

DOCKET NO. SA-228

EXHIBIT NO. 16A

NATIONAL TRANSPORTATION SAFETY BOARD

WASHINGTON, D.C.

SURVIVAL FACTORS/AIRPORT AND EMERGENCY RESPONSE GROUP CHAIRMAN'S
FACTUAL REPORT

by

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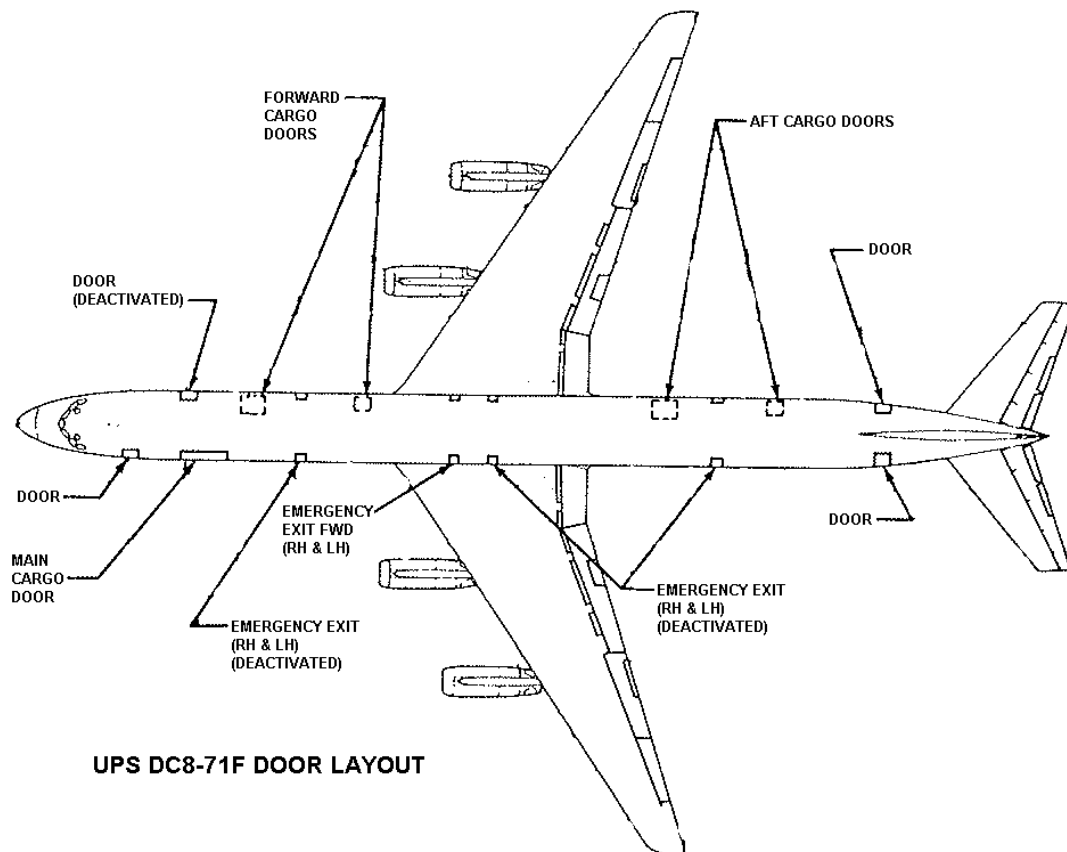
C. Summary

On February 7, 2006, at 2359 eastern standard time, a Douglas DC-8-71F, N748UP, operated by United Parcel Service Company (UPS) as flight 1307, landed at Philadelphia International Airport (PHL), Philadelphia, Pennsylvania, after the crew reported a cargo smoke indication. The three flight crewmembers were able to evacuate the airplane using the L1 slide. Fire subsequently caused substantial damage to the airplane and numerous cargo containers on board. The three crewmembers received minor injuries. Night visual meteorological conditions prevailed and an instrument flight rules flight plan had been filed for the flight from Hartsfield-Jackson Atlanta International Airport (ATL), Atlanta, Georgia, to PHL. The scheduled cargo flight was conducted under 14 CFR Part 121.

D. Details Of The Investigation

1.0 Airplane Configuration

The airplane cabin was a cargo-class configuration with 3 floor-level door exits and one over-wing window exit on each side of the airplane.



See Attachment 1, *Interior Arrangements for UPS DC-8 Cargo Airplane*, dated February 13, 2006, for the airplane configuration of N748UP.

1.1 Smoke Curtain

The smoke curtain was located between the forward galley and the forward 9-G cargo netting. The smoke curtain attached to the cargo liner via rivets and Velcro, and was reinforced with cargo tape. There was a velcroed access slit on the left side of the curtain, approximately 6 inches from the left edge. Immediately behind the smoke curtain, the ceiling's cargo liner was cut out to accommodate the netting's structural attach points. Immediately in front of the smoke curtain there were several cutouts in the ceiling cargo lining for the strap attachments that hold the smoke curtain in place.

According to Boeing, the smoke curtain installed on the accident aircraft was not a delivery item from the manufacturer; it was retrofitted after the airplane was put into service. According to UPS, the smoke curtain was installed prior to UPS purchasing the airplane.

2.0 Aircraft Flight Deck and Forward Cabin Documentation

The airplane's flight deck and forward galley were examined and the following was noted:

2.1 Operational Exits

The crew forward entrance exit (L1) was disarmed and completely opened. The slide pack bustle was attached to the exit, and the slide was not attached to the exit. The left aft entrance exit (L4) was disarmed and partially opened. Debris, which was lodged between the door and the jamb, was hanging out of the bottom right corner and approximately $\frac{3}{4}$ of the way down forward edge. The right aft service entrance exit (R4) was disarmed and completely open.

