on ground June 10 (includes fax confirmation sheet, St. Louis Airport Police Department K-9 Unit, "Records for Dog" (computer-generated sheet

14. Memo from FAA CASFU STL, September 21, 1996 in reference to events during tracking N93119.
15. Letter of Compliance in reference to St. Louis Airport Explosives Storage Bunker.

16. May 1, 1996 Letter in reference to Military Explosives Change-out Update.

17. Standard Practice and Procedures to Minimize Cross-Contamination of Explosive Materials.

18. Letter of Agreement: K9 Explosives Detection Team Program.

19. FAA Technical Publication--*Immersion Studies of Aircraft Parts Exposed to Plastic Explosives* by F.T. Fox, S. Sisk, and R. DiBartolo.

ATTACHMENT

1. **Interview on September 23, 1996: K-9 Handler, St. Louis International Airport Police Department, Bureau of Support Operations.**

Record of Conversation

Person	K-9 Handler
Address	Lambert-St. Louis International Airport P.O. Box 10212 St. Louis, MO 63145
Telephone Number	314-731-7880
Place	St. Louis International Airport Police Dept
Date	Sept. 23, 1996
Time	1 pm
By	Lasseigne
Other Persons Present:	Turano

Introduction

The text which follows is not a verbatim record of my conversation with the K-9 Handler. It is my interpretation of what he has related to me and has been developed with the help of my hand-written notes of the conversation. This record is correct and complete to the best of my recollection.

Record of Conversation

- On June 10, at 9:30 a.m., the K-9 Handler called the TWA MOD, requesting an available aircraft for K9 proficiency training. The TWA MOD said "yes, there was a 747 aircraft available at Gate 50, but the Captain wants the aircraft to be available by 11:30 am."

- Around 10:15, K-9 Handler went to the explosives bunker, removed ammo containers with four explosives.

- The fifth container, containing a pyrotechnic, was already in his vehicle. At 10:25, the K-9 Handler arrived at Gate 50; swept the area inside the 747 - no one was located and placed the ammo cans near the R1 galley location. Around 10:45 am, the K-9 Handler removed the pyrotechnic container's cap and placed the container on its side. The pyrotechnic container was placed in the compartment separating seats 1 and 2, Row 1. The K-9 Handler stated that there may have been a small spill of pyrotechnic material [maybe a pinch or so, it was hard to see and couldn't actually say how much was spilled in the compartment between the seats.]

- Next, he returned to the galley, and removed the next explosive and placed it on the upper deck in a small closet at the back of the upper deck. Around 11:00 am, he returned to the galley at R1 door and placed an explosive sample (1-lb) at Row 10, Seat 9, inside rear pouch. Then he returned to the galley and took another explosive and placed it at Row 20 in the overhead location. He noted the cracked condition of this explosive and that this explosive wasn't in "pristine condition"

because they had been using these explosives a long time, since 1994. The K-9 Handler also noted that one explosive also released a small amount of dust like a cloud in the aircraft when it was removed from the ammo case.

- K-9 Handler stated that there were no exceptions to any of the explosive inner packaging. If there had been, he would not have used it. K-9 Handler stated that St. Louis doesn't have a log in the explosives bunker to sign explosives in and out - all the explosives have been listed with the amount and type on a log sheet based on a monthly inventory.

- The commercial explosives are changed out every three months - which is the K-9 Handler's responsibility He turns in the old explosive to the local quarry were supplies are furnished and all accounted for on the log sheet that the local quarry maintains. The commercial explosives are obtained from a company in Farmington, Missouri.

- Normally, the K-9 Handler is accompanied by the K-9 Trainer, who oversees the checking out and placing of the training aids.

- At 11:15, the K-9 Handler sat down for about 15 minutes he believes, to allow ample set time. Then he started his search pattern first from position 1, then to 2, 3, 4 and 5 in that order. The test was successful in that the dog went to the source and gave a final response on all explosives planted. Afterwards the dog was returned to the vehicle and K-9 Handler picked up all the explosives starting at 5, 4, 3, 2, 1 and secured all explosives between 10:30 and 10:45 am.

- Everything was taken from the aircraft to the police vehicle after checking to ensure that all contents were properly packaged and identified. He stated that it took two separate trips to remove the explosives from the aircraft.

- He described that all the training aid he uses has a warning with information that it is an "explosives aid" and to contact the police;

- Once he was through, K-9 Handler did not notify anyone from TWA that the test had been concluded.

- The K-9 Trainer makes out a monthly form verifying types and amounts of military and commercial explosives in each bunker. Review of these forms indicates that the month to month inventory was up to date and all explosive items were accounted for. The most recent major explosive exchange was on June 19, 1996 where the military explosives were replaced by FAA personnel from the FAA Technical Center.

- The handler discussed the importance of identifying or matching up his training aids with aircraft tail numbers - and had not been specifically taught to record the tail

numbers - but had an appreciation of their importance. He noted that they use this same procedure when planting explosives in vehicles - listing make, model and license plate.

- In case of a mishap involving explosive accountability, his first action would be to call his supervisor and advise him of actual situation, and request his guidance and assistance.

- The K-9 Handler's activities are limited to the front half of the aircraft. The K9 was never taken beyond the L/R 3 location and he never entered the lower cargo deck at any time with the K9 - or inspected the lower cargo deck during this test.

- He advised the airport was modifying their proficiency training document, to include tail numbers in order to identify aircraft.

ATTACHMENT

2. **Interview on September 23, 1996: K-9 Trainer St. Louis International Airport Police Department, Bureau of Support Operations.**

Record of Conversation

Person	K-9 Trainer
Address	St. Louis Airport
Telephone Number	314-426-8100
Place	Airport Police Dept
Date	Sept 23, 1996
Time	11 am
By	Lasseigne/Turano

Introduction

The text which follows is not a verbatim record of my conversation with the K-9 Trainer. It is my interpretation of what he has related to me and has been developed with the help of my hand-written notes of the conversation. This record is correct and complete to the best of my recollection.

Record of Conversation

- On August 29, FAA CASFU called and requested information for the last 6 months, ie.: "If we had done any training on a TWA 747?" In checking our records, only one proficiency test was found involving a 747.

  The "747 " notation on June 10 proficiency test record was made by the K-9 Trainer on September 5 after he verified that the wide-body was a 747; this was based on a description of where the training aids were planted

  He then sent a message to the CASFU notifying them was to the Gate, Date, Time of the 747 inspection.

- Usually the K-9 Trainer observes the K-9 Handler during proficiency training exercises but on June 10, 1996 the trainer was on vacation.

- Once a month, the K9 Teams conduct an inventory of explosives in the bunker. Documentation included February 1994 hand receipt and June 1994 hand receipt. Also provided documentation on change-out of explosives on June 19, 1996 by FAA.

ATTACHMENT

3. **Interview on September 23, 1996: Supervisor, St. Louis International Airport Police Department, Bureau of Support Operations.**

DCA96MA070
July 17, 1996
East Moriches, Long Island, NY

Record of Conversation

Person	Supervisor-Airport Police
Address	St. Louis Airport
Telephone Number	314-426-8114
Place	Airport Police Dept
Date	Sept 23, 1996
Time	10:30 am
By	Lasseigne/Turano

Introduction

The text which follows is not a verbatim record of my conversation with the airport police supervisor. It is my interpretation of what he has related to me and has been developed with the help of my hand-written notes of the conversation. This record is correct and complete to the best of my recollection.

Record of Conversation

- On August 29, the local CASFU asked the airport police K-9 unit for any documentation of K-9 training on 747's. On September 19, 1996, TWA was requested to go through the airport resume/flowchart and they discovered a 747 was sitting at Gate 50 on June 10 between 10:45 am and 11:30 am.

- On Friday morning , September 20, 1996, the local FAA Regional Security Manager called and said that the aircraft that we had trained on was TWA 800 - and that we would probably be contacted by the FBI. At 12:25 p.m. my beeper went off and I talked to the FBI shortly afterwards.

ATTACHMENT

4. **Interview on September 23, 1996: Supervisor FAA CASFU and Federal Security Manager, Lambert-St. Louis International Airport.**

Record of Conversation

Person	Supervisor, STL FAA CASFU
Address	St. Louis Airport
Telephone Number	314-423-0336
Place	East Terminal, Suite 2030
Date	Sept 23, 1996
Time	9:30 am
By	Lasseigne/Turano

Introduction

The text which follows is not a verbatim record of my conversation with the supervisor. It is my interpretation of what he has ; ıe and has been developed with the help of my hand-written notes of the conversation. This record is correct and complete to the best of my recollection.

Record of Conversation

- FAA Headquarters contacted STL CASFU on August 29 in reference to training exercises on TWA 747s in St. Louis.

- On September 4, the STL K-9 unit provided STL CASFU with a copy of their training record for June 10 and she confirmed with the team that it was indeed a TWA 747. The CASFU supervisor then sent to FAA Headquarters a cc:mail message that identified a proficiency test was conducted June 10 on a TWA 747 . Her message included the date, time and explosives amount/location.

- In addition, CASFU sent a message on September 5 to the Central Region Deputy Division Manager. The message included the above information along with the notation that the aircraft tail number was not recorded on the training record.

- September 18 - an FAA Explosive Unit Specialist contacted STL CASFU and requested the tail number of the aircraft in reference to her Sept 9 message. In response STL CASFU contacted the STL TWA manager on duty and was advised on 9/19 that TWA #17104 **(FAA # N93104)**, a TWA 747, was on the ground at STL on June 10.

- However, the FAA Explosives Team at the Long Island Command Post advised that they were also aware that TWA Flight 800, TWA # 17119 **(FAA # N93119)** was also on the ground on June 10. As a result CASFU was advised to confirm the

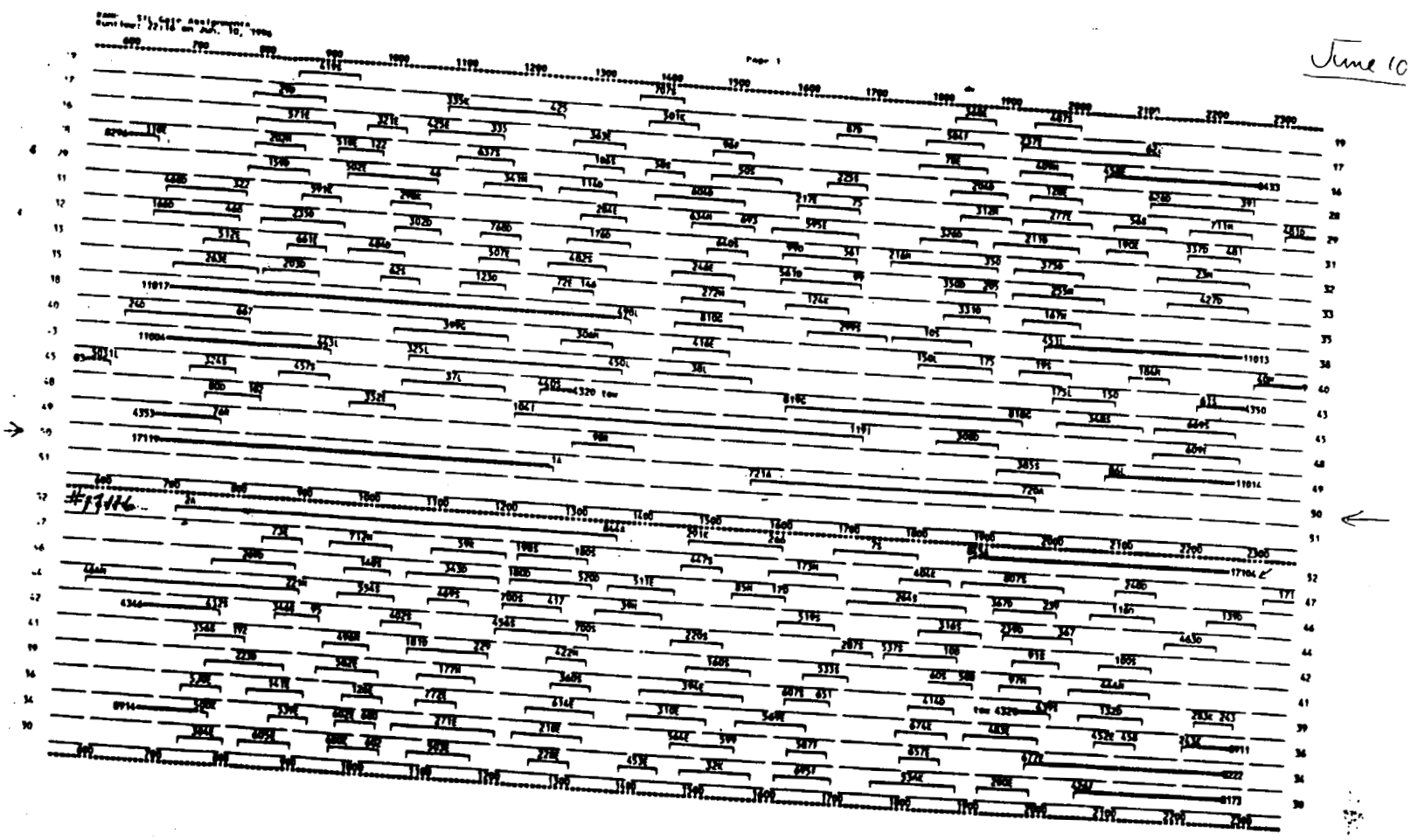
information on TWA #17104 and any other 744's on the ground at St. Louis-Lambert International Airport.

- During the next several hours, CASFU contacted the TWA MOD, who reviewed the TWA airport resume[1] and determined that there were actually three 747's on the ground. The resume indicated that on June 10, 747 aircraft, TWA # 17119 was at Gate 50, and two other 747's TWA # 17104 and # 17116 (**FAA # N53116**) were at Gate 52 at various times on June 10, 1996.

- After this exchange of information on 9/19, STL CASFU was advised the FAA Explosive Team that no further action on their part was necessary at this time.