Four Type I emergency exits had been deactivated in 1996, as detailed in the *UPS Service Engineering Order (EO)* (Number DC8-5210-3206-B, dated September 20, 1996), see Attachment 2. Two of these Type I exits were located between the main cargo door and the forward overwing exit on each side of the airplane, and two were located between the aft overwing exits and the L4 and R4 exits. Access to the forward cabin was granted through the L1 exit and tail access to the cargo area was granted through the L4 and R4 exits.

None of the exits of the accident airplane had placards or instructional guidance for operating the exits from the outside. On February 21, 2006, a formal request was made to the FAA to determine the regulatory requirement for exterior marking and/or placarding of exits on cargo aircraft. No response from the FAA was received to date.

Refer to Attachment 3 for the *UPS DC-8 Maintenance Manual - External Access Door Diagram*, dated July 01, 1994.

2.2 Overwing Window Exits

There were four type III overwing window exits on the accident airplane. All four exits had been removed. Three of the overwing exits were found inside the airplane. The fourth was found in a cargo container near the airplane on the ramp. The left aft and right forward exits were severely fire damaged. The left forward exit had soot and puncture marks on the outside. The right aft exit had puncture marks on the outside, in the center of the exit.

The two forward overwing exits were capable of being removed from inside or outside the airplane. The two aft overwing exits could not be removed from either the inside or outside of the airplane because there is a cargo liner covering the exit on the interior of the airplane. The two aft overwing exits were deactivated in 1996, as detailed in the *UPS Service Engineering Order (EO)* (Number DC8-5210-3206-B) (refer to Attachment 2). According to UPS, the two forward overwing exits remained operational for maintenance personnel access.

Refer to Attachment 3 for the *UPS DC-8 Maintenance Manual - External Access Door Diagram*, dated July 01, 1994.

2.3 Forward Galley

The oven, coffee pot, and cabinets in the forward galley were in place with all safety latches in locked position (refer to Attachment 1).

2.4 Emergency Equipment

See Attachment 4, *UPS DC-8 Systems Manual - Emergency Equipment Location*, dated March 01, 2004, for the location of all emergency equipment contained on N748UP.

2.4.1 Fire Extinguishers

The gauge on the halon fire extinguisher located in the flight deck read “full” and the 2.5-pound extinguisher was stowed in its holder on the wall above the second observer’s seat. The gauge on the 13-pound halon fire extinguisher found just outside cockpit, in the forward galley on the left bulkhead inside the L1 doorway, read “full” but was not stowed in its metal holder.

There was an inconsistency in the *UPS Systems Manual* in depicting the specified locations of fire extinguishers in the forward area. The *UPS DC-8 Systems Manual - Emergency Equipment Location* diagram depicted a halon fire extinguisher in the flightdeck above the second observer’s seat, one above the courier’s seat and another in the lavatory. The *UPS Systems Manual – Forward Area Installation* diagram, dated July 01, 2005 (Attachment 4), depicts one fire extinguisher located at floor-level on the left bulkhead inside the L1 doorway. According to UPS, the *UPS DC-8 Systems Manual - Emergency Equipment Location* diagram is incorrect, and the correct locations of the fire extinguishers are above the courier’s seat in the flightdeck and on the left bulkhead inside the L1 doorway.

2.4.2 Supplemental Oxygen

The Captain, First Officer and Flight Engineer's quick-don oxygen masks were off their holders, and their oxygen regulator switches were in the "on" position. The flight crews' oxygen regulator (tank), which was manufactured by Scott, was located behind the aft courier's seat. The tank had a 115-cubic foot capacity at 1850 PSI, and the pressure gauge for the tank read approximately 400 PSI.

2.4.3 Escape Tape

The Captain's escape tape was found out of its compartment and dangling to the left side of the Captain's seat. The escape tape was attached and was measured to be 10 feet 9 inches in length from its attachment point. The distance to the ground was measured and it was determined that when extended out of the cockpit window, the tape (uncoiled and untwisted) hung 6 feet above the ground.

According to Boeing (Douglas) drawing number 4713946, the escape tape for DC-8 airplanes was specified at 132 inches (11 feet) in length. In the UPS Aircraft Maintenance Manual (AMM), dated July 01, 2005 (Attachment 5), the section titled "Inspection/Check – Escape Tape," a 'NOTE' for 'Step B – Check length of Escape Tape,' states, "Escape tape, when fully extended, should reach from its container, out the emergency exit, and down to the ground."

2.4.4 Smoke Goggles

The Captain, First Officer, and Flight Engineer's smoke goggles were in their respective holders. The Captain and First Officer's smoke goggles were stored with the oxygen masks, under the window and next to the seats. The Flight Engineer's smoke goggles were stored above the instrument panel.

2.4.5 Personal Breathing Equipment (PBE)

There was one PBE on the airplane. It is located in the flightdeck, above and behind the second observer's seat. The PBE was sealed in its pouch, with the security seal intact.

2.4.6 Cargo Door Wrench

The cargo door wrench was stowed in its designated place, to the right of the Flight Engineer's position on a ledge at the bottom of the circuit breaker panel.

2.5 Flightdeck Crew Seats

The flight deck contained a pilot seat, a copilot seat, a flight engineer seat, and two observer's seat. The five-point harness and inertia reels in the Captain, First Officer and Flight Engineer's seat was working properly. The flight crews seat information was:

2.5.1 Captain's Position

Restraint System:

Part No. 1111588-01-001

NA No. 1111587-05-001

FA No. 2100023-15-001

Inspection: 07/03 MIA

Rated for to 2000 lbs, conforms to FAA TSO C114

Reel part # 1111589-01-001, manufactured by Pacific Scientifics

FA# 2100023-15-01

Inspection: 07/03, rated for 3000 lbs, conforms to FAA TSO C114

Seat:

Manufacturer: Douglass

Point Industries Aircraft Design: June, MIA, repair station # LY4R353M,

Part No. 5641031-547D

Serial No. 036

Date 03/98

MOD EOC-2510-7925-A

Aircraft Merchandise Inc, Colorado Springs, CA

Specification # 7616605, seat type: Pilot

Drawing # 5641031-1

Serial # 036, FAA TSO C-39

Base plate # 5657520-515

2.5.2 First Officer's Position

Restraint System:

Part # 1111588-01-001

NA # 1111587-05-001

FA # 2100023-15-001

Manufactured: 02/04 MIA, rated for to 2500 lbs, conforms to FAA TSO C114

Reel part # 1111589-01-001

FA# 2100023-15-01

Inspection: 02/04, rated for 2500 lbs, conforms to FAA TSO C114

Seat:

Manufacturer: Jet Repair Center, Inc

FAA/JAA repair number J48R410Y

Miami, FL

Customer Permit # 5641031-549-U

OEM/CMM Part number 5461031-521

Serial # 099

Description: Co Pilot

Date 3/12/04
EO Accomplishment: C-2510-7925B

Aircraft Merchandise Inc, Colorado Springs, CA
Specification # 7616605, seat type: Co Pilot
Drawing # 5641031-521AE
Serial # 099, FAA TSO C-39
Base plate # 5657520-512

2.5.3 Flight Engineer's Position

Restraint System:

Part # 1111589-01-001
NA # 1111587-05-001
FA # 2100023-15-001
Inspection: 09/02 MIA, rated for to 3000 lbs, conforms to FAA TSO C114

Reel part # 1111589-01-001, manufactured by Pacific Scientifics
FA# 2100023-15-01
Inspection: 09/02, rated for 3000 lbs, conforms to FAA TSO C114

Seat:

Part # 5641031-1
Serial # 030
Manufacturer: AMI/Flight Engineering

2.6 Slide Pack Information

The L1 evacuation slide was found detached from the airplane and deflated. It was a single lane slide and was found in a cargo container near the airplane on the ramp. The L1 slide information was:

Manufacturer: Goodrich Corporation of Phoenix, AZ
Part No. 5156100-4-DGD
Serial No. 45
Manufacturer date: 08-68
Weight: 39.2 lbs
Last overhauled: March 200? (illegible)

Inflation bottle:

Gauge reading zero
Last overhaul: 01-04
Overhaul due: 03-07

Regulator valve:

Manufacturer: Goodrich Corporation of Phoenix, AZ
Part No. 30001-BN-HL
Serial No. H-251

Right aspirator:

Manufacturer: Goodrich Corporation of Phoenix, AZ
Part No. 1122-200
Serial No. MIA-244

Left aspirator:

Manufacturer: Goodrich Corporation of Phoenix, AZ
Part No. 1122-200
Serial No. MIA-243

3.0 Airport Certification

3.1 Location of Airport

PHL is located in Philadelphia and Delaware Counties, Pennsylvania. The Airport is located approximately five miles southwest of downtown Philadelphia, and is positioned at 39°52'19.0"N and 75°14'28.1"W at an elevation of 36 feet. PHL is certificated under Title 14 Code of Federal Regulations (CFR) Part 139, with Index E aircraft rescue and firefighting (ARFF) service.

The airfield consisted of four runways (see Attachment 6). Runway 9R-27L was a Category D, Design Group V runway that was 10,506 feet in length by 200 feet wide, and constructed of grooved asphalt. Runway 9L-27R was a Category D, Design Group V runway that was 9,500 feet in length by 150 feet wide, and was constructed of grooved asphalt. Runway 17-35 was a Category D, Group III runway that was 5,460 feet in length by 150 feet wide, and was constructed of grooved asphalt. Runway 8-26 was a Category B, Group III runway that was 5,000 feet in length by 150 feet wide, and was constructed of grooved asphalt. All runways with the exception of Runways 8 and 35 have precision instrument approaches.

The airport had 24-hour air traffic control tower (ATCT) service. The night of the accident, ATC cleared UPS Flight 1307 to land on Runway 27L; however, the flight crew landed on Runway 27R.²

3.2 Airport Self-Inspection

At PHL, airport operations personnel perform Airport self-inspections three times daily, once per shift, based on availability for traffic flow. The first daily inspection occurs at approximately midnight local time, the second occurs at approximately 0800 local time, and the third occurs at approximately 1600. The self-inspection consists of examining signs and lights on

² Additional details of ATC communication are available in the ATC transcript, which can be found in the public docket.

runways and taxiways; pavement conditions on runways and taxiways; fueling operations at fuel farm; construction sites; ARFF personnel and equipment availability; fencing and gates; wildlife hazards, obstruction lights and rotating beacon; and snow and ice conditions (when applicable). Each time an inspection is conducted, the inspector is responsible for filling out an Airport Self Inspection Checklist.

Airport Operations performed the morning inspection on the day of the accident between 2400 and 0800 local time (see Attachment 7). During this inspection, two centerline lights on Runway 9L-27R were reported out. The midday inspection did not inspect runway 9L-27R due to the traffic flow at the time of the inspection. The afternoon inspection reported no discrepancies for Runway 9L-27R on the checklist.

Attachment 8, *PHL Operations Section-Shift Highlights*, details that an “FAA & Airport Operation Aircraft Accident Inspection” was performed by airport operations prior to reopening runway 9L-27R. Re-opening of the runway occurred at 1100 local time the day after the accident.

3.3 Airport Condition Reporting

PHL sends a daily Field Condition Report to airlines and tenants. The report contains information on weather conditions, surface conditions, construction or maintenance activities, airfield lighting outages, wildlife hazards, obstructions, airfield restrictions, field advisories and Notices to Airmen (NOTAM).

There were no active NOTAMs for Runway 9L-27R at the time of the accident. At 0032 local, airport operations issued a NOTAM (number D02/010) stating, “Philadelphia International Airport closed.” This NOTAM was cancelled at 0600. Airport Operations issued another NOTAM (number D02/011) at 0548 that stated “Runway 9L-27R closed until further notice.”

The Field Condition Report issued at 0557 EST, after the accident, stated “Runway 9L-27R closed until further notice.”

Attachment 9 contains the PHL Field Condition Report and Attachment 10 contains the NOTAMs.