[1] See attached: TWA resume for STL on June 10 through 11, 1996 and *TWA Operations Specifications Manual 747-100, May 10/96.*

June 10



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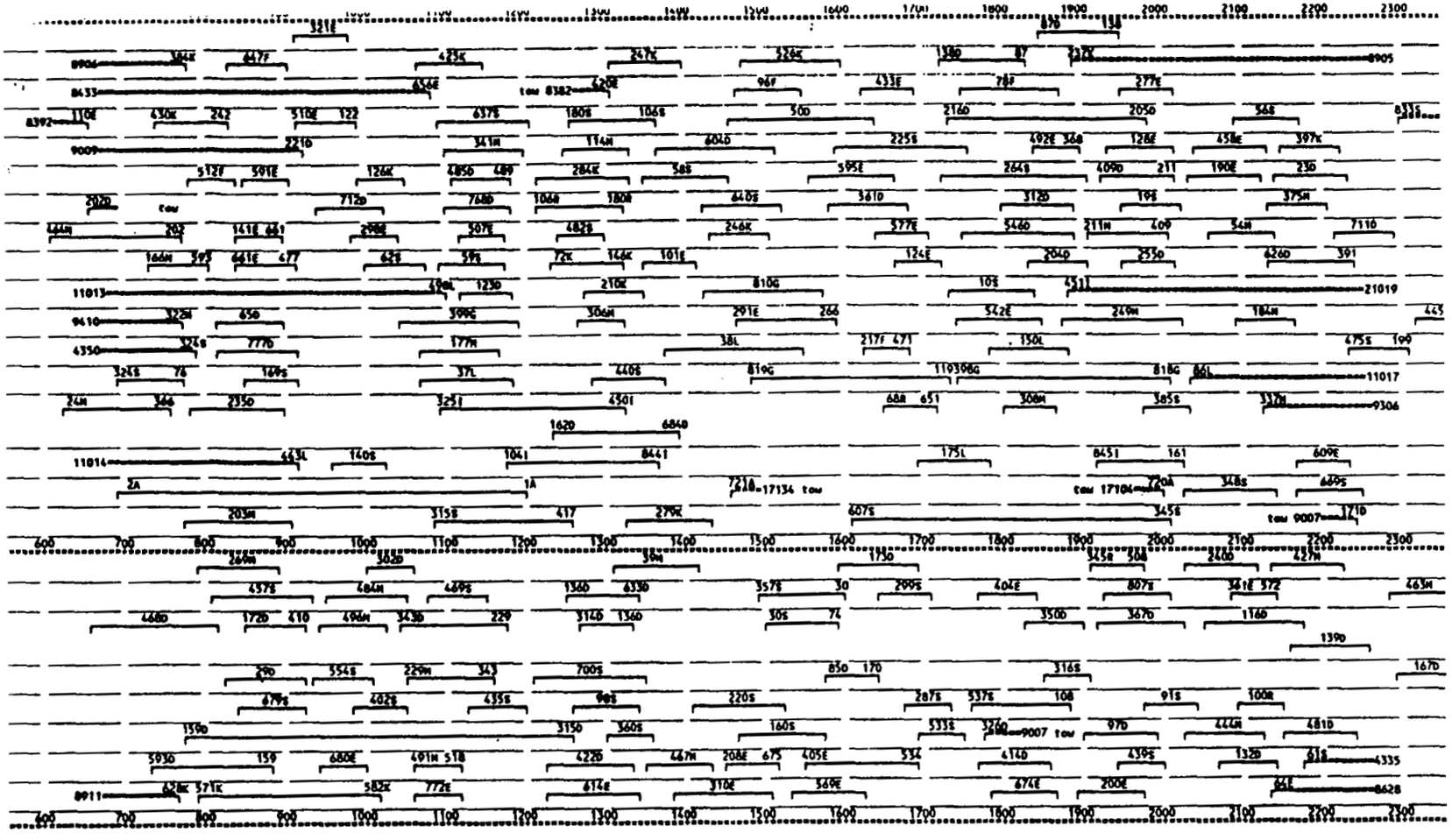

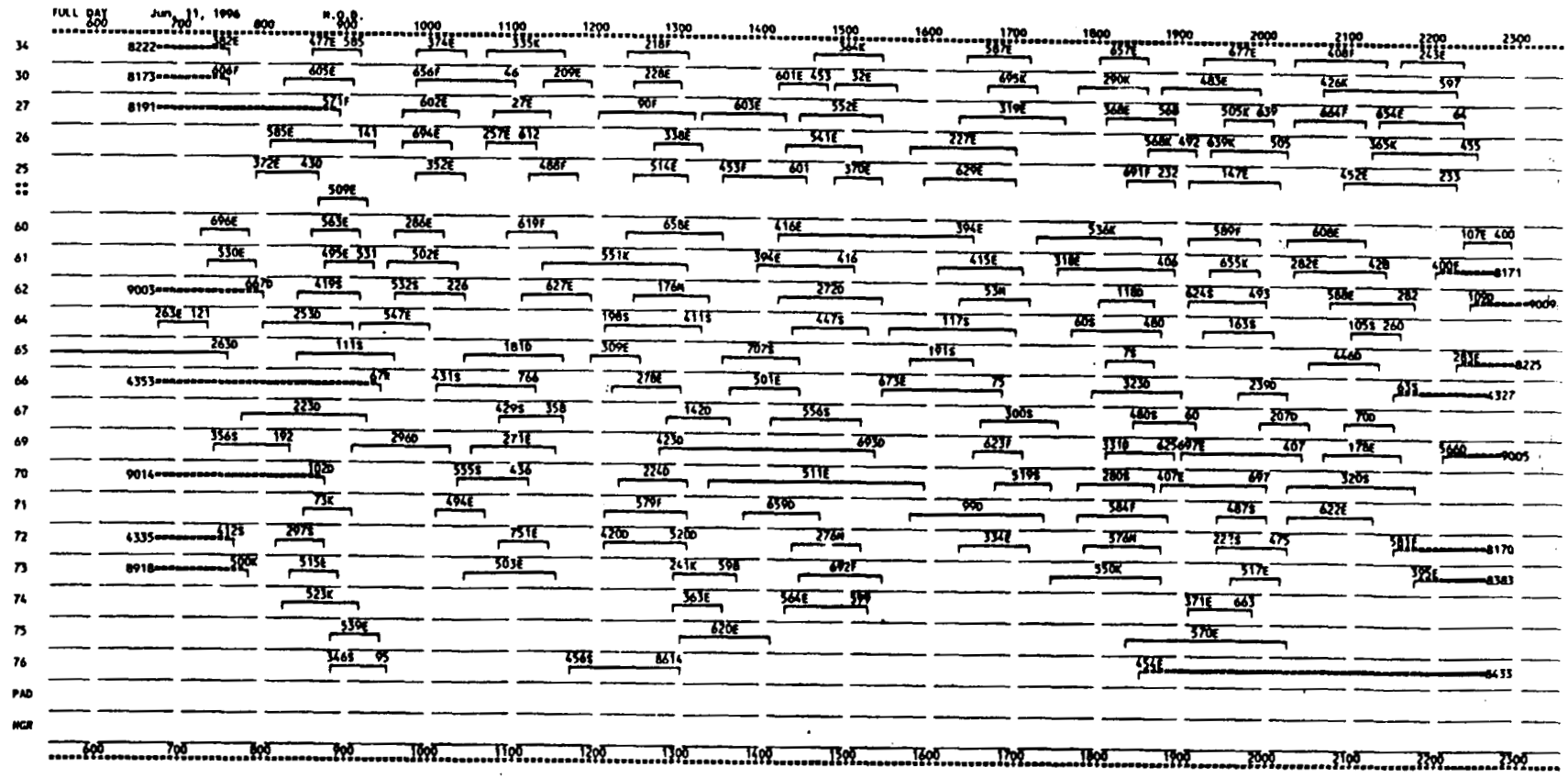
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TWA

OPERATIONS SPECIFICATIONS MANUAL

747-100

THIS IS A COMPLETE REPLACEMENT FOR CHAPTER 9

THIS REVISION INCORPORATES ALL CURRENT FORM A's, and MISCELLANEOUS CHANGES.

747-100 AIRCRAFT EFFECTIVITY LIST

The following is a listing of all 747-100 aircraft that are included in the TWA aircraft maintenance program:

TWA Number	Fleet Type	FAA Number	Line Number	IPC Number
17104	747-131	N93104	20	104
17105	747-131	N93105	21	105
17107	747-131	N93107	35	107
17108	747-131	N93108	38	108
17109	747-131	N93109	43	109
17110	747-131	N53110	63	110
17116	747-131	N53116	102	116
17119	747-131	N93119	153	119
17133	747-156A	N133TW	76	133
17134	747-156A	N134TW	91	134

ATTACHMENT

5. Interview on September 24, 1996: FAA Aviation Explosives Unit Specialist on site at Morriches, Long Island.

DCA96MA070
July 17, 1996
East Moriches, Long Island, NY

Record of Conversation

Person	FAA Aviation Explosives Unit Specialist
Address	Washington, DC
Place	Morriches, Long Island
Date	September 24, 1996
By	Lasseigne/Turano

Introduction

The text which follows is not a verbatim record of my conversation with the explosives unit specialist. It is my interpretation of what he has related to me and has been developed with the help of my hand-written notes of the conversation. This record is correct and complete to the best of my recollection.

Record of Conversation

- On August 26, 1996 following media announcements [trace amounts of explosives were found on the aircraft], the FAA Explosives Unit identified the need to check possible proficiency training on the aircraft of FAA K9 teams. Briefed the NTSB, FBI, and key members of the explosives unit.

- The explosives specialist requested the TWA coordinator - to produce a list of airports where the accident aircraft (N93119) had been on the ground for at least 4 hours. TWA responded on August 28 with a list of all stations visited by N93119 for at least 4 hours from January 1, 1996 to July, 1996. On August 29, FAA requested all FAA field units to begin checking all K-9 records for proficiency testing at the each of the identified airports.

- On September 5, the St. Louis FAA office identified a TWA 747 K-9 test had been conducted on June 10. However, this data was incomplete, as no tail number was included. Also at this time, not all of the identified airports had responded to the earlier August 29 request. [This information request was not followed up by FAA Headquarters on as a high priority item due to the belief that the explosive traces were not related to the cause of the accident and key investigative FAA personnel were not available for coordination.]

- On September 18 the St. Louis CASFU advised the FAA Explosives Unit that only one 747 was on the ground at the time in question. [At this time, STL FAA CASFU had advised the FAA explosives unit in Calverton that the TWA 747 on the ground in STL was N17104, which was not the accident aircraft.] As a result, St. Louis was advised by the FAA Explosives Unit that their information was inconsistent with that supplied by TWA Corporate info which indicated that N93119 the accident aircraft

was on the ground at STL and that the STL FAA security office should recheck airport records.

- On September 19, FAA St. Louis Security Office rechecks with TWA St. Louis Maintenance, and advised that there were three TWA 747's on the ground on June 10. This information places TWA N93119 at Gate 50 during the time the training was conducted by the St. Louis Airport Police Department K-9 Unit. The K-9 unit training sheet shows training was conducted at Gate 50. NTSB and FBI are briefed at Calverton at 1600.

- The explosives specialist advised that in the future the FAA is looking in the area of more carrier involvement in maintaining records which reflect specific security activities involving explosives proficiency testing.

ATTACHMENT

6. **Annual Evaluation for the K9 Team on July 22, 1996 at St. Louis Airport.**

DCA96MA070
July 17, 1996
East Moriches, Long Island, NY

DEPARTMENT OF THE AIR FORCE
AIR EDUCATION AND TRAINING COMMAND

1 Aug 1996

MEMORANDUM FOR FEDERAL AVIATION ADMINISTRATION (FAA)
ATTENTION: [redacted]

FROM: 341 TRS/CC
2800 Craw Avenue
Lackland AFB TX 78236-5618

SUBJECT: Report of Temporary Travel

1. Purpose: To conduct an annual evaluation of the explosives detection canine team in the FAA Explosives Detection Canine Team Program.

2. Travelers: (1) [redacted]; (2) [redacted]

3. Itinerary: St. Louis Airport Police Department, St. Louis, Missouri, 19-22 July 1996; [redacted] Captain, Bureau of Support Operations; [redacted], Patrolman, Canine Trainer; [redacted], Patrolman, Explosives Detection Canine Handler; [redacted], Special Agent, FAA Civil Aviation Security Field Office (in-briefing only); [redacted], Federal Security Manager (out-briefing only).

4. Discussion: a) An in-briefing was conducted on 19 July 1996. Guidelines for the evaluation were discussed. This was an annual evaluation for the team of Officer [redacted] and b) An out-briefing was conducted on 22 July 1996. Key personnel were informed the team failed to meet FAA certification standards.

5. Observations, Recommendations, and Conclusions:

a. Deficiencies were noted with the handler's pace, timing, and basic search techniques. [redacted] was searching too slow and making meaningless presentations. This action caused his canine's sniffing behavior to become sporadic or nonexistent, which consequently led to missed explosives aids. Presentations are made when the canine is not searching and it is the handler's responsibility to ensure that the canine actively searches on a continuous basis.

b. [redacted] must learn to distinguish when [redacted] is working novel odor or explosive odor. When patrolman [redacted] determines that [redacted] is on novel odor he should give [redacted] a mild "no, seek" command to put him back in a searching mode.

c. Personnel were advised on the use of training versus evaluation scenarios. Personnel were instructed that training scenarios are established to improve on any difficulties demonstrated by the canine. Evaluation scenarios are used to point out those difficulties or deficiencies. Evaluation should be conducted on a monthly or quarterly basis. Training should be conducted daily on assigned training days.

d. The handlers were made aware the importance of maintaining open communications with each other during training.

e. The handlers were made aware of the importance of varying the distance between training aids, training aid placement, and the height and depth of training aids. Not varying the height and depth will condition the canine to work only established patterns.

f. Quality versus quantity training should be conducted. Quantity training is currently being met. In order to have a successful program quality training should be maintained. Quantity training might decrease the canine's proficiency level, questioning the teams reliability.

g. Sincere appreciation to Patrolman [redacted] for his interest and participation in this evaluation.

h. The evaluation team received excellent support from the St. Louis Airport Police Department and the FAA.

6. 341 TRS POCs are [redacted], FAA Support Branch, [redacted]

[redacted]
Commander

ATTACHMENT

7. St. Louis Airport Police Department K-9 Unit, Canine Explosives/Narcotics Training Record, June 10, 1996.

ST. LOUIS AIRPORT POLICE DEPT. K-9 UNIT
CANINE EXPLOSIVE / NARCOTICS TRAINING RECORD

DATE: (97) 6-10-96

HANDLER	DOG	LOCATION	TYPE OF AREA
[redacted]	[redacted]	GATE 50	AW

WEATHER	TRAINER	FALSE RESPONSE	SET TIME	START TIME	STOP TIME	TOTAL TIME
68°	[redacted]	0	1045	1175	1130	

	TYPE/LOCATION AIDS	SEARCH RESULTS	AMOUNT	HEIGHT	DEPTH
1	[redacted] CTR ARMREST ROW 2 SEAT 2	+	[redacted]	2 FT	1 FT
2	[redacted] REAR STORAGE UPPER LEVEL	+	[redacted]	2 FT	1 FT
3	[redacted] REAR COUCH ROW 10 SEAT 9	+	[redacted]	1 FT	0 FT
4	[redacted] OVERHEAD ROW 20	+	[redacted]	5 FT	2 FT
5	[redacted] UNDER EXIT DOOR PAX	+	[redacted]	0 FT	0 FT
6.					
7.					
8.					
9.					
10.					

\+ POSITIVE (+) HANDLER ASSIST - MISSED (-) HANDLER ERROR

PURPOSE OF TRAINING :

TRAINER COMMENTS:

HANDLER COMMENTS: [redacted] showed good change on all the aids. He still wants to rush and appears to slow him down seems to make he want to show past areas.

ATTACHMENT

8. St. Louis Airport Police Department K-9 Unit, "Records for Dog" (Computer-generated sheet).

Report:
TrainRec

Date/Time Printed
09/21/96 20:14

ST. LOUIS AIRPORT POLICE DEPARTMENT K-9 UNIT
Records for Dog 009P 06/10/96--06/11/96

EXPLOSIVE/NARCOTICS TRAINING RECORD — TRAINING DATE **06/10/96 - Monday**

HANDLER	[redacted]	FALSE RESPONSE	0
DOG		SET TIME	10:45
LOCATION	gate 50	START TIME	11:15
TYPE OF AREA SEARCHED	aw Aircraft WB	STOP TIME	11:30
WEATHER	68	TOTAL TRAINING	45
TRAINER	[redacted]	TOTAL SNIFF	15

	TYPE/LOCATION AIDS	RESULT	AMOUNT	HEIGHT (FT)	DEPTH (FT)
1	[redacted] inside ctr armrest roe 2 seat 2	+st	[redacted]	2.0	1.0
2	[redacted] inside rear storage area upper level	+st	[redacted]	2.0	1.0
3	[redacted] inside rear pouch roe 10 seat 9	+st	[redacted]	1.0	0.0
4	[redacted] inside overhead row 20	+st	[redacted]	5.0	2.0
5	[redacted] under exit door	+st	[redacted]	0.0	0.0