3.4 Triennial Exercise

As a 14 CFR Part 139 Certificated Airport, PHL is responsible for conducting a full-scale mock disaster drill once every three years. On September 30, 2005, PHL carried out this full-scale drill (see Attachment 11), which included participation from: PHL Division of Aviation, Police and ARFF; City of Philadelphia Fire Department; City of Philadelphia Police; Delta Airlines; UPS; American Red Cross; Tinicum Township Mutual Aid Units; DELCO Emergency Management; Medivac support units; regional emergency medical services; regional medical facilities/hospitals; and non-municipal ambulance services.

3.5 Airport Emergency Plan (AEP)

The purpose of the AEP is to minimize the possibility and extent of personal injury and property damage, and to prescribe the procedures to be followed in case of emergencies, incidents or accidents at PHL.

This plan provides for procedures, notification rosters and areas of responsibilities for those individuals and/or agencies involved in handling emergency situations at, or in close proximity to PHL. The Philadelphia police and fire departments have detailed procedures in support of the AEP and are included as appendices to the Airport Certification Manual (ACM).

4.0 Aircraft Rescue and Firefighting

PHL maintains a 14CFR Part 139.315 Index E aircraft rescue and firefighting (ARFF) facility on the airfield, Engine 78. The ARFF station is staffed 24 hours a day, seven days a week by a minimum of 13 firefighters. The ARFF facility and equipment is owned by the City of Philadelphia.

4.1 Notification

The Air Traffic Control Tower notified ARFF of an Alert 1 (a reported aircraft emergency or problem) via the “crash phone” at 23:57:15 EST (see Attachment 12). The Tower reported that UPS was 5 miles southeast of the airport with a smoke warning light in a cargo hold.

4.2 Fire Control Time

According to the City of Philadelphia Fire Department FCC dispatch logs (refer to Attachment 12), ARFF arrived at the accident site at 2359 local time. A period of 4 hours and 8 minutes elapsed from the initial arrival on scene to the time the incident commander radioed (Deputy Chief McCrory) to dispatch for fire control (e.g., fire under control) (at 0407 local time).

4.3 Command of ARFF Activities

Captain Gary Loesch (in Foxtrot 21) from Engine 78 assumed initial incident command. Captain Loesch maintained command until Deputy Chief Matthew McCrory arrived on site at 00:04:55 local time, when Deputy Chief McCrory assumed command. Engine 78 established the mobile command post upon arriving on scene. Staging areas for all off-airport emergency response vehicles and crew were established at Gate11 of airport perimeter fence.

4.4 Communications Network

The crash phone serves as a direct phone link and activates a buzzer and lights at Engine 78 (the airport fire station), the Airport Communications Center, the City Fire Dispatcher at the Fire Communication Center (FCC), and serves as a dispatch call for these emergency

responders. The crash phone was recorded at the Fire Communication Center. A copy of these recordings was obtained from the City of Philadelphia Fire Marshal.

At approximately 0002:00, Captain Loesch radioed to the PHL dispatch Center to “strike the box.” According to Captain Loesch, this prompts the City Fire Dispatcher at the Fire Communication Center to notify 4 engines, 2 ladders, 2 Chiefs and 2 squads (Medic units) from off-airport to respond to the scene. According to the dispatch log, only one squad was sent to the accident scene.

4.5 ARFF Response Difficulties

ARFF personnel reported no difficulties were encountered during the initial response. However, there was a 60 to 90 second delay in responding to the scene due to the change in runways, and subsequent change in standby positions. Standby positions are included in Attachment 13.

4.6 Fire Conditions On-Scene

When ARFF vehicle arrived on-scene, no fire was visible, but smoke could be seen coming from the open L1 door and the outflow vent in the tail. The first indication of visible flame came when firefighters opened the right over wing emergency hatch. Flames were observed rolling on the fuselage ceiling over the tops of the cargo containers. Smoke began emanating from all open exits. All fire was located aft of the over wing exits toward the aft bulkhead. Burn through of the fuselage roof occurred at several locations between the trailing edge of the wing, aft toward the tail.

4.7 Firefighting Strategy

The ARFF units surrounded the airplane and a water attack was ordered. Access to the main cargo area was obtained via the right over wing doors, and an exterior hand line attack was initiated from this location. Turret streams were applied into the R4 doorway while a snozzle piercing operation was conducted on the left side. The piercing operation began behind the left aft overwing exit, in line with the windows, and continued aft toward the tail. The entire operation switched to a foam attack. Eventually hand lines were advanced to the interior of the airplane through the R4 and left side over wing doors until total extinguishment was completed.

4.8 Fire Department Incident Report

Attachment 14 includes the incident report completed by, Captain Gary Loesch, Incident Commander.

4.9 ARFF Equipment List

A list of ARFF equipment that responded to the site is included in Table 1, below. In addition to the ARFF vehicles, a list of Philadelphia Fire Department equipment responding to

the accident site is contained in Attachment 12. In addition, a complete list of ARFF equipment at PHL is included in Attachment 15.

Table 1. ARFF Vehicles Responding to Accident

Vehicle	Radio Call Sign	Personnel	Agent Capacities	Additional Equipment
1999 Oshkosh	Foxtrot 2	2	1,500 gal H ₂ O, 210 gal AFFF ³ , 500 lbs Dry Chemical	Roof and bumper turret
1991 Oshkosh	Foxtrot 5	2	3,000 gal H ₂ O, 420 gal AFFF	Roof and bumper turret
1997 Oshkosh	Foxtrot 6	2	3,000 gal H ₂ O, 420 gal AFFF	Bumper turret
1998 Oshkosh	Foxtrot 7	2	3,000 gal H ₂ O, 420 gal AFFF	Bumper turret, Penetration Snozzle
Suburban	Foxtrot 9	2	N/A (command vehicle)	N/A
1991 Seagrave	Engine 247*	2	500 gal H ₂ O	N/A
1997 GMC Suburban	Foxtrot 21	1	N/A (command vehicle)	N/A

* Note: Engine 247 was replacing Foxtrot 10, which was out of service. During the accident, Engine 247 was designated as “Foxtrot 10.”

4.10 Medical Response

A Medic unit (M30) based at Engine 78 responds to all alerts. The medics responded to the accident scene behind the ARFF vehicles. At the scene, they intercepted the flight crew and performed initial triage. At 0017, M30 transported the three flight crewmembers to the University of Pennsylvania Hospital.

4.11 Hazmat Response

FAR Part 139, Section 319 “Aircraft Rescue and Firefighting: Operational Requirements,” paragraph (j) states “Hazardous materials guidance. Each aircraft rescue and firefighting vehicle responding to an emergency on the airport must be equipped with, or have available through a direct communications link, the “North American Emergency Response Guidebook” published by the U.S. Department of Transportation or similar response guidance to hazardous materials/dangerous goods incidents.”

The PHL ACM states that each ARFF vehicle responding to an emergency on the airport will be equipped with, or have available through direct communications link, the “North American Emergency Response Guidebook” or similar response guidance to hazmat. According

³ Aqueous film-forming foam

to Captain Lynch, all ARFF vehicles that responded to the accident airplane had hazmat response guidance.

4.12 Aircraft Rescue and Firefighting Training

According to the ACM, firefighters are given instruction prior to initial performance of rescue and firefighting activities and receive recurrent training every 12 calendar months. This instruction covers topics including: airport familiarization and grid maps, aircraft familiarization, ARFF fire fighter personnel safety, familiarization with emergency communications system at PHL, aircraft rescue and firefighting apparatus (hoses, nozzles, turrets, etc.), extinguishing agents, emergency aircraft evacuation assistance, firefighting operations, adapting and using structural rescues and firefighting equipment for ARFF, hazards associated with aircraft cargo and familiarization with the firefighters duties under the Airport Emergency Plan.

Each firefighter must also participate in a least one live fire drill prior to initial performance and every 12 calendar months thereafter.

According to the ARFF Training Officer at PHL Engine 78, there was no formal syllabus or program for this “in-house” training. To cover the instruction in the FAA required 12 subject areas, PHL Engine 78 uses a combination of PHL-specific training presentations (i.e., Powerpoints), and training presentations obtained from other airports. Neither FAR Part 139, nor the National Fire Protection Association (NFPA) 1003, “*Standard for Airport Fire Fighter Professional Qualifications*,” require initial and/or recurrent training materials to be airport-specific. FAA Advisory Circular 150/5210-17, “*Programs for Training of Aircraft Rescue and Firefighting Personnel*,” provides additional guidance detailing what should be included in training for each of the 12 required subject areas. The AC recommends airport familiarization; aircraft familiarization; and fire hoses, nozzles, turrets and other appliances; are airport-specific in training materials. These recommendations are stated as; “... standard map used at the airport”, “...aircraft operating at the airport”, and “... equipment used locally”. PHL does not have airport specific training materials/presentations in these three subject areas.

ARFF personnel training records are located in Attachment 16.

5.0 Hazmat Information Exchange

5.1 On-scene Hazmat Requests

When Captain Loesch arrived on scene, he asked the airplane’s captain if there was hazmat on board. The captain notified him that hazmat was on board, however, he did not have the manifest with him. Captain Loesch requested that airport operations obtain the information. According to the Airport Operations Duty Officer, he arrived on the UPS ramp at 0006 and requested the hazmat documents from UPS personnel.

Lou Lombardi, UPS, brought a “faxed copy” of hazmat documentation to an Airport Operations Agent, who was staged on the UPS ramp. The airport operations agent

immediately brought Mr. Lombardi to the scene, and handed the hazmat documentation to the Airport Duty Officer at 0107.

Mr. Lombardi stated that a Ramp Supervisor gave him the “prediction”⁴ of what was on board the airplane. At approximately 0014, airport operations met him at Taxiway Uniform and drove him out to the airplane. When he arrived on scene, a firefighter with a white helmet asked him what hazmat was on board. He told the firefighter that the hazmat was located in position 14 and 3. He told the firefighter that he could only provide positions of the hazmat, because only the Notice to Captain (NOTOC) tells what the hazmat is. Mr. Lombardi also saw a firefighter throw the NOTOC out of the airplane along with some other items. He said he personally picked up the NOTOC and opened it to find four pouch placards, two for hazmat and two for dry ice. He explained what the hazmat on board was to the firefighter, and handed him the two pouch placards for the hazmat and kept the NOTOC and two pouch placard for dry ice. Later, he handed the rest of the paperwork to Lieutenant LoPresti when he asked for it. Attachment 17 contains Mr. Lombardi’s written statement.

5.2 Notification to Captain (NOTOC) Chain of Custody

According to the UPS Flight Operation Manual, the NOTOC information is obtained by the Captain from the UPS load supervisor prior to departure and placed in a Dangerous Goods “pouch,” which was located on the outside of the lavatory door of the accident airplane. According to interviews of the flight crew (refer to the Operations Group Chairman’s Factual Report), the NOTOC was on floor of the flightdeck during the flight and the Flight Engineer picked it up and “wedged it in the crash axe sheath.”

According to the ARFF crew, when ARFF arrived on scene, Captain Loesch instructed Lieutenant Wells to attempt to enter the cockpit to find the “manifest.” Lieutenant Wells entered the cockpit to do a quick search for the manifest and crewmembers, but was not able to find the manifest.