COMMENTS

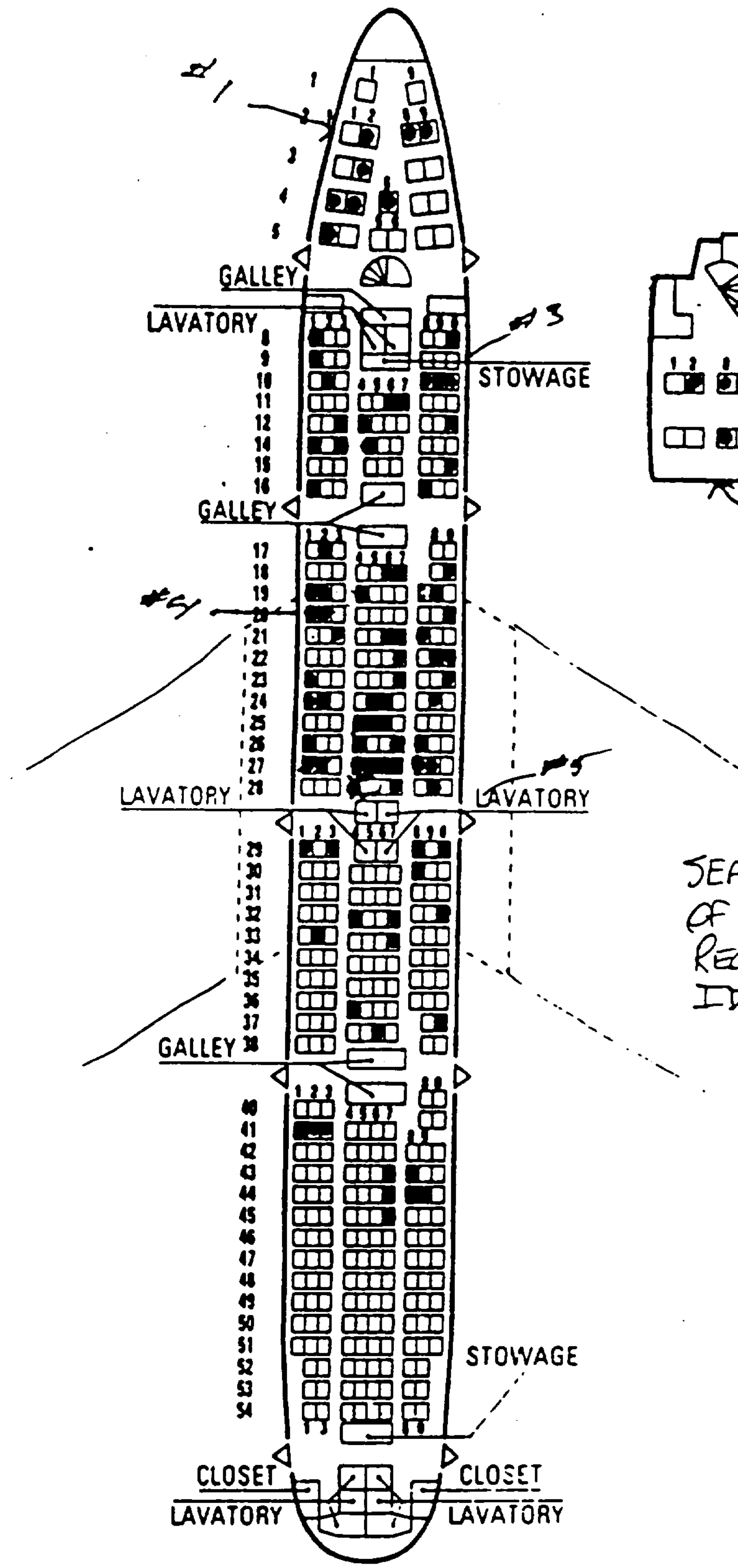
[redacted]

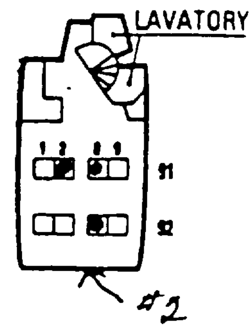
ATTACHMENT

9. Diagram of 747-100 layout: location of training aids planted on June 10, 1996.

DCA96MA070
July 17, 1996
East Moriches, Long Island, NY

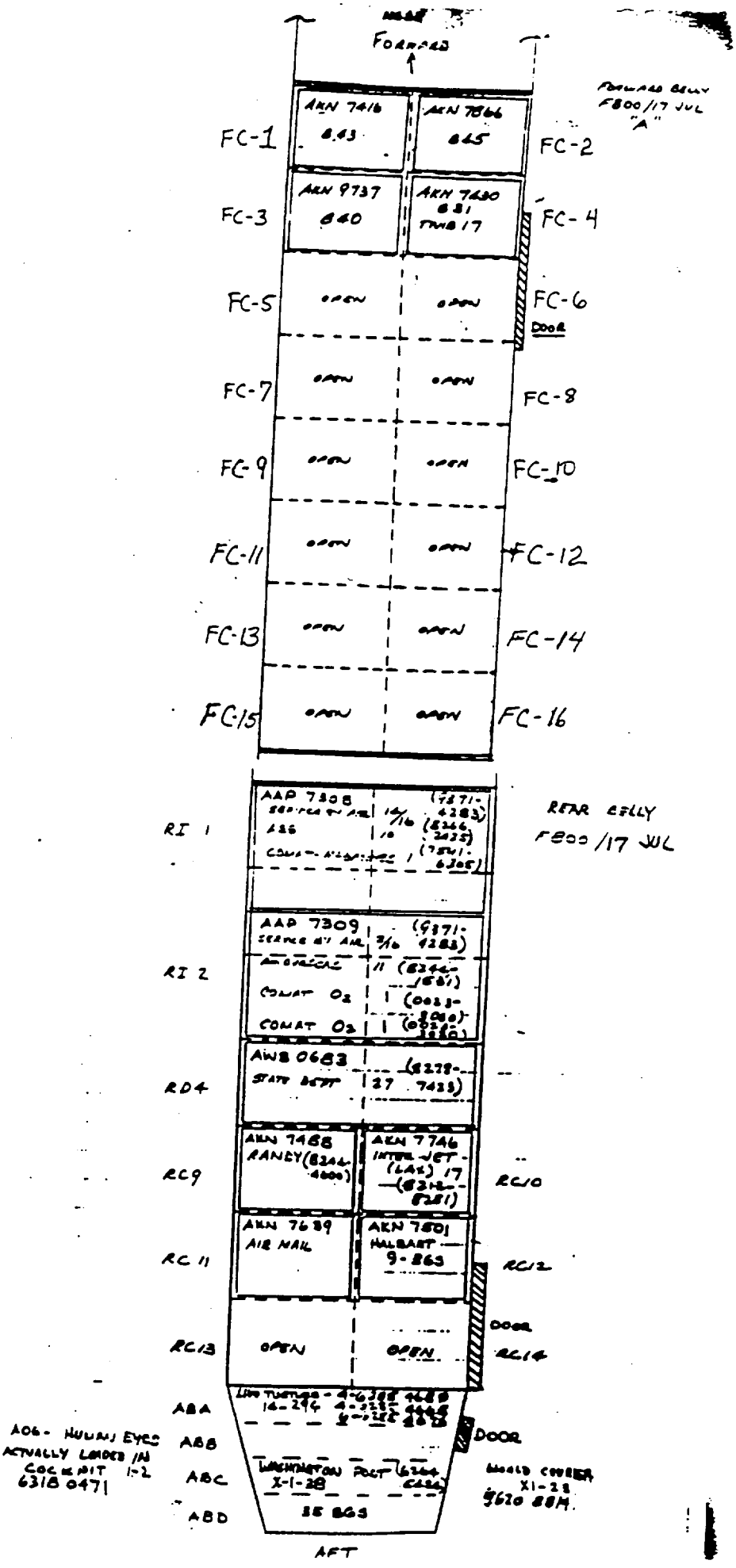
Vaf





SEAT ASSIGNMENTS OF PASSENGERS RECOVERED AND IDENTIFIED.

7/25


FORWARD
FORWARD BELLY FEB00/17 JUL "A"
FC-1
AKN 7416 643
AKN 7866 645
FC-2
FC-3
AKN 9737 640
AKN 7490 631 TMB 17
FC-4
FC-5
OPEN
OPEN
FC-6
DOOR
FC-7
OPEN
OPEN
FC-8
FC-9
OPEN
OPEN
FC-10
FC-11
OPEN
OPEN
FC-12
FC-13
OPEN
OPEN
FC-14
FC-15
OPEN
OPEN
FC-16
RI 1
AAP 7308
RI 2
AAP 7309
RD4
AWB 0683
RC9
AKN 7468 RANEY
RC10
AKN 7746 INTER JET - (LAX) 17
RC 11
AKN 7689 AIR NAIL
AKN 7801 HALBART 9-863
RC12
DOOR
RC13
OPEN
OPEN
RC14
ABA
ABB
ABC
ABD
DOOR
WASHINGTON POST
X-1-28
SE BGS
AFT
REAR BELLY FEB00/17 JUL
A06 - HUMAN EYES ACTUALLY LOADED IN COCKPIT 1-2 6318 0471
SHOULD COVERED X1-28 9620 88M

ATTACHMENT

10. CC:mail message, August 28, 1996 from Supervisor FAA CASFU STL to the field reference: if any proficiency training was conducted by teams in the FAA K-9 Explosives Detection Team Program on any TWA 747s during past 6 months.

Ref. # 12

Author: [redacted] at ACS
Date: 08/28/96 04:31 PM
Priority: Urgent
Receipt Requested
TO: [redacted] AWP700
TO: [redacted] at ANE_CASFO
TO: [redacted] at AEA700
TO: [redacted] at AGL700CC
TO: [redacted] at ASO700CC
TO: [redacted] at ACE700
TO: [redacted] at ANM700
TO: [redacted] at ASW700PO
TO: [redacted] at AEA700
TO: [redacted] at AEU000PJ
TO: [redacted] at ACE700
TO: [redacted] at AAL700PO
TO: [redacted] at ANE700
TO: [redacted] at AWP700
TO: [redacted] at AGL700CC
TO: [redacted] at ANM700
TO: [redacted] at ASW700PO
TO: [redacted] at ASO700CC
CC: [redacted]
CC: [redacted]
Subject: FAA K-9 Team Proficiency Training - TWA 747's...

---------- Message Contents ----------

In an effort to see if there is the slightest possibility that the explosives residue which has been discovered on TWA 800 could have come from our K-9 teams (from conducting proficiency training), our aviation explosives experts have requested that we poll our FAA K-9 Explosives Detection Team Program Participants with this question:

During the past 6 months, have you conducted training on any TWA 747's....

Answer should be simple at this point:

Program Participant: _____

No proficiency training was conducted by these teams on any TWA 747's during the past 6 months.

or....

Yes, proficiency training was conducted on:

(1) (date), 1996. Trained with _____ (type of explosive training aid(s) used), and where planted on aircraft.

(2) (date), 1996, etc....

(3) and so forth.....

The idea is to ask this generic question from our participants to see what information comes back - based on data gathered, we can ask more specific questions as we need to.....

This information is needed just as quickly as possible --

Please cc:mail responses to me - so I can tally them up.

Thanks so much for your assistance.

Mary Carol

ATTACHMENT

11.CC:mail message, September 4, 1996 from FAA Exploisve Unit Specialist to the field, reference: List of airports visited by N93119 since January 1, 1996.

Ref. # 13

Author: [redacted]
Date: 08/29/96 09:32 AM
Priority: Normal
TO: [redacted]
CC:
CC:
CC:
Subject: U.S. Locations for TWA-800 Aircraft in CY-96
---------- Message Contents ----------

The following airports were visited by the accident aircraft since January 1996:

SJU
MCI
LAX
STL
PHX
PIT
HNL
BOS
JFK
SVN

---------- Forward Header
Subject: Re[2]: U.S. Locations for TWA-800 Aircraft in CY-96
Author: [redacted]
Date: 9/4/96 1:03 PM

Please note that SVN on the original message should be changed to SAV (Savannah, GA not Santa Elena, Venezuela).

This information is VERY IMPORTANT to the TWA-800 investigation.

Sorry for the typo (TWA's).

---------- Reply Separator
Subject: Re: U.S. Locations for TWA-800 Aircraft in CY-96
Author: [redacted]
Date: 8/29/96 11:03 AM

I am surprised the list is so short.

What about foreign locations, see my note yesterday about an old experience in Athens ?

REF #

12

Author: [redacted]
Date: 08/28/96 04:31 PM
Priority: Urgent
Receipt Requested
TO: [redacted]
TO:
TO:
TO:
TO:
TO:
TO:
TO:
TO:
TO:
TO:
TO:
TO:
TO:
TO:
TO:
TO:
TO:
CC:
CC:
Subject: FAA K-9 Team Proficiency Training - TWA 747's...

---------- Message Contents ----------

In an effort to see if there is the slightest possibility that the explosives residue which has been discovered on TWA 800 could have come from our K-9 teams (from conducting proficiency training), our aviation explosives experts have requested that we poll our FAA K-9 Explosives Detection Team Program Participants with this question:

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Answer should be simple at this point:

Program Participant: _____

No proficiency training was conducted by these teams on any TWA 747's during the past 6 months.

or....

Yes, proficiency training was conducted on:

(1) (date), 1996. Trained with _____ (type of explosive training aid(s) used), and where planted on aircraft.

(2) (date), 1996, etc....

(3) and so forth.....

The idea is to ask this generic question from our participants to see what information comes back - based on data gathered, we can ask more specific questions as we need to.....

This information is needed just as quickly as possible --

Please cc:mail responses to me - so I can tally them up.

Thanks so much for your assistance.

[redacted]

[redacted]

ATTACHMENT

12. St. Louis Airport Police Department K-9 Unit, "Records for Dog" (Computer-generated sheet).

Report:
TrainRec

Date/Time Printed
08/29/96 17:20

ST. LOUIS AIRPORT POLICE DEPARTMENT K-9 UNIT
Records for Dog 009P 06/10/96--06/11/96

EXPLOSIVE/NARCOTICS TRAINING RECORD TRAINING DATE 06/10/96 - Monday

HANDLER	[redacted]	FALSE RESPONSE	0
DOG	[redacted]	SET TIME	10:45
LOCATION	gate 50	START TIME	11:15
TYPE OF AREA SEARCHED	aw Aircraft WB (747)	STOP TIME	11:30
WEATHER	68	TOTAL TRAINING	45
TRAINER	[redacted]	TOTAL SNIFF	15

	TYPE/LOCATION AIDS	RESULT	AMOUNT	HEIGHT (FT)	DEPTH (FT)
1	[redacted] inside ctr armrest row 2 seat 2	+st	[redacted]	2.0	1.0
2	[redacted] inside rear storage area upper level	+st	[redacted]	2.0	1.0
3	[redacted] inside rear pouch row 10 seat 9	+st	[redacted]	1.0	0.0
4	[redacted] inside overhead row 20	+st	[redacted]	5.0	2.0
5	[redacted] under exit door	+st	[redacted]	0.0	0.0

COMMENTS

[redacted]

ATTACHMENT

13. **Information faxed to FAA Explosives, dated September 19, reference TWA 747's on ground June 10 (includes fax confirmation sheet, St. Louis Airport Police Department K-9 Unit, "Records for Dog" (computer-generated sheet)**

ATTACHMENT

14. Memo from FAA CASFU STL, September 21, 1996 in reference to events during tracking N93119.

[redacted] #

September 21, 1996 Submitted by: [redacted]

16

The following describes a chronological order of events in obtaining information regarding Lambert-St. Louis International Airport (STL) Police Canine (K-9) Unit Explosives Detection Team training on Trans World Airlines (TWAA) 747's at STL. The times are approximate and the conversations are as I recall them.

On August 29, 1996, I received a cc:mail message forwarded by [redacted] ACE Regional K-9 Coordinator, which included a request from [redacted] ACS K-9 Program Manager, through [redacted] at ACS. The message, in part, requested that FAA K-9 Explosives Detection Team Program participants be asked if, during the past six months, had they conducted training on any TWA 747's. The message requested those participants that had trained on TWA 747's to provide the date of the training; the type of explosive training aid(s) used, and the location the aids were planted on the aircraft. I then telephonically contacted the STL K-9 Unit Training Officer and solicited the above information.

On September 4, 1996, I received a copy of the STL K-9 Unit training record for training conducted by the STL K-9 team on June 10, 1996, on a wide body aircraft. I telephonically contacted the STL K-9 Training Officer to confirm the wide body aircraft on which the team trained was a TWAA 747. He stated it was. A copy of the training record is included as Attachment 1.

I then forwarded the information through the FAA cc:mail system to [redacted] - the STL FAA Federal Security Manager (FSM), [redacted] - the CASFO Manager, and [redacted] - the MCI Unit Supervisor. A copy of the original message and my reply is included as Attachment 2.

On September 5, 1996, I was telephonically contacted by [redacted] ACE Deputy Division Manager, and asked if the information originally requested by ACS regarding K-9 training on TWAA 747's had been obtained. I explained the information had been forwarded the previous day through cc:mail. He asked if I could forward the information to him through cc:mail which I did.

On the afternoon of September 18, 1996, I received a telephone call from [redacted] who requested I attempt to obtain the tail number of the TWAA aircraft on which the STL K-9 Unit had conducted training on June 10. He asked that I provide the information directly to [redacted]. I contacted the TWAA Manager on Duty (MOD) and asked if records were available at

this station that would provide information, including the tail number, relative to the specific 747 aircraft on the ground at STL on June 10 between the hours of 1045 and 1130. The MOD suggested I contact a secretary in the station manager's office and ask her to glean the information from their daily resume files that are maintained in her office. I then made telephonic contact with her, described the information needed, and asked that she contact me when it was available. I then placed a call to [redacted] was not available, but I spoke with [redacted] and explained that local TWAA personnel would be reviewing the resume files to determine if the information was available at STL. [redacted] stated that TWAA Chief Investigator [redacted] was with him and that [redacted] suggested I contact TWAA Kansas City office if the information was not available locally.

On the morning of September 19, 1996, a message on the answering machine stated that the tail number of the TWAA 747 on the ground at STL on June 10 was N17104. I then telephonically contacted [redacted] and provided the tail number of N17104. At that time [redacted] asked that I confirm that the information was accurate. He explained that the info would be provided to the Federal Bureau of Investigations (FBI) and it was imperative that it be accurate. I stated that I would request TWAA to allow me to review the resume files for June 10 and attempt to confirm the information. [redacted] then explained that he had information from TWAA records that TWAA 747, tail number N17119, had been on the ground in St. Louis for over 45 hours and that the date of June 10 was included in part of that 45 hours. [redacted] went on to explain that N17119 was the aircraft used for TWAA Flight #800.

I proceeded to the STL TWAA Station Manager's office located in the main terminal at STL. I passed the STL FSM in the concourse. I explained the request and he accompanied me to the TWAA office. There we met with the TWAA MOD [redacted] explained that the numbers on the right hand of the resume sheets indicate the gate numbers where the aircraft were located and that the alpha numeric designators on the bars represent the flight number and the type of aircraft. He explained that A and C represent 747 aircraft. The resume for June 10 indicates that tail number N17104 arrived at gate 52 at approximately 1845 hours. The resume also indicates that on June 10, tail number N17119 was at gate 50 until approximately 1230 hours. Additionally, according to the resume, a third 747, tail number 17116, was on the ground at STL at gate 52 from approximately 0715 to 1340 hours. A copy of this resume was previously provided.

[redacted] and I returned to our office and called [redacted] were on a speaker phone. During the conversation we explained the information on the resume indicated that tail number 17119 had departed STL at approximately 1230 hours. [redacted] explained that the TWAA records they had obtained indicated that tail number 17119 had arrived at STL on June 8 at 0948 hours and had not departed STL until 1735 hours on June 10. [redacted] asked [redacted] and I what we thought the next step should be. [redacted]

suggested we contact the STL Chief of Police and the K-9 Unit Commander and reconcile the inventory of training aids on hand on the date of the training (June 10) and the inventory of training aids exchanged on June 19 between FAA representative [redacted] and the STL Training Officer. We were advised that was not necessary at this time and that the purpose of confirming the tail number used for K-9 training was to determine if the source of the traces of explosives detected on TWAA Flight 800 aircraft could have come from the training aids. [redacted] and I were advised that no further action on our part was necessary at this time. Copies of the locally obtained TWAA resume for June 10 and the STL K-9 Unit training record for June 10 were faxed to [redacted]

ATTACHMENT

15. Standard Practice and Procedures to Minimize Cross-Contamination of Explosive Materials.

DCA96MA070
July 17, 1996
East Moriches, Long Island, NY

[redacted]

FEDERAL AVIATION ADMINISTRATION
NATIONAL EXPLOSIVES DETECTION
K-9 TEAM PROGRAM

#
3-8

Standard Practice
and Procedure to Minimize
Cross-Contamination of
Explosive Materials

FOR OFFICIAL USE ONLY

DRAFT

Revision 0.0
June 1996

[redacted]

FEDERAL AVIATION ADMINISTRATION NATIONAL EXPLOSIVES DETECTION K-9 TEAM PROGRAM

Standard Practice and Procedure to Minimize Cross-Contamination of Explosive Materials

DRAFT

Revision 0.0

June 1996

Prepared for:
Federal Aviation Administration
K-9 Program Manager
Civil Aviation Security (ACO-200)
800 Independence Avenue, S.W.
Washington, D.C. 20591

[redacted]

Copy to:
Federal Aviation Administration
Aviation Security Trace Detection
Program, AAR-520
FAA William J. Hughes Technical Center
Atlantic City International Airport, NJ 08405

[redacted]

[redacted]

PREFACE

This document was prepared in support of the Aviation Security Explosives Trace Detection Program at the Federal Aviation Administration (FAA) William J. Hughes Technical Center, Atlantic City International Airport, New Jersey. Key FAA personnel supporting this effort are [redacted] Aviation Security Research and Development Division (AAR-520); [redacted] Senior Engineering Research Scientist, Office of Civil Aviation Security, Policy and Planning Technology Integration Division (ACP-400); [redacted] Civil Aviation Security (ACO-200); and Special [redacted] Aviation Explosives Security (ACS-50).

[redacted] prepared this document under contract number [redacted] with the FAA William J. Hughes Technical Center. The Program Manager for this effort is [redacted]. The author of this document is [redacted]

DRAFT

This document is intended for those participants in the FAA Explosives Detection K-9 Team Program only. As such, it is not to be duplicated or reproduced without the expressed written authorization from the FAA K-9 Program Manager.

TABLE OF CONTENTS

DRAFT

APPENDICES

LIST OF ACRONYMS AND ABBREVIATIONS

AAR	Aviation Security Research and Development Division
ACO	Office of Civil Aviation Security
ACP	Office of Civil Aviation Security, Policy and Planning Technology Integration Division
ACS	Office of the Associate Administrator for Civil Aviation Security
ATF	Bureau of Alcohol, Tobacco, and Firearms
[redacted]	
FAA	Federal Aviation Administration
[redacted]	
K-9 Program	Explosives Detection K-9 Team Program
SPP	Standard Practice and Procedure
[redacted]	

DRAFT

1. INTRODUCTION

1.1 PURPOSE.

The purpose of this document is to provide a Standard Practice and Procedure (SPP) to minimize the cross-contamination of explosives used as training aids for the Federal Aviation Administration (FAA) Explosives Detection K-9 Team Program (K-9 Program). These procedures are necessary to maintain the quality of the explosive training aids used to validate FAA K-9 team performance during training and testing.

DRAFT

1.2 SCOPE.

This SPP minimizes cross-contamination of FAA K-9 Program explosive training aids during acquisition, storage, transportation, and operational training. The SPP is prescribed by the FAA to improve the FAA K-9 Program. These provisions of this SPP do not supersede any other provisions of law or safety regulations for the handling and storage of explosive materials. In the event that this SPP conflicts any other mandated procedure or regulation, that procedure or regulation will take precedence upon written notification to the FAA.

1.3 STANDARD PRACTICE AND PROCEDURES.

A multiple-agency program, such as the FAA K-9 Program, requires regulated procedures and methods for maintaining explosive training aids for the training and testing of FAA K-9 teams. It is imperative that the explosives remain free of cross-contamination, therefore, the FAA will revise these procedures as the FAA deems necessary.

Throughout this SPP, individuals handling explosives are directed to wear "fresh" vinyl gloves when handling explosives and associated materials. Fresh gloves are those vinyl gloves that have had no previous contact with explosives or odors from the explosives, hence they are uncontaminated. The use of fresh gloves is imperative in controlling cross-contamination. They must be changed each time any one explosive is handled. After one use, remove the gloves and discard them immediately.

1.4 MANDATORY PROCEDURES.

The use of this SPP is mandatory for all participants in the FAA K-9 Program. If adhered to, the cross-contamination of explosive training aids will be minimized. The FAA will conduct chemical analyses of the explosive training aids to measure the cross-contamination and determine the success of operational sites following the SPP.

1.5 ADDITIONAL REFERENCES.

This SPP only addresses the cross-contamination of explosives used as training aids for FAA K-9 teams. To reference laws and regulations that address storage and transportation of explosives, see the following documents: Bureau of Alcohol, Tobacco, and Firearms (ATF) Explosives Handling and Storage Laws and Regulations (ATF P 5400.7); and Department of Transportation Hazardous Materials Regulations (DOT 49 CFR 171-179).

DRAFT

1.6 FAA POINT OF CONTACT.

For questions concerning issues outside the scope of this SPP, contact the FAA K-9 Program Manager at the following address:

Federal Aviation Administration
Office of Civil Aviation Security (ACO-200)
800 Independence Avenue, S.W.
Washington, DC 20591
[redacted]

DRAFT

1.7 DEFINITION OF TERMS.

a. Clip: A device that grips or clasps.

b. Confound: To cause to become confused; uncontrolled.

c. Contaminate: To make impure or unclean by contact or mixture.

d. Cross-contamination: The combination of odors from explosive training aids.

e. Explosive: Any chemical compound, mixture, or device, the primary or common purpose of which is to function by explosion.

f. Explosives Storage Container: A container that is marked to indicate a specific explosive training aid. (There are a total of five separate containers, one for each type of explosive training aid.)

g. Explosive Materials: These include explosives, blasting agents, and detonators. The term includes but is not limited to dynamite and other ~~height~~ high explosives, slurries, emulsions, and water gels, black powder and pellet powder, initiating explosives, detonators (blasting caps), safety fuse, squibs, detonating cord (Det Cord), igniter cord, and igniters.

h. Explosive Training Aids: The term includes but is not limited to the explosives provided by the FAA to train FAA explosives detection dogs. The following explosives are provided by the FAA: [redacted]

DRAFT

i. FAA K-9 Program: The FAA National Explosives Detection K-9 Team Program.

j. FAA K-9 Program Participant: Any department, agency, or authority who has signed a letter of agreement with the FAA to participate in the FAA K-9 Program.

k. Filter: A porous material through which a gas is passed in order to separate, or remove, impurities. The filter contained in the FAA shipment contains charcoal which facilitates the absorbency of the filter.

l. Nylon Bag: A clear nylon bag used to contain explosive training aids in each explosives storage container.

m. Odor: The property or quality of an explosive training aid that affects, stimulates, or is perceived by the sense of smell.

n. Operational Training: Explosives detection training conducted in the operational environments that K-9 teams must certify as being free of explosive threats.

o. Tongs: A device for seizing or lifting objects, having two long arms pivoted or hinged together.

p. Vinyl Gloves: Clear vinyl disposable gloves that have had no previous contact with explosives or odors from explosives, hence they are uncontaminated. Often referred to as "fresh" vinyl gloves.

q. Volatile: Evaporating readily at ambient temperatures and pressures.

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2. CROSS-CONTAMINATION EXPLAINED

Cross-contamination of explosive training aids is a major concern of FAA K-9 Program management. It occurs when odors not from explosive training aids are present on explosive training aids. Cross-contamination may confound K-9 team performance because the dogs may be trained to detect odors that are not the volatile components of the explosives on which the dogs are being trained. This confound is problematic, as the dogs cannot be relied on to detect uncontaminated explosives in an operational setting. There are two types of cross-contamination: Type 1, which results from contact with other explosives, and Type 2, which results from contact with human scent.

Type 1 cross-contamination occurs when explosives are stored in common areas or when explosives are handled with gloves that have had previous contact with explosives. For both situations, explosives with the most volatile (odorous) chemical components may contaminate, dilute, or mask the odors of other explosives with less volatile components. When this happens, it is likely that the odors combine across explosive training aids and that the dogs only respond to the strongest, or most volatile, odor. This may confound the dogs' explosives detection performance because they will not be able to respond to uncontaminated explosives that possess less volatile odors.

Type 2 cross-contamination usually occurs from handling the explosives with ungloved hands. Dogs learn odors of humans (e.g., handlers, operators, trainers) rather quickly and associate that odor with a reward. Explosives that have the scent of the handler on them may confound the dogs' performance because the dogs may be responding to the handlers' odor, rather than the explosive odor.

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3. ADMINISTRATIVE AND MISCELLANEOUS PROVISIONS

3.1 RIGHT OF ENTRY AND EXAMINATION.

Due to a current memorandum of understanding between the FAA and the Department of Defense, the FAA assumes responsibility for the security and safe storage of explosives used to train FAA K-9 Program Participants. As such, authorized FAA representatives may be required to conduct periodic inspections of FAA K-9 Program Participants' operational training and

administrative areas, explosives, storage facilities, records, and materials required to be maintained under the FAA K-9 Program.

3.2 DISCLOSURE OF INFORMATION.

Upon receipt of a written request from the FAA, the Program Participant shall make available to the FAA any information with respect to the person(s) within the organization who have received, stored, or handled any FAA explosive materials.

3.3 PROHIBITED TRANSFER OR LENDING OF EXPLOSIVE MATERIALS.

No FAA K-9 Program Participant is authorized to transfer, lend, or ship any FAA procured explosive to any other agency or individual without written authorization and direction from the FAA K-9 Program Manager.

3.4 LOST OR STOLEN EXPLOSIVE TRAINING AIDS.

All FAA procured explosives that are lost or stolen shall be reported to the FAA K-9 Program Manager immediately upon knowledge of the incident so it can be reported to the ATF.

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4. RECEIPT OF EXPLOSIVES

Receipt of explosives shall be performed by authorized FAA K-9 Program Participants only. This procedure applies when explosives are arriving at the operational site from the FAA.

Receipt encompasses checking the shipment to ensure that all materials are provided, and to document safe and complete arrival of explosives.

4.1 SHIPMENT CONTENTS.

It is the intent of the FAA to provide a shipment of explosive training aids and essential materials to each FAA K-9 Program Participant on a regular basis. The shipment includes:

[redacted]

b. explosives storage containers that are labeled for each explosive,

c. charcoal filter,

d. nylon bags,

e. large clips,

f. vinyl gloves,

g. tongs that are labeled for each explosive, and

h. paper towels.

DRAFT

4.2 CHECKING SHIPMENT CONTENTS.

Before checking the explosives shipment, put on a fresh pair of vinyl gloves. Remember, do not touch anything without wearing a new pair of vinyl gloves.

FAA K-9 Program Participants will receive 600 pairs of vinyl gloves in each shipment of explosives. The use of gloves when handling the explosives is absolutely necessary to minimize

cross-contamination. When used properly, explosive odors will remain on the gloves and not be combined across the explosive training aids. Change the gloves each time an explosive training aid or explosives storage container is handled, this includes after handling the same or different explosive training aid. Notify the FAA K-9 Program Manager when half of the gloves have been used.

NOTE: To remove the vinyl gloves, grab the base of one glove and remove it by pulling it off your hand and allowing it to turn inside-out. Place the removed glove in the palm of the still gloved hand, and remove that glove in the same manner, keeping the first glove inside the second glove. Dispose of the gloves immediately.

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Explosives will be shipped by the FAA in explosives storage containers (Tupperware). Each container includes a charcoal filter to absorb any impurities that contaminate the explosive training aid. The filters are set in place with double sided tape and must remain in the container at all times. ***Do not remove the filter from the container.***

The containers are labeled to indicate the type of explosive training aid. Inside each container, a specific type of explosive training aid is contained in a clear nylon bag that is sealed with a large clip. Each clip is labeled to indicate the explosive type. Also inside each explosives storage container is a pair of tongs that is labeled to indicate the explosive training aid to be handled.

When shipments arrive, check the inventory and complete the necessary paperwork as directed by the FAA representative who delivered the explosives. See Appendix A for a listing of specific procedures to check explosives shipments.

5. EXPLOSIVES STORAGE

The FAA prohibits any FAA K-9 Program Participant from storing FAA procured explosive training aids and materials in a manner not in conformity with these procedures. The storage of explosive training aids requires specific procedures to minimize cross-contamination. These procedures are listed in Appendix B.

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5.1 STORAGE FACILITY.

Explosive training aids only may be stored only in an ATF approved storage magazine (see ATF P 5400.7 for explosives storage laws and regulations). The storage standards prescribed by the FAA confer no right or privilege to store explosive materials in a manner contrary to federal, state, or local laws. The magazine may be inspected periodically by the FAA or authorized FAA representative to ensure that the explosives are stored properly and to ensure that the magazine provides adequate safety and security.

5.2 STORING THE EXPLOSIVES.

The FAA recently conducted an analysis of the FAA K-9 Program and found that a major source of cross-contamination is from storing the explosive training aids in unsealed explosives storage

containers that are placed in an open air magazine (Cormier et al., 1995). As a result, the odors of the explosives escape from the containers and combine across the various explosive training aids. This results in Type 1 cross-contamination.