According to a statement from Firefighter Christopher Willing, at a later point, he entered the flightdeck to search for the NOTOC again, and found it. He handed it to Battalion Chief Cowden and he was instructed by Deputy Chief McCrory to handle Hazmat operations. According to Battalion Chief Cowden, he relayed the information on the NOTOC to Lieutenant Snyder from the Hazmat Unit for research. According to Lieutenant Snyder, he handed the NOTOC to a firefighter on his crew and requested information on the particular chemicals from the Materials Safety Data Sheet (MSDS). After receiving information on the chemicals, Lieutenant Snyder radioed the information to Battalion Chief Cowden. There was no further handling of the NOTOC until Lieutenant LoPresti from the Hazmat Unit requested to see any information regarding the chemicals on board. At this time, he gave the NOTOC to Lieutenant LoPresti. Refer to Attachment 17 for Battalion Chief Cowden and Lieutenant Snyder’s written statements.

The Survival Factors Group received the NOTOC envelope on-scene from Lieutenant LoPresti on February 10, 2006.

⁴ A “prediction” identifies the location of hazmat on-board the airplane, it does not specify the type of hazmat.

6.0 Interviews

6.1 Airport Operations

Jeremiah Hall⁵

Airport Operations Officer

3 years experience at PHL

Mr. Hall received the Alert 1⁶ at 2357. He (Airport 10) was just taking over the midnight shift. He heard the “clicking” from the crash phone speaker that an Alert was coming out. He proceeded to his vehicle, a 2006 Dodge Dakota, and drove through the C/D terminal alley to Taxiway J. He noticed the airplane was lined up on runway 27R. He contacted the three airport operations agents and told them to proceed to Gate 11 and standby. He heard ATC clear the pilot to land on 27L about 1 mile out from the PHL. He heard the pilot repeat that they were lined up on 27R and were cleared to land. Airport 10 noticed the ARFF vehicles were in their 27L staging positions at Sierra 1, Sierra 3, and the intersection of Uniform and Sierra 4. On the Emergency 1 frequency, he notified ARFF that the airplane was arriving on 27R. He drove onto Kilo 3 and went up Kilo to follow airplane. As the Airport Duty Officer, he follows the airplane so he can advise Foxtrot 21 (Incident Commander) of progress and look for debris. Airport 10 asked ATC for clearance to follow the airplane on the runway and to advise them to close both Runways 17-35 and 9L-27R. He proceeded onto Runway 27R from the Runway 17 intersection and stopped between Kilo 2 and Echo, approximately 1000 feet behind the airplane. The airplane stopped on Runway 27R, between taxiway Mike and Lima. He heard ATC report winds from the northwest at 12-14 knots, so he tried to stay upwind from the airplane. He saw smoke coming from the rear bottom of the airplane. He heard the Incident Commander state over the emergency radio frequency that the crew was already off the airplane. Airport 10 contacted the communications center to page Airport 223 (Airport Operations Manager) and Airport 230 (Airport Operation Superintendent). Airport 10 stood by while ARFF staged trucks and did their initial assessment.

The Incident Commander contacted Airport 10 and requested that he contact UPS to track down a manifest for the hazmat on board the airplane. Airport 10 tried to radio an Operations Agent to go to the UPS hangar, but was not able to get a hold of anyone. He heard an Airport Operations Agent confirm, over the radio, that he was at Gate 11. Airport 10 then proceeded to UPS via Echo, Sierra and Uniform to stay clear of the airplane.

Airport 10 arrived on the UPS apron at 0006 and flagged down people on the ramp and told them they had a DC-8 incident. He said they needed “managers” and the cargo hazmat manifest. He also asked for a mechanic that knew cargo doors, doors of airplane and other general information about the airplane. He advised the airplane appeared to be on fire and stressed the importance of getting the necessary people in a hurry. While sitting on the ramp he

⁵ During the interview, Jeremiah Hall referred to notes he had taken during the accident event, providing a detailed sequence of events.

⁶ Alert 1 indicates a reported aircraft emergency or problem (e.g. hydraulic failure, bad gear indication, etc.)

upgraded the emergency to Alert 2⁷ (at 0014) as directed by his supervisor. At 0020 Airport 10 left the UPS ramp with a “chief pilot” and a mechanic. He noted that it took a “long time” to get UPS representatives.

They returned to the scene at 0022, via taxiway November to Runway 27R, and he noticed that the smoke from the L1 door had increased. Airport 10 recalled seeing smoke coming from the lower tail section; about 30 feet forward the tail. He also noticed off-airport fire units were on scene, about 4 or 5 additional pieces. The Incident Commander met the UPS representatives as they approached the airplane.

At 0032, Airport 10 officially closed the Airport with ATC and with the Flight Service Station (FSS) (NOTAM 02/010). Airport Police reported closing Hog Island Road due to possible hazmat and smoke obscuring the road. ATC contacted Airport 10 to see if they should evacuate the ATC facility due to hazmat, but Airport 10 instructed ATC to standby for an assessment from the Incident Commander. Airport 230 arrived on scene and Airport 223 was just a couple minutes behind.

At 0045, Airport 230 advised he contacted FSS and FAA command center to advise them of the incident. At 0050, the Incident Commander contacted Airport 10 looking for confirmation of the reported fuel load. (Information reported by Communication Center when alert was issued included: Alert 1, UPS DC-8, smoke indicator light, 21,000 pounds of fuel, 3 souls on board, landing 27L). Airport 10 was then advised that the flight crew had been transported to Hospital of the University of Pennsylvania (HUP). Airport 219 (an Airport Operations Agent), who was assigned to the UPS ramp for escorting, advised that there was a fuel load of 21,700 lbs (Airport 10 did not know where Airport 219 obtained this information). An ATC controller also advised, over the radio, the fuel load as first reported (21,000 pounds), but Airport 10 did not know whom ATC was speaking with to obtain the information.

At 0055, Airport 10 was advised of a Kitty Hawk cargo airplane (a Boeing 727) that had been sitting at the approach of Runway 27L, at the Sierra and Sierra 1 intersection, presumably awaiting departure when the airport was officially closed. ATC requested permission to taxi the airplane back to parking, which Airport 10 approved. At 0107, Airport 219 brought UPS representatives to the scene with a faxed copy of the manifest, which was handed to Airport 10, who then handed it to the Incident Commander. The “chief pilot” from UPS stated that there should be a copy of the manifest in the cockpit of the airplane.