To minimize cross-contamination occurring from storage, the explosive training aids must be stored in the identical storage configuration as that provided by the FAA. [redacted] explosives [redacted] will be packed in separate explosives storage containers and stored in the magazine. Inside the magazine, the containers will be stacked or arranged appropriately to ensure that all explosives aids are accessible. The containers must remain sealed so that the odors from the explosives do not escape and contaminate other containers or explosives stored in the magazine. Inside each explosives storage container, explosives are placed in nylon bags that are sealed with an appropriately labeled clip. Tongs, used to handle the explosive training aids are also stored in the explosives storage containers. Refer to Appendix B for specific procedures for storing explosives.

Remember, vinyl gloves must be worn to handle the explosives storage containers, explosive training aids and other related materials. Before storing the explosives, first open the magazine with ungloved hands. Next, put on a fresh pair of vinyl gloves to handle each explosives storage container. Throw away each pair of gloves after one use. Upon placing all containers in the magazine, remove gloves and discard them before closing the magazine door. The gloves must not be stored inside the magazine or in explosives storage containers at any time.

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6. EXPLOSIVES HANDLING FOR OPERATIONAL TRAINING

The FAA prohibits any FAA K-9 Program Participant from handling FAA-procured explosive training aids and materials in a manner not in conformity with these procedures. The handling of explosive training aids requires specific procedures to minimize cross-contamination. Those procedures are listed in Appendix C.

6.1 CROSS CONTAMINATION RESTATED.

The gloves and tongs provided by the FAA will minimize Type 1 and Type 2 cross-contamination by serving as major barriers between the explosives and human contact. When explosives are handled without gloves, dogs are trained on explosives that contain the odors of a human. Therefore, the dogs may be responding to human rather than the odors of the explosive training aid. The dogs are then able to associate the human scent with a reward upon their detection response. In the event of an actual bomb threat, dogs that have been trained on explosives contaminated with human scent may not recognize the odors of a different human. Training the dogs on explosives uncontaminated with human scent ensures that they are trained to respond to the explosive odors, regardless of human scent paired with it.

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Even when using gloves to handle the explosive training aids, gloves that are used more than once will combine volatile odors across explosive training aids. This type of contamination is referred to as Type 1 contamination (see Section 2 of this SPP). To avoid Type 1 contamination form handling the explosive training aids, remove the gloves after one use and discard immediately.

6.2 RETRIEVING EXPLOSIVES FROM MAGAZINE.

When conducting operational training, it is necessary to retrieve the appropriate explosives storage containers from the magazine. Before opening the magazine, first determine the explosives needed for operational training to limit the amount of time the magazine will be open and to minimize any cross-contamination occurring from the door being open. The magazine door should be opened with ungloved hands to avoid getting odors on vinyl gloves. Once the door is open, put on fresh vinyl gloves to handle the explosives storage container.

The entire explosive storage container should remain sealed when removed from the magazine for the operational training. By taking the entire container, those explosive training aids will not be exposed to the odors of other explosives stored in the magazine.

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6.3 OPERATIONAL TRAINING.

Remember that prior to handling each explosive training aid, FAA K-9 Program Participants must wear fresh vinyl gloves. The gloves must be discarded immediately following first use. Always put on fresh vinyl gloves before handling training aids, regardless of whether the aid is different or the same.

Operational training should be conducted as directed by the [redacted] However, this SPP also specifies procedures that FAA K-9 Program Participants must follow to minimize cross-contamination occurring from training. The following materials are needed for operational training: explosive

training aids that are sealed in explosives storage containers, vinyl gloves, tongs (also sealed in the explosives storage containers), and paper towels. The tongs are especially helpful in minimizing cross-contamination. Even though individuals who handle explosives must wear the vinyl gloves, the tongs provide added protection against trace amounts of odors contaminating the training aids. While the tongs must be used to remove the explosives from the nylon bags, the FAA *recommends* also using the tongs to handle the explosives when hiding the explosives. When conducting operational training, be careful not to touch other objects while wearing the vinyl gloves. This will transfer the explosive odors to these objects, thus contaminating the training area. Upon completing operational training, it is necessary to pick up the training aids and repack them into the explosives storage containers. Specific procedures to handle explosives training aids are provided in Appendix C.

DRAFT

REFERENCES

Cormier, S. G.; Robey, J. C.; Hallowell, F.; Barrientos, J. M.; Fischer, D. S.; Prestrude, A. M.; O'Shea, J.; Weitzman, D.; and Malone, R. M. *Systems Analysis of the Federal Aviation Administration's K-9 Program* (Report DOT/FAA/AR-95/123). FAA Technical Center: Aviation Security Human Factors Program, 1995.

Department of the Treasury. *ATF-Explosives Law and Regulations* (Report ATF P 5400.7). Bureau of Alcohol, Tobacco, and Firearms, 1990.

APPENDIX A - EXPLOSIVES SHIPMENT INVENTORY

Inventory Procedures.

Following are specific steps that are required upon receipt to inventory each new shipment of explosive training aids and for periodic inventories of explosive training aids:

a. Put on a fresh pair of gloves.

NOTE: Remove and discard gloves each time a different explosives storage container or training aid is handled.

b. Locate explosives storage containers.

c. Place paper towel (approximately 2 feet long) under each storage container.

d. Check one container at a time. Open and inspect for appropriate explosive, sealed nylon bag, large clip, and tongs.

e. Seal the inspected container.

f. Dispose of gloves.

g. Repeat the above steps to check the integrity of each explosives training material.

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APPENDIX B - EXPLOSIVES STORAGE

Storage Procedures.

Following are specific steps required to store explosive training aids:

a. Open magazine with ungloved hands.

b. Once the magazine is open, put on fresh gloves.

NOTE: Remove and discard gloves each time a different explosives storage container is handled.

c. Ensure that the containers contain the appropriate explosive training aid and materials, and that they are sealed prior to storing in the magazine. Procedures for checking the containers are provided in section [illegible] and Appendix [illegible].

d. Pick up one storage container and place in appropriate area of the magazine. Carry only one container at a time.

e. Remove gloves, discard, and put on a fresh pair.

f. Continue this process until all containers are stored in the magazine.

g. Before closing the magazine, remove and discard the vinyl gloves used to handle the last container. Shut and lock the door of the magazine.

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APPENDIX C - EXPLOSIVES HANDLING FOR OPERATIONAL TRAINING

Handling Procedures.

Perform the following procedures when handling explosives storage containers and training aids:

a. Put on fresh gloves and remove the required explosives storage container from the magazine. (Do not carry more than one container at a time.)

b. Place explosives storage container in transportation vehicle immediately.

c. Remove and discard gloves.

d. Repeat a. through c., above, for each explosive type needed for training.

e. Drive directly to the training area.

f. Put on fresh gloves and carry explosives container into training area. (Only one explosive type shall be taken into the training area at a time.)

g. Place container on approximately 3 feet of paper towels.

h. Open container and nylon bag. Using tongs, remove explosive from bag and place on fresh paper towel.

i. Hide explosive in training area.

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j. Seal explosive storage container. (Leave the container on the paper towel).

k. Remove and discard gloves.

l. Repeat steps h through l, above, until all training aids are in place.

m. After training, put on fresh gloves to pick up each explosive from the area where it was hidden for the operational training. Place the training aid on paper towel next to the explosive storage container.

n. When all explosives have been collected, place them in their respective nylon bag, affix clips, and seal the lids of the explosives storage container.

o. Return explosives storage container to the transportation vehicle.

p. Remove and discard gloves and paper towels.

q. Drive directly back to the magazine.

r. Perform storage procedures provided in Appendix B.

DRAFT

ATTACHMENT

16. Letter of Compliance in reference to St. Louis Airport Explosives Storage Bunker.

DCA96MA070
July 17, 1996
East Moriches, Long Island, NY

LAMBERT-ST. LOUIS INTERNATIONAL AIRPORT

City of St. Louis Airport Authority / P.O. Box 10212 • St. Louis, Missouri 63145 • Telephone (314) 426-8000

DEPARTMENT OF POLICE
TELEPHONE (314) 426-8100

Leonard L. Griggs, Jr., P.E.
Director

Leroy J. Adkins
Chief of Police

Freeman R. Bosley, Jr.
Mayor
City of St. Louis

June 11, 1996

[redacted]

#

3-9

[redacted]
Supervisor
Civil Aviation Security Field Unit
P.O. Box 10447
Saint Louis, Missouri 63145

[redacted]

The purpose of this letter is to advise you, that the explosive storage bunker used by Lambert-St. Louis International Airport, has been approved by the Bureau of Alcohol Tobacco and Firearms.

Sincerely,

[redacted]
Captain
Bureau of Support Operations

PEM/daj
96-06-18

RECEIVED
JUN 12 1996
St. Louis Civil Aviation
Security Field Unit

HONESTY **FAIRNESS** **PROFESSIONALISM**

ATTACHMENT

17. May 1, 1996 Letter in reference to Military Explosives Change-out Update.

DCA96MA070
July 17, 1996
East Moriches, Long Island, NY

U.S. Department
of Transportation
Federal Aviation Administration

Memorandum

[redacted]

#

Subject: **ACTION**: Military Explosives Changeout Update

Date: MAY 1 1996

3-11

From: Director, Office of Civil Aviation Security Operations, ACO-1

Reply to Attn. of:

To: All-700's, (Information to AEU and AAL)

Arrangements are nearing completion for the emergency procurement of military explosives training aids from the Department of the Army (DA). It is expected that these items will be shipped in bulk to the FAA Technical Center during the month of May, where they will be packaged and labeled for each program participant.

Currently, details for a time-sensitive delivery system are being worked so that program participants may receive these training aids during a period from late June through July. For planning purposes, regional K-9 coordinators are asked to work with their program participants to provide the following:

- Two specific contact names, including accurate pager numbers and telephone numbers where, if necessary, these contacts can be raised immediately. While an exact delivery date for each participant will be provided in the near future, the time of the actual delivery during the scheduled day may vary slightly. For this reason, it is imperative that the contact persons and all associated numbers provided are accurate, and that the contacts will be available during this timeframe.
- Per the terms of the new agreement with DA, the FAA must ensure that all program participants have ATF-approved storage facilities to receive these explosives training aids. Regional K-9 coordinators must verify that appropriate magazines are physically in place and meet all ATF regulations prior to the actual delivery date. Please note that if the storage facility is not suitable, the delivery of these training aids cannot be accomplished.
- The official department name and a 24-hour emergency phone number (with area code) to be used on labels for each explosive training aid. This information is necessary in the unlikely event a training aid is lost or stolen.

Please forward all information to [redacted] by Friday, May 24.

It is anticipated that the mechanics of this delivery process will be finalized near the end of May. A national telecon for FAA regional/local K-9 coordinators on this issue is tentatively scheduled for 1:00 p.m. (EDT), Wednesday, May 29. Call-in details will be provided to regional K-9 coordinators by Friday, May 24. Please direct any questions to [redacted]

[redacted]

[redacted]

ATTACHMENT

18. Letter of Agreement: K9 Explosives Detection Team Program.

DCA96MA070
July 17, 1996
East Moriches, Long Island, NY

LETTER OF AGREEMENT
FAA K-9 EXPLOSIVES DETECTION TEAM PROGRAM

This document defines and updates the responsibilities and mandatory requirements each local law enforcement entity or airport authority (participant) agrees to abide by in order to participate in the Federal Aviation Administration (FAA) K-9 Explosives Detection Team Program. Participants who fail to comply with any portion of this agreement may face immediate decertification and/or removal from the FAA K-9 Explosives Detection Team Program. This Letter of Agreement is effective on the date the last required signature is obtained.

The authority to enter into this agreement is granted by 49 USC Section 47151, Authority to Transfer an Interest in Surplus Property (grants authority for FAA to transfer an interest in the Federally procured explosives detector canines to local law enforcement or aviation authority entities), as well as 49 USC Section 322(c)(3), (allows FAA to confer and cooperate with, and use the services, records, and facilities of State and local agencies.)

FEDERAL AVIATION ADMINISTRATION RESPONSIBILITIES:

1. Provide Department of Defense (DOD) FAA-procured, certified dogs when requested by participant(s) and approved by FAA National Program Manager. It is understood that the FAA is granting an interest to the local law enforcement or aviation authority to use these explosives detector K-9's as a desirable and necessary means for improving and operating security measures at public airports. FAA-procured K-9's remain the property of the FAA, and are exclusively under FAA authority. Dogs are assigned to cities on a priority basis, based on programmatic needs as determined by the FAA National Program Manager. FAA-procured K-9s may be moved to other locations to meet programmatic needs.

2. Train all handlers assigned to the FAA K-9 Explosives Detection Team Program. Costs covered by the FAA include: tuition for required course(s) and transportation and per diem from the home location to the training location.

3. For those participants desiring a single purpose (bomb detection only) FAA-procured dog for handlers who have successfully completed the required handler course:
   - the FAA will provide initial equipment (including leash and crate, if required), and shipment of the dog from training location to the home location.
   - an on-site 14-day training mission for initial FAA certification

4. Provide recurrent on-site FAA certification for teams during the FAA annual evaluation cycle. In the event any team fails the annual evaluation, a re-evaluation will follow within several months. Should any team(s) fail the re-evaluation, an automatic 10-day training mission will follow. (NOTE: Team(s) failing the re-evaluation will remain decertified until next year's evaluation cycle.)

5. **For cities desiring field certification of a dual purpose locally procured ("city") dog for handlers who have successfully completed the required handler course:**
   - the FAA will consider requests for field certification from each appropriate city, asking that the team(s) be allowed to participate in the next regularly scheduled annual evaluation. Final approval will be granted by the FAA National Program Manager.

6. **Loss/Decertification of locally procured ("city") K-9:**
   - if a new city dog fails to certify in two consecutive annual certification (12 months/3 tries), the dog will no longer be considered for the FAA program.
   - the participant has six months from the time of the second consecutive annual certification failure to provide an acceptable locally procured dog as a replacement. If unable to do so, the participant must take an FAA-procured K-9 as the replacement in order to meet mission objectives. In all cases, the FAA National Program Manager retains the right to exercise any final decisions.

7. Make available local FAA logistical support/coordination.

8. Coordinate requests for K-9 teams, if available to assist other entities or agencies in the event of a national or international matter. No participating agency will deplete their agencies' capability to adequately respond to their own airport responsibilities.

9. Provide military explosives training aids required for proficiency training. [redacted]

LAW ENFORCEMENT/AVIATION AUTHORITY RESPONSIBILITIES:

1. Maintain at least two FAA-certified explosives detection K-9 teams. (One team is defined as one handler and one dog.)

[redacted]

3. Provide handlers to meet program requirements, including the mandatory initial handler training. The mandatory retention period for all handlers in the FAA program is a minimum of three years. Failure to comply with the three-year retention period will result in the pro-rated reimbursement by the participant of the costs of handler training to the FAA.

4. Provide adequate kennel facilities for FAA Program K-9's. The dogs must not be left in makeshift accommodations or without proper supervision, protection, and care. (See Attachment 2).

5. Ensure that all handlers have a vehicle available in order to properly transport the K-9. The vehicle will be configured with screening and padding sufficient for security and safe transport. (See Attachment 3).

6. Ensure that each K-9 team receives the necessary, FAA-mandated proficiency training per week to maintain FAA-required certification standards, and that all training is documented appropriately.
   - FAA-mandated proficiency training must occur in the following six areas: wide body and narrow body aircraft, terminal, luggage, air freight and vehicles. Proficiency training shall consist of a minimum of 4 hours to a maximum of 40 hours per week per team.

- Training documents for each FAA K-9 team must be maintained for each team, and must be well documented. These records must be made available to FAA evaluators during site visits, and upon request from the FAA. All training records/scattergrams, etc. must be kept on file a minimum of two years. (See Attachment 4 for required training information/ recommendations.)

7. Provide necessary commercial explosives training aids required for proficiency training. [redacted]

8. Provide for the proper storage of all explosives training aids required for proficiency training in accordance with ATF requirements, including ATF-approved explosives storage magazines.

9. Ensure that adequate veterinary care for all FAA K-9 Program dogs is provided. (See Attachment 6).

10. Assure that FAA K-9 teams are available to participate in the annually scheduled FAA evaluation and re-evaluation (as necessary), in accordance with current evaluation guidelines. Failure to comply with this provision may result in immediate decertification and/or removal from the FAA K-9 Explosives Detection Team Program.