At 0110, the Incident Commander asked Airport 10 to identify closest fire hydrant in the area. Airport 10 contacted airport maintenance that confirmed hydrant locations at gates D10, D15, and D8. This information was relayed to the Incident Commander. The Police Supervisor (77A) dispatched an officer to check Hog Island Road for a hydrant location as a back up. Fire engines were dispatched to both gates D10 and D15 to run a hose line to support the operation on the runway. Airport 10 requested vehicles on each side of hose line to stop vehicles from running over the hose line.

⁷ Alert 2 indicates an actual aircraft accident or incident with relatively minor damage and suspected few or no casualties.

Between 0110 and 0205 Airport 10 was involved in escorting UPS representatives and stayed in close contact with UPS for coordination. Airport 10 was also involved in coordinating the opening and manning of Gate 2, which was an automated access gate by Terminal E that was malfunctioning. The Airport Operations Agent in Airport 229 came to the incident site with a digital camera for Airport 10, and the UPS “chief pilot” used it to take pictures of the incident site. During this time he was involved in several phone calls with Airports 3 (Deputy Director of Aviation, Operations and Facilities), 223 and 230.

At 0205, Airport 10 saw visible flames for the first time from the top of the airplane. At 0215, Airport 230 advised he spoke with the NTSB, FSS and FAA command center. The NTSB advised the airplane was to stay in its location. NTSB also said that nothing was to leave the site and if it did, to “stop it.” This message was relayed to the Incident Commander. Airport 10’s first face-to-face communication with Airport 223 was at 0246, and he was advised to contact Risk Management, which was done via cell phone. At 0300, Foxtrot 21 advised Airport 10 ice melt was needed for the incident site due to ice buildup on and around the airplane.

Airport 10, a Maintenance Manager and two supervisors from Pavement and Grounds coordinated for sand trucks, urea or Peladow (non-corrosive salt). Between 0300 and 0320 the trucks showed up and material was applied with hand spreaders. Risk Management arrived on scene while they were applying the material.

From 0320 to 0500, Airport 10 continued coordinating escorts between the scene and UPS, as well as other locations. Airport 10 requested that the Airport contractors, who were working on an electrical project, stop working and be moved off the airfield. At 0300 he spoke with a building maintenance supervisor who informed him that no cars were blocking fire hoses that were coming from the hydrants at the D Terminal. Airport 10 redirected maintenance to have vehicles protect the hose line where it crossed the outer service road around gates D10 and D15. Between 0330 and 0345 Airport 10 advised ATC about “how” the airport would operate when reopened. The taxiways that would be closed were Juliet between Kilo 3 and November, Kilo between Kilo 2 and Kilo 3, Mike between Runway 27R and Kilo, Lima between Runway 27R and Kilo. This plan was passed to ATC for planning purposes.

At 0510, Airport 230 notified Airport 10 that the UPS go team would be arriving in a Lear 35, tail number N50CK between 1100 Zulu (Z) and 1200Z. ATC was asked to advise Airport 10 when the airplane was in the area, and if it would be diverting to Northeast Philadelphia Airport so they could assist in coordinating transportation.

At 0530, Airport 230 advised Airport 10 that the fire hoses across Taxiway Juliet would need to be removed before 0600 local, for the planned re-opening of the Airport. It was determined that all runways and taxiways would be open except runway 9L-27R. Airport 10 began a perimeter inspection of all taxiways and pavement for debris, and possible ice conditions where sand was needed. Also, an Airport Operations Agent escorted an off airport fire unit off airport.

At 0536, Airport 10 directed Airport Operations Agent 229 to perform a FOD and safety inspection of the three other runways and all taxiways in preparation for opening. Airport 10

advised the Agent to make multiple passes on each runway to ensure the full length and width is adequately inspected. Airport 10 advised Airport 209 to “tighten up” access at Gate 11 and Airport 219 to “tighten up” escorts to UPS to ensure no one leave the area unless they are under escort. Airport 10 wanted all escorts to be monitored closely due to the airport preparing to reopen. Platoon 70 (off-airport fire equipment) was escorted from the site and taken off airport.

At 0540, he confirmed hose lines at Gates D10 and D15 were removed so inspection of and treatment of those pavement areas could happen prior to 0600. Water from the fire hoses was running onto the pavement and the area was icy so urea and sand were applied.

At 0542, the Incident Commander advised Airport 10 that Engine 78 was back in full index and in service.

At 0550, Airport 10 instructed Airport 209 to complete an inspection of Runway 8-26 prior to opening. All Operations Agents reported runways and taxiways clear.

At 0555, pavement treatment began on Taxiways Juliet and Kilo where water was leaking. Airport 20 (Terminal/Landside Operations Officer) advised that the field condition report was published, and NOTAMs closing Runway 27R and Taxiway Lima had been issued.

At 0600, Airport 10 made advisory calls on multiple channels advising airport employees of the airport and runways reopening imminently. Airport 10 was making a final check of Runway 17-35 and was getting ready to re-open when he noticed off-airport fire vehicles, under escort by Airport Police, cross the approach end of Runway 17.

At 0604, Airport reopened with Runways 27L-9R, 17-35 and 8-26 available.

At 0608, Airport 229 was assigned to position on Runway 27R at the intersection of Runway 17 to protect against a runway incursion. Airport 10 instructed Airport 219 to perform any escorting necessary for off-airport emergency equipment to Gate 11 and Airport 10 advised that city escorts get priority over UPS escorts. Airport 10 instructed Airport 209 to perform the daily Self Inspection Report inspection for the entire airport.

At 0610, Airport 10 was instructed by Airport 230 to return to the office so he would have an opportunity to prepare his documentation of the night’s events.

At 0615, NTSB reported on the scene.