11. If a team fails two consecutive annual evaluations, due to handler error on both occasions, the handler will not remain in the FAA K-9 Explosives Detection Team Program.

12. Assure that any decertified K-9 team(s) **notifies the air carrier or airport authority when responding to a threat or incident, that they are, in fact, currently decertified prior to any search.**

13. Assure the FAA K-9 teams provide the FAA Regional Coordinator with a monthly activity report, utilizing the approved FAA report form, and any incident reports. (See Attachment 7).

14. Notify the local FAA security office if dogs or handlers encounter training or operational problems. Please note that participants are encouraged to contact the FAA contractor to discuss any problems or concerns associated with routine training. [redacted]

15. Assure that any FAA-procured dog bearing a Department of Defense (DOD) brand, *will not be cross-trained*, bred, disposed of or otherwise removed from the FAA Explosives Detection K-9 Team Program. Any participant wishing to retire an FAA-procured K-9 must notify the FAA National K-9 Program Manager in writing. Final written approval rests with the FAA National K-9 Program Manager. FAA maintains sole ownership of these rights, and at no time transfers these rights. (See Attachment 9).

16. Assure that any locally procured K-9 utilized in the FAA K-9 program is not cross-trained (*with the exception of patrol work*).

17. Notify the FAA National K-9 Program Manager immediately in writing if for any reason the department/aviation authority desires to terminate participation in the FAA K-9 Explosives Detection Team Program. Resolution of specific details on outstanding issues regarding the close-out of a department's or aviation authority's participation will be accomplished on a case-by-case basis.

18. When required, send a K-9 representative to the FAA Explosives Detection K-9 Team Program annual review, funded by the FAA.

19. Allow FAA K-9 teams to assist another entity/agency in the event of a national or international matter, on a case by case basis, if available. Under no circumstances will the city forfeit its own airport response responsibilities.

20. In all cases, the FAA National K-9 Program Manager retains the right to exercise any final decisions regarding K-9 programmatic issues, including resolving any disputes that may arise between the parties to this agreement.

21. Agree to all attachments to this Letter of Agreement.

22. Agree to any updates to attachments to this Letter of Agreement.

23. All modifications to this agreement shall be in writing and signed by the original signors of this agreement, or their successors. Oral modifications or changes to this agreement shall not be effective.

24. This agreement will be revalidated between the FAA and each individual participant every 5 years.

Authorizing Official	Title
Name of Participating Agency	Date
Manager, FAA K-9 Explosives Detection Team Program	Date

KENNEL FACILITIES

Kennel facilities require at a minimum:

- Adequate ventilation, cooling, heating, and sanitation systems.
- Minimal noise levels. Kennels must not be located near runways, taxiways, engine test cells, small arms ranges, or other areas where the time weighted overall average sound pressure level for any 24-hour period exceeds 75 adjusted decibels.
- Areas free of infestations of mosquitoes, ticks and rodents.

Assistance regarding different kennel designs for various climates or other information regarding kennel facilities is available from the FAA Support Branch staff. Please call [redacted]

K-9 VEHICLES

At a minimum, K-9 vehicles must:

- contain a stable platform or secure kennel crate; and
- when in use, the vehicle/kennel crate must be properly ventilated and appropriately protected from the elements.

TRAINING RECORD INFORMATION

Training record information *for each team* should include at a minimum:

- handler name/K-9 name (brand number if applicable)
- trainer name
- date of training exercise
- weather conditions at time of training exercise
- location/size of area used for training exercise (e.g., type of aircraft and tail number; number of vehicles; pieces of luggage; cargo/freight area - approximate sq. ft.; terminal area - approximate sq. ft; number of gates, etc.)
- type(s) of explosive(s) planted, location (to include amounts, heights and depths for each plant.)
- set time
- start time of search
- stop time of search
- results of each scenario
- comments - to include any specific problems (handler or canine) and corrective action recommended/taken and results. Include information on false responses and misses, and steps taken to solve training deficiencies.

Recommendation: One simple way to gain an overall snapshot of each team's training strengths and weaknesses is to incorporate a training worksheet summary, or "scattergram" for each team. An example of this format, developed by the FAA Support Branch, follows on the next page.

Trainers and handlers are encouraged to contact the FAA Support Branch staff for any needed technical assistance. The phone number is: [redacted]

ROUTINE VETERINARY CARE

Program participants are responsible for routine care to include:

- semi-annual examinations, disease prevention programs, diet and weight management programs, etc.
- medication, if necessary, for different conditions or illnesses.
- all costs associated with routine care

Assistance regarding a second opinion on any condition of a canine in the FAA K-9 Explosives Detection Team Program (including locally procured canines which have successfully been FAA-certified) is available at no charge. Please contact the FAA Support Branch at [redacted] for further information.

PLEASE NOTE: **Should an emergency situation arise with an FAA-procured K-9, program participants must immediately notify their local/regional FAA K-9 coordinator and the FAA Support Branch staff** [redacted]

FAA K-9 EXPLOSIVES DETECTION TEAM PROGRAM
MONTHLY K-9 UTILIZATION REPORT FORMAT GUIDANCE

The following 9 items are designed to "snapshot" essential information regarding utilization of FAA-sponsored K-9 teams. Each local report will be compiled into a national monthly status report. Guidance for this format is as follows:

(1) **"Date"** - of incident, request for assistance, demonstration, etc.

(2) **"Location"** - reflects search location such as:

- Aircraft (list type - Boeing 747, MD-80, etc. and list aircraft tail number)
- Terminal (indicate specific area, e.g.: Terminal C, Gates 40-41)
- Vehicles (list location - airport parking garage, section "x")
- Cargo/Warehouse/Freight - be as specific as possible with area searched; (e.g.: Delta - Building #6)
- Off airport - be sure to note the words "off airport," followed by a description such as Hilton Hotel, US District Court House, K-Mart, etc.

(2A) **"Airport"** - reflects airport (when applicable) where K-9 team(s) respond; (e.g., ORD or MDW; IAH or HOU, etc.)

(3) **"Requesting Agency"** - reflects entity making request; (e.g. - United Air Lines, Secret Service, Greater Orlando Aviation Authority, US State Department, State of Massachusetts, US Justice Department, etc.)

(4) **"Activity"** - reflects *reason* for utilization; (e.g.: "bomb threat/written," "bomb threat/ telephonic," "security - President Clinton," "suspicious package," "security, Rose Kennedy Funeral," "demonstration," "security - Secretary of State," etc.)

(5) **"Teams Used"** - reflects individual FAA K-9 team(s) utilized. Enter handler's last name/K-9's name; (e.g.: for an incident the team of Studley/Marko" is entered; or, if two teams are used for one incident, mark notation as "1) Studley/Marko;
2) Wesinger/Cora," etc. Do not list K-9 brand numbers, handler social security number.

FAA K-9 EXPLOSIVES DETECTION TEAM PROGRAM
MONTHLY K-9 UTILIZATION REPORT FORMAT GUIDANCE

(continued)

(6) **"Areas Searched"** - reflects specific information about actual search. Description highlights should contain information such as:

- "Team searched aircraft interior and all checked luggage, approx. 150 pieces."
- "Terminal A, Gates 3-10 - total area searched approximately 15,000 sq. feet."
- "75 vehicles searched."
- "Freight area search - approximately 10,000 sq. feet."
- "Federal courthouse, first level only, 75,000 sq. feet."
- "Luggage search - approximately 60 pieces."

(7) **"Approximate Search Time"** - this entry must be done with "start" and "stop" times, utilizing the 24-hour clock, for each team actively working the "area searched." For example, for three teams: (1) 0900-0930; (2) 0900-0945; (3) 0920-0945.

(8) **"Results"** - reflects what happened during search; (e.g.: "negative," "Important - see detailed info in security summary," [if applicable], etc.)

(9): **"FAA Security Summary #"** - (FAA use only.) Enter where applicable. Useful for further reference, if necessary.

BLANK FORMAT

FAA K-9 EXPLOSIVES DETECTION TEAM PROGRAM

FY199_ UTILIZATION REPORT - (Insert Month)

Insert PROGRAM PARTICIPANT NAME Here

(1) Date	(2) Location	(2A) Airport	(3) Requesting Agency	(4) Activity	(5) Teams Used	(6) Areas Searched	(7) Approx Search Time	(8) Results	(9) FAA Security Summary #

EXAMPLE

FAA K-9 EXPLOSIVES DETECTION TEAM PROGRAM
FY 1996 UTILIZATION REPORT - April

ABC POLICE DEPARTMENT

(1)	(2)	(2A)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Date	Location	Airport	Requesting Agency	Activity	Teams Used	Areas Searched	Approx. Search Time	Results	FAA Security Summary #
5-Apr	Aircraft, MD-80	PIT	United Air Lines	Bomb threat (written)	1) Studley/Marko 2) Wesinger/Cora	aircraft interior and all checked luggage (approx. 150 pieces	1) 0900-1030 2) 0950 1030	Negative	PIT-96-18
10-Apr	Off airport: Hilton Hotel		Secret Service	Security - President Clinton	1) Farnum/Lenny	1st level conference area; approx 35,000 sq. feet	1730-1800	Negative	
11-Apr	Terminal A, Gates 3-10	MCO	Greater Orlando Aviation Authority	Bomb Threat (telephonic)	1) Eastberg/Rocky	approx. 15,000 sq. ft.	1130 - 1215	Negative	MCO-96-45
15-Apr	Off airport: Funeral		State of Massachusetts	Security - Dignitary Funeral (e.g.: Rose Kennedy)	1) Studley/Marko 2) Wesinger/Cora 3) Farnum/Lenny	Support provided by each team, for approx. 2 hours	N/A	Negative	N/A
30-Apr	Off airport: US District Court		US Department of Justice	Demonstration	1) Eastberg/Rocky	Demo set up in conference room - approx. 9,000 sq. ft.	0800-0830 (estimated time for overall demo.)	N/A	N/A

REQUIREMENTS FOR REQUESTING RETIREMENT OF FAA-PROCURED K-9'S

General information: FAA explosives detector canines are reassigned based on several factors, including age and medical condition, as well as priority placement requirements. When an FAA -owned canine is no longer medically fit for duty, it may be retired *to the department*, if appropriate. To request retirement action, the following steps must be followed.

- Request must be typed on official department/agency letterhead, and signed by the head of the department/agency. Letter should be addressed to Manager, FAA K-9 Program through appropriate regional K-9 coordinator. The letter must contain the statement requesting that "the K-9 [name/brand number] be retired to [the official Department name]. The Department will assume full responsibility and liability for the canine until his/her death, upon which the death certificate will be forwarded to the FAA."

- A statement on official letterhead from the veterinarian responsible for treatment of the canine must also be attached, summarizing the canine's fitness to function as an explosives detector canine.

NOTIFICATION TO THE FAA OF THE RETIREMENT OR DEATH OF LOCALLY PROCURED K-9'S

A written statement on official letterhead is required immediately when a locally procured K-9 is retired from duty as an active explosives detector K-9 in the FAA K-9 Explosives Detection Team Program. The same notification must occur in the event a locally procured K-9 dies.

Participants should send the letter to their appropriate FAA regional K-9 coordinator, who will forward it to the Manager, FAA K-9 Program.

ATTACHMENT

19. **Federal Aviation Administration Technical Publication—*Immersion Studies of Aircraft Parts Exposed to Plastic Explosives by F.T. Fox, S. Sisk, and R. DiBartolo.***

DCA96MA070
July 17, 1996
East Moriches, Long Island, NY

IMMERSION STUDIES OF AIRCRAFT PARTS EXPOSED TO PLASTIC EXPLOSIVES

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The work in this laboratory has been focused on testing and evaluation of trace detection systems to support the FAA certification process of this equipment. We have developed a variety of aqueous particulate suspensions for use as standards to test Trace Detection Systems (TDS), and have successfully used them to quantify detector responses for purposes of comparison.

In light of the recent aircrash of TWA flight number 800, it was decided to study what the effects of seawater would be on cloth and aluminum aircraft parts exposed to explosives contamination. To study this, aluminum aircraft parts from the wing of a commercial airplane were obtained at the FAA salvage yard. These pieces were cut into approximately four inch squares. They were then sonically cleaned, rinsed, and dried in the sun to remove excess water. After this, each piece was tested with a commercially available TDS system for absence of explosive contamination. Seat cover materials were obtained for cloth studies. In some of the experiments we also used fiberglass cloth as a substrate because it is a good neutral substrate that is able to be directly inserted into the desorption unit of the TDS systems employed in this study (Barringer 400 and Iontrack Itemiser).

The aluminum aircraft pieces then had 1/8 inch holes drilled in each corner and the pieces were wired onto plastic baskets. These were placed in baskets, that are eight by six inches and perforated. The configuration of these plastic baskets is such that each of them can be wired to another using their top "lip" as a support (see illus.). This makes for a durable system that in one sense seals the aircraft parts, while still allowing for the unobstructed flow of water around them. Also, it is convenient to remove parts from this setup by just taking a "half" (one basket) of each unit at a time back to the laboratory for analysis by just unclipping it from the other. Similarly, the cloth pieces are retained with these baskets and handled in the same manner.

The baskets are attached to a system using an anchor, rope and buoy by placing them into a perforated nylon bag (**FIGURE 2**). The bag is attached to the anchor rope using a stainless steel marine shackle. This simplifies removal and reattachment during sample collection.

Some published solubility values are shown in Table 1. In this table the normal units to express solubility mg./l are converted to nanograms per milliliter in order to more easily make direct comparison to the nanogram amounts present on surfaces in the event of trace contamination.

Table 1A

SOLUBILITY OF SOME EXPLOSIVES

Water 25° C

NANO GRAMS PER MILLILITER (ng/ml)

2,4 DNT	250,000	
2,6 DNT	160,000	
TNT	94,000	TO 149,000
RDX	42,300	TO 56,000
HMX	5,000	
PETN	2,100	

TIME: 6 HOURS (TNT, RDX)

The baskets are attached to a system using an anchor, rope and buoy by placing them into a perforated nylon bag (**FIGURE 2**). The bag is attached to the anchor rope using a stainless steel marine shackle. This simplifies removal and reattachment during sample collection.

Four separate experiments were performed:

I). Analysis of Aircraft Parts After Artificial Contamination With Aqueous Particulate Suspension

As outlined above, aircraft parts were labeled, wired onto baskets and then explosive depositions were placed on their surfaces.

TYPES OF PLASTIC EXPLOSIVES USED FOR IMMERSION TESTS		
Explosive	**Active Component**	**Amount Deposited**
C-4	**RDX**	**20 ng**
C-4	**RDX**	**195 ng**
Detasheet	**PETN**	**423 ng**
Semtex H	**RDX/PETN**	**549 ng/375 ng**

TABLE 1). TYPE AND AMOUNT OF EXPLOSIVES USED FOR ALUMINUM AIRCRAFT PARTS TESTING FOR LOSS IN SEAWATER

Additional, unimmersed parts were tested and large responses for the explosives were obtained to check detector response. The 20 ng deposition of RDX gave a solid alarm when tested on the Itemiser TDS system.

The parts attached to baskets were then placed into the mesh bag, attached to the anchoring system and submerged in the water for periods of time from two days to seven days, with samples taken every second or third day. All samples were tested by swabbing with the Itemiser test swabs, the swabs were then placed in the desorption chamber and analysis was run. Results are listed below.

Explosive	Submerged	Active Comp.	Amount	Alarm Y/N
C-4	2 Days	RDX	20 ng	N
C-4	2 Days	RDX	195 ng	N
Detasheet	2 Days	PETN	423 ng	N
Semtex H	2 Days	RDX/PETN	549 ng/375 ng	N

TABLE 2). SUBMERSED ALUMINUM AIRCRAFT PARTS TESTED AT TWO DAYS FOR SEAWATER INDUCED LOSS OF EXPLOSIVES

Explosive	Submerged	Active Comp.	Amount	Alarm Y/N
C-4	5 Days	RDX	20 ng	N
C-4	5 Days	RDX	195 ng	N
Detasheet	5 Days	PETN	423 ng	N
Semtex H	5 Days	RDX/PETN	549 ng/375 ng	N

TABLE 3). SUBMERSED ALUMINUM AIRCRAFT PARTS TESTED AT FIVE DAYS FOR SEAWATER INDUCED LOSS OF EXPLOSIVES

Explosive	Submerged	Active Comp.	Amount	Alarm Y/N
C-4	9 Days	RDX	20 ng	N
C-4	9 Days	RDX	195 ng	N
Detasheet	9 Days	PETN	423 ng	N
Semtex H	9 Days	RDX/PETN	549 ng/375 ng	N

TABLE 4). SUBMERSED ALUMINUM AIRCRAFT PARTS TESTED AT NINE DAYS FOR SEAWATER INDUCED LOSS OF EXPLOSIVES

Results:

From the above results (TABLES 2,3, 4), it was clear that the explosives which we deposited on the aircraft parts were not present when tested with the Itemiser system after two days. We continued testing to ensure that our initial results were correct. It appears that all of the deposited explosives are gone within two days.

II). Analysis of Aircraft Parts After Blast Contamination By Actual Explosive Deposition

Explosive contamination due to residue from explosive charges was studied. To do this, the aircraft parts were wired onto chain link fence and exposed to Semtex H, C-4 and Detasheet (FIGURE 1). The aircraft parts were the same as used above and were attached with 20 gauge galvanized wire at each corner. The fence was standard galvanized cyclone fence five feet long and doubled over to be approximately two and one-half feet high. This was supported by three evenly spaced steel fence posts that were driven approximately eight inches into the ground. The three blasts were separated by about 15 meters each.

For C-4 and Semtex H the charge was divided into thirds of one-half pounds each. These were triggered simultaneously. Detasheet was exploded as a single one and one-half pound charge. With the Detasheet explosive, the fence was doubled around the wired on aircraft parts to be able to catch any pieces which could be blown clear of their wires.

During the explosion, the fence and the parts were fairly undisturbed from the C-4 and Semtex H blasts. The Detasheet explosion tore up the fence and stripped loose three of the aluminum aircraft parts. The fence posts were also broken in the Detasheet blast, and the fence touched the ground, possibly contaminating some of the pieces with old explosive residue from the ground. The posts from the C-4 and Semtex H explosions were bent, but still standing. None of the pieces from these tests were lost or separated from the fencing.

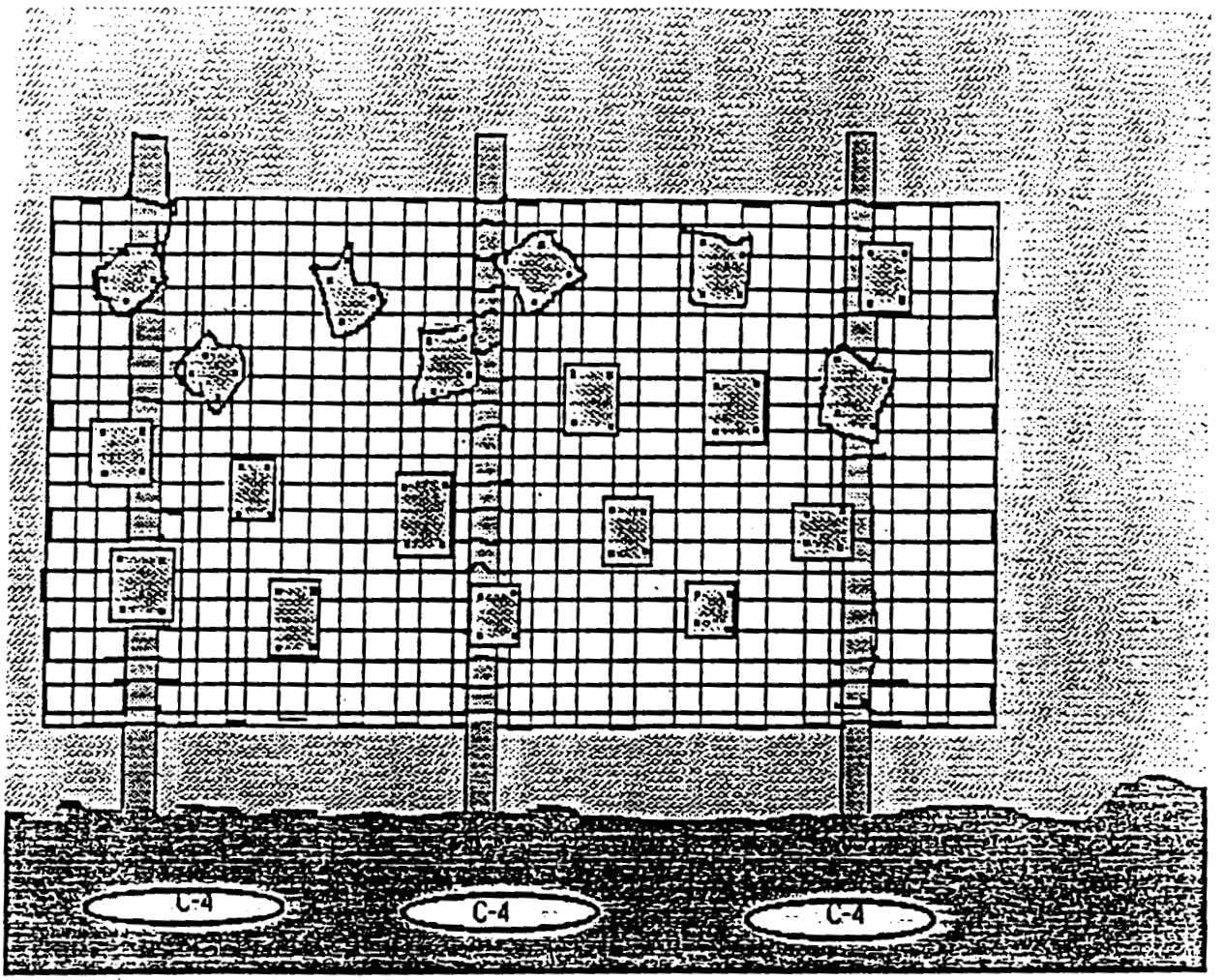


FIGURE 1). DIAGRAM OF BLAST SITE SHOWING POSITIONING OF CHARGE, FENCE AND AIRCRAFT PARTS

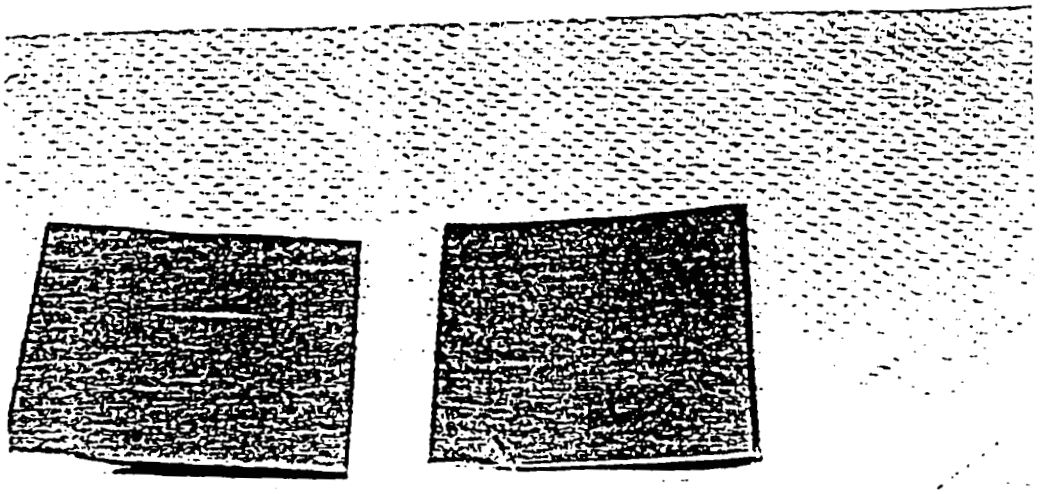
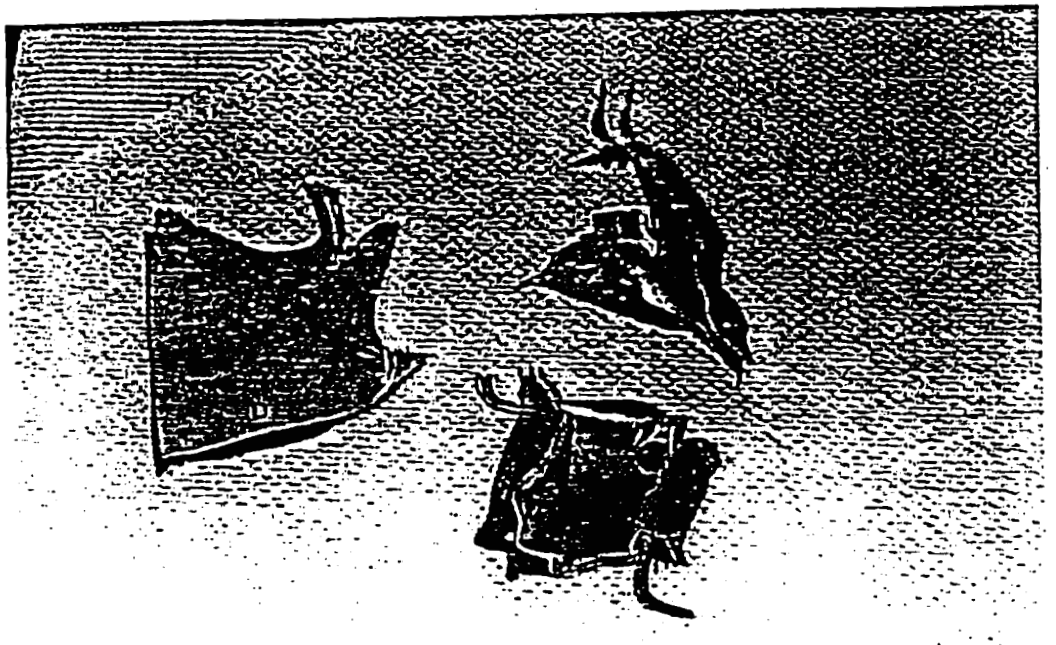


FIG. 1a PIECES CUT FROM WING OF COMMERCIAL AIRCRAFT BEFORE BLAST EXPOSURE

FIG. 1B PIECES AS IN FIG 1A BUT AFTER BLAST EXPOSURE



NON-SUBMERGED TEST RESULTS

C-4 SAMPLES	ALARM (Y/N)	RDX-C	RDX-N	QTY. (pgs.)
1	Y	544	554	409
2	Y	461	726	379
3	Y	547	337	410
4	Y	311	411	326
5	Y	189	160	282

SEMTEX-H	ALARM (Y/N)	RDX-C	RDX-D	RDX-N
1	Y	53	83	0
2	N	0	0	0
3	N	0	0	0
4	N	0	0	0
5	N	0	0	0

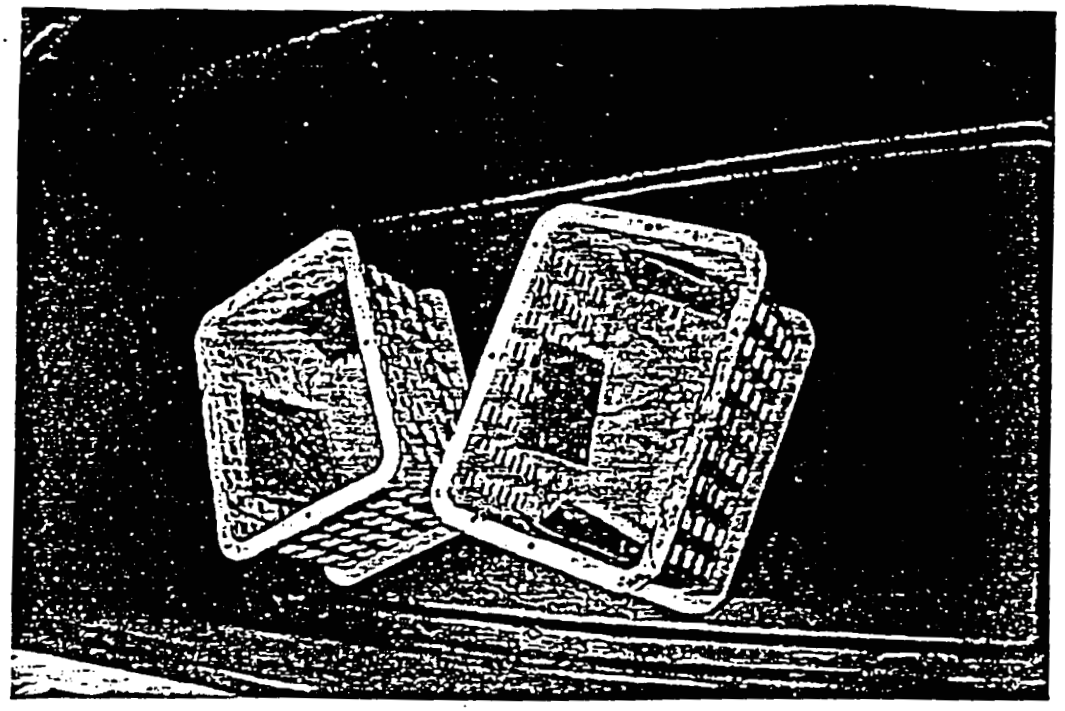
DETASHEET SAMPLES	ALARM (Y/N)	PETN-C	PETN-N
1 *	N	0	0
2 *	N	0	0
3	N	0	0
4	Y	85	61
5	N	0	0

* Samples 1 & 2 yielded alarms for RDX-felt to be contamination

TABLE 5). TDS RESULTS OF BLAST CONTAMINATED AIRCRAFT PARTS

Preliminary testing of aircraft parts recovered from the blasts revealed surprising low results. (TABLE 5). For five directly exposed parts each, Semtex H and Detasheet only gave one very low level alarm response. The five parts exposed to C-4 each gave a good, but low alarm signal using the Barringer 400 TDS instrument.

We compared the responses obtained from the C-4 results to calibration curves using known concentrations of RDX. From the responses that we obtained we were able to determine the amounts of the C-4 which was deposited onto the aircraft parts during the explosion. In no instance was even as much as one-half nanogram observed.



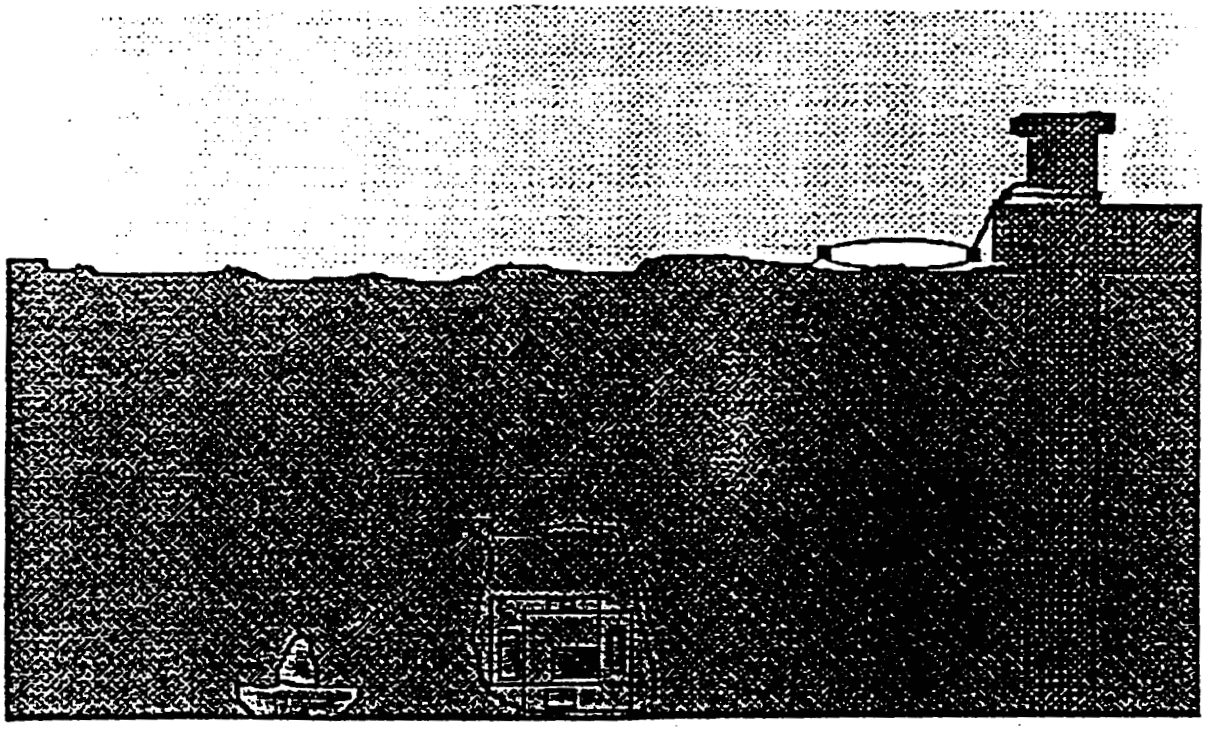


FIGURE 2). DIAGRAM OF IMMERSION APPARATUS FOR TESTING AIRCRAFT PARTS FOR EXPLOSIVES CONTAMINATION REMOVAL

As in our previous experiments, the contaminated aircraft parts were attached to baskets, placed in nylon mesh bag and anchored to the bottom of the bay at Conway's Marina in Brigantine, NJ (FIGURE 2). The parts were removed over the course of a day and analyzed using the Barringer 400 TDS system.

FIG. 2A PIER AND TIDAL INLET USED FOR THE IMMERSION STUDY
BRIGANTINE, NEW JERSEY

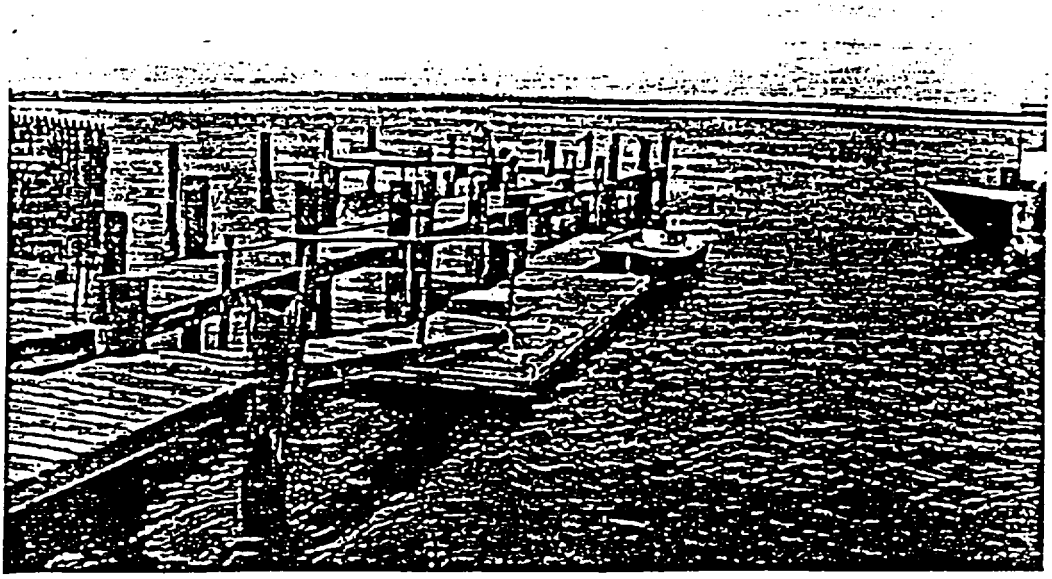


FIG. 2B APPARATUS READY FOR IMMERSION THE DIVER BAG AND BASKET HOLDING THE SAMPLES IS CLEARLY VISIBLE. WATER DEPTH 5 TO 8 FEET DEPENDING ON THE TIDE

1 HOUR BAY SUBMERSION TEST RESULTS

EXPLOSIVE	RESULTS ON BARRINGER 400
C-4	NO3=341, RDX-C=141, RDX-N=267
C-4	NO ALARM
SEMTEX	NO ALARM
DETASHEET	NO ALARM

4 HOUR BAY SUBMERSION TEST RESULTS

EXPLOSIVE	RESULTS ON BARRINGER 400
C-4	NO ALARM
SEMTEX	NO ALARM
DETASHEET	NO ALARM
SEMTEX	NO ALARM

(2)-24 HOUR BAY SUBMERSION TEST RESULTS

EXPLOSIVE	RESULTS ON BARRINGER 400
C-4	NO ALARM
SEMTEX	NO ALARM
DETASHEET	NO ALARM
SEMTEX	NO ALARM

TABLE 6). RESULTS OF IMMERSION TESTING OF AIRCRAFT PARTS AFTER BLAST CONTAMINATION WITH EXPLOSIVES

Samples of the aircraft parts were removed and returned to our laboratories after one, four and twenty-four hours of immersion in the bay (TABLE 6). Only one sample gave a positive alarm and this was a one hour C-4 contaminated piece. The twenty-four hour experiment was performed in duplicate. All other pieces yielded no positive alarms. This correlates well with the first part of the experiment where we observed that our deposits were completely removed after two days. It should be noted that the amount of mechanically deposited explosives used were from 20 ng to 549 ng compared to the amounts less than 0.5 ng of unburned explosive flash deposited on exposure to blast.

III). STUDIES WITH CLOTH SEAT COVER MATERIAL FROM AIRCRAFT

Samples of aircraft seat cover cloth were cut into approximately two inch squares. Five hundred ng of Semtex H was mechanically deposited onto the cloth. Samples were tested at first using a technique of swabbing with acetone soaked cotton gauze. The gauze was then washed with 15 ml of acetone, the liquid collected and evaporated to about 100 ul. This was applied to the Barringer sampling tabs. Testing with this procedure proved to be very non-quantitative and too slow for screening.

A second testing technique was tried which used direct insertion of the treated cloth sample into the desorption head of the Barringer 400. This test procedure proved more straightforward and gave more consistent results.than the previous method and was used throughout the cloth study.

Two sets of tests were run, a one hour test and a five hour test. In the first test (TABLE 7). four treated samples were placed in 125 ml Erlenmeyer flasks and 85 ml of fresh seawater added. These flasks were manually swirlled every 1/2 hour and the samples removed and dried. The cloth patches were then tested with the Barringer 400 system and a low level alarm found for only one of the samples. This was compared to a control which used the same number of cloth patches that were not immersed in seawater. The control samples were tested and gave four alarms.

TEST OF 1/2ug. SEMTEX-H APPLIED TO AIRCRAFT CLOTH EXPOSED TO BAYWATER (1hr.)

	CLOTH RESPONSE (Semtex-H, no baywater)				CLOTH RESPONSE (Semtex-H, in baywater)			
CHANNEL	PETN-C	PETN-N	RDX-C	RDX-N	PETN-C	PETN-N	RDX-C	RDX-N
PATCH #1	48	128	155	337	0	0	0	0
PATCH #2	0	93	65	157	0	0	0	0
PATCH #3	0	104	99	192	85	72	0	0
PATCH #4	0	92	86	155	0	0	0	0

TABLE 7). RESULTS OF ONE HOUR IMMERSION IN SEAWATER FOR SEATCOVER MATERIALS TREATED WITH 0.5 ug OF SEMTEX - H

TEST OF 1/2ug. SEMTEX-H APPLIED TO AIRCRAFT CLOTH EXPOSED TO BAYWATER (5hrs.)

	CLOTH RESPONSE (Semtex-H, no baywater)				CLOTH RESPONSE (Semtex-H, in baywater)			
CHANNEL	PETN-C	PETN-N	RDX-C	RDX-N	PETN-C	PETN-N	RDX-C	RDX-N
PATCH #1	49	80	111	222	0	0	0	0
PATCH #2	0	54	49	92	0	0	0	0
PATCH #3	0	68	50	92	0	0	0	0
PATCH #4	64	64	90	144	0	0	NO3=324	117

TABLE 8). RESULTS OF FIVE HOUR IMMERSION IN SEAWATER FOR SEATCOVER MATERIALS TREATED WITH 0.5 ug OF SEMTEX - H

The five hour test (TABLE. 8) was performed exactly as the one hour test.. After five hours. the samples were withdrawn, dried and the data is listed above. Three of the four

but from the results it is possible this alarm is a result of biodegradation or simple water pollution.

IV). Biodegradation Studies Using Cloth Substrates

To examine what the cause of alarm negation in seawater would be, it was decided to run two experiments. In the first experiment (FIG.3, TABLE 9) fiberglass cloth was treated with Detasheet C. Three groups of samples were tested, a dry control, a baywater immersed group, and a sterile, freshwater group. This test lasted forty-eight hours and we found 25% sample alarm in seawater, 100% sample alarm in purified fresh water and 100% sample alarm for the control patches. The numerical data reveals other patterns as well, the most obvious being that there is some removal of material even in the pure water. In salt water, there is also a change in the pattern of the instrument response for the Barringer 400 system. This is noted by the presence of the NO_3 peak and loss of the PETN-C peak from the plasmagram of the Barringer 400 unit, this is found even for the sterilized seawater, but not for the purified freshwater (TABLES 9.10).

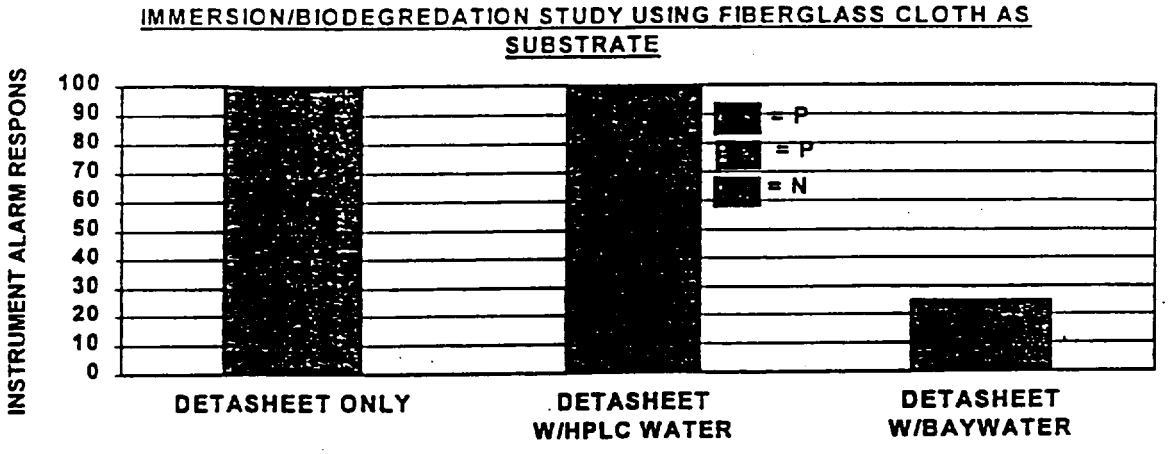


FIGURE 3). STUDY USING FIBERGLASS CLOTH AS A SUBSTRATE AND PURE WATER AND SEAWATER TO REMOVE DETASHEET C SUSPENSION

CONTROL SAMPLES #	1	2	3	4	AVERAGE RESPONSE
PETN-C	549	543	498	539	532
PETN-N	447	548	411	555	490
RDX-N	69	44	30	30	43

BAY WATER SAMPLES #	1	2	3	4	AVERAGE RESPONSE
NO3	0	737	0	0	184
PETN	0	74	0	0	19

HPLC WATER SAMPLES #	1	2	3	4	AVERAGE RESPONSE
PETN-C	94	110	122	534	215
PETN-N	70	91	68	270	125
RDX-N	0	0	0	26	7

TABLE 9). FIBERGLASS MATERIAL WITH DETASHEET IN BAYWATER, HPLC WATER AND A CONTROL, BARRINGER 400 TDS

The second experiment (FIG. 4, TABLE 10) that we did was a study of sterilized and normal seawater. Water from Brigantine bay was used to immerse three sets of fiberglass samples. The first set was a "dry" control of four fiber glass two inch squares. All samples had a one microgram deposit of Detasheet C applied to them. There was a group of four samples that were each placed into 100 ml of previously boiled and then cooled seawater. The last group of four samples were each placed in 100 ml portions of normal seawater and everything allowed to sit without stirring for two and one-half hours. The samples were dried overnight and tested using the Barringer 400 TDS instrument. Samples were placed directly into the desorption chamber of the instrument and tested.

While the numerical response values and factors changed in pattern and amount between the immersed and non-immersed samples, alarm response values were not changed between the sterilized water samples and the dry controls.

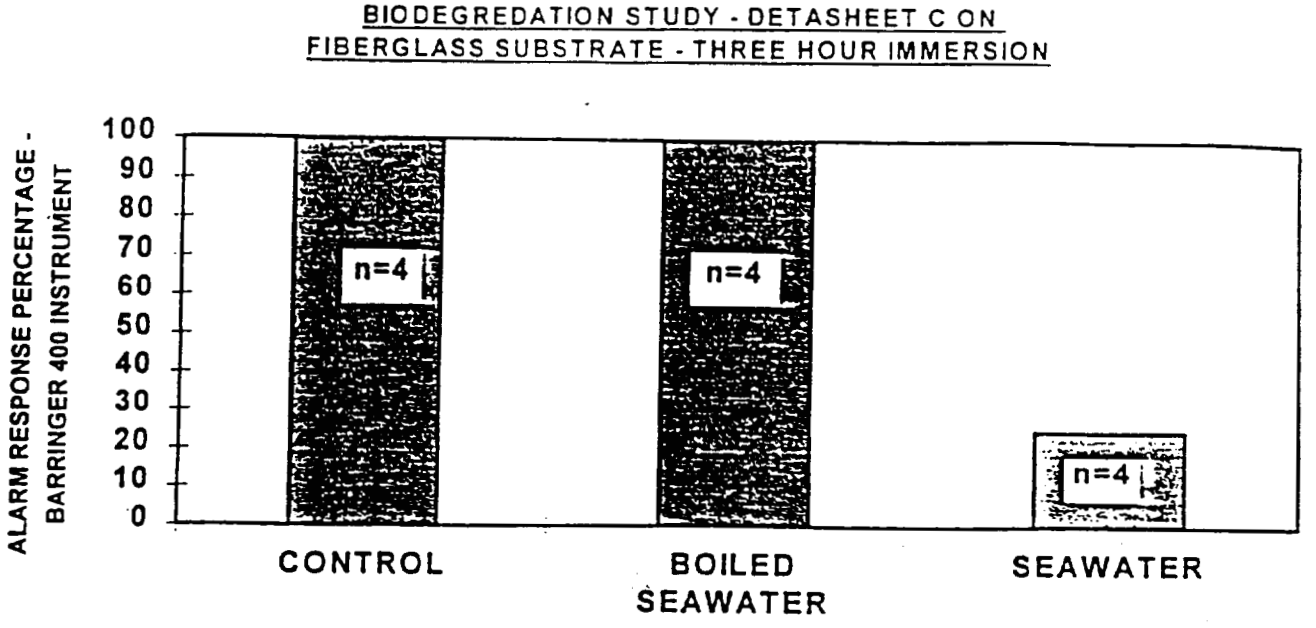


FIGURE 4). TEST USING FIBERGLASS CLOTH AS SUBSTRATE FOR REMOVAL OF DETASHEET C BY STERILIZED AND NORMAL SEAWATER
(Numerical data is in table 10)

CONTROL	1	2	3	4
PETN-C	333	466	432	483
PETN-N	957	650	863	771
RDX-N	42	36	45	50
BOILED SEAWATER	1	2	3	4
NO3	642	755	803	570
PETN-N	44	88	146	108
SEAWATER	1	2	3	4
	0	0	0	0
NO3	0	0	673	0
PETN-N	0	0	22	0

TABLE 10). NUMERICAL DATA FROM THE STERILIZED SEAWATER EXPERIMENT WITH A FIBERGLASS SUBSTRATE - ONE ug DEPOSIT OF DETASHEET - BARRINGER 400 TDS (See figure 4)

Conclusion: Our experiments have shown that their is very little likelihood that blast deposited explosive materials remain very long on cloth or aluminum aircraft parts after immersion in seawater. This is further complicated by the fact that their doesn't appear to be very much contamination to begin with. Their are possibly several reasons for this;

1). Explosions of PETN and RDX are highly efficient and leave only small amounts of the unexploded parent residue.

2). The materials are somewhat soluble in seawater and are rapidly leached from surfaces upon immersion.

3). Microbial degradation seems to play a role in the removal or conversion of these materials into components that are not identified or are not present when analyzed with the presently configured TDS systems.

Further work on this process is ongoing in these laboratories.