6.2 Aircraft Rescue and Firefighting Personnel

Captain James Alberici⁸
33 years with the Philadelphia Fire Department
2½ years with Engine 78 ARFF

At about midnight, Captain (Capt.) Bushka and Airport Operations notified Capt. Alberici of the Alert 2 via cell phone. He called the airport operations center and they patched him through to Mr. John Glass who informed Capt. Alberici that they had a UPS airplane on fire. Capt. Alberici headed to Engine 78, he estimated that it took him about 30 minutes to arrive at Engine 78. When he arrived at the station, he met Capt. Bushka. Capt. Alberici got onto one of the Engines (either Foxtrot 5 or Foxtrot 7) as it returned to the scene after refilling.

At the scene, he reported to Chief Flanagan, who put Capt. Alberici in charge of Foxtrot 7 operations. Foxtrot 7 was already conducting piercing operations with the snozzle turret at this time, and he instructed them to keep piercing at different intervals. Foxtrot 7 began the piercing operations using only water, and then Capt. Alberici instructed that they switch to foam. Capt. Alberici stated he saw a “dramatic” difference in the fire when water applications were changed to foam. He stated that burn through “might” have already occurred when he arrived to the scene, and all the doors on the airplane were opened.

He walked around the airplane with a thermal imaging camera to located hot spots. Based on what he saw on the camera, he instructed Foxtrot 7 where to pierce. Capt. Alberici’s main concern was to keep the fire contained between about 6 feet aft of the wing and the tail. He wanted to keep the fire from moving forward. Once the fire spread was contained, Capt. Alberici began operations for extinguishing.

Capt. Alberici explained that the main cargo door did not function properly and firefighters could not get the cargo out. He stated that this really hindered the operation to get to the fire because the airplane was “so packed.”

Capt. Alberici stated that during aircraft familiarization the Training Officer uses a pictorial of the airplane, but the training is for a passenger airplane, not cargo. He stated PHL doesn’t conduct specific hazmat training for ARFF. The Fire Communication Center (FCC) dispatches the hazmat Administration Unit (HMAU) for all Alert II alarms. If the HMAU is not automatically dispatched, ARFF can request the HMAU to respond.

Fire Fighter Theodore Bailey
28 years with the Philadelphia Fire Department
23 years with Engine 78 ARFF

Firefighter (FF) Bailey heard the Alert and “jumped” into Foxtrot 10, a structural engine. They approached the airplane from the west, proceeded to the south and positioned the truck. After stopping at their position, the driver pulled a hand line and put the engine in pump while

⁸ Interview not conducted as a Survival Factors/Airport and Emergency Response Group activity. Interview conducted with FAA Party Coordinator and Group Chairman upon arrival on scene, prior to Group being formed.

FF Bailey suited up in his silvers [aluminized protective clothing] and Self-Contained Breathing Apparatus. FF Bailey observed the chute (escape slide) was already blown and the crew was off the airplane.

Someone had placed a ladder at the L1 door. FF Bailey and Lieutenant (Lt.) Wells entered the airplane through L1 to see if they could see fire, but saw nothing. The flight deck was smoky but not hot. FF Bailey exited the airplane via the L1 door, and then attempted to enter the main cargo door by turning the handle. He turned the small lock handle to open door, however nothing opened. He noticed the hex nut, but he did not have anything to operate it.

FF Bailey proceeded to the right side of the airplane and placed a ladder onto the leading edge of the wing. He climbed on the wing and asked firefighters below for a tool to make entry. He was handed an axe. FF Bailey opened the forward over wing exit door with the axe and looked inside. He saw flames reaching the interior ceiling of the airplane. FF Bailey estimated there was about 6 to 12 inches between the door jam and the container immediately inside to door. FF Valentin brought a hand line onto the wing and they began to apply water inside the doorway until the fire was no longer visible. FF Bailey got off the right wing and FF Bailey went to Foxtrot 2, which was forward of the airplane. He noticed that a hand line had been pulled from Foxtrot 2 but the line was not charged. He charged the line and stayed in Foxtrot 2, monitoring the radio, until he heard they needed the Mobile Air Command (MAC-3) vehicle.

Capt. O'Neill took FF Bailey to Engine 78 to get MAC-3. FF Bailey brought MAC-3 to the accident site and set the vehicle up for operation. He stayed with MAC-3 until 0730 when MAC-3 was ordered to be returned to the Engine 78. FF Bailey returned the MAC-3 and stayed at the station, he did not return to the incident site.

Captain Charles Bushka⁵
30 years with the Philadelphia Fire Department
2 years with Engine 78 ARFF

Capt. Bushka received notification while he was at home, from Capt. Lynch via cell phone. Capt. Lynch told him there was a fire on an airplane. Capt. Bushka explained that it is standard operating procedure for all Captains to be called into Engine 78 for all Alert 2's. Capt. Alberici and Capt. Lynch had just arrived at Engine 78 when Capt. Bushka arrived. Foxtrot 5 and Foxtrot 7 were coming into the station to refill, and Capt. Bushka took Foxtrot 5 back to the scene.

Capt. Bushka put on his "gear," which was in the command vehicle (Foxtrot 21), when he arrived at the scene. There was "quite a bit" of fire department equipment already at the scene. There was a "fair amount" of smoke, some fire was showing, and deformation of metal on the top rear of the fuselage had started. The doors on the front left, right rear and lower cargo bays were open. The escape slide was on the ground.

⁵ Interview not conducted as a Survival Factors/Airport and Emergency Response Group activity. Interview conducted with FAA Party Coordinator and Group Chairman upon arrival on scene, prior to Group being formed.

Capt. Loesch was in-charge of the ARFF Unit and told Capt. Bushka the flight crew was off the airplane. Capt. Loesch said they needed to try to make entry into the airplane. There was a “roller” or “container unit” pushed up to the front left cargo door with firefighters standing on top trying to gain access to the cargo door. Capt. Bushka went up onto the wing with Engine 69 (an off-airport unit) firefighters and used a circular saw to try to cut into the skin of the airplane near the overwing “hatches,” on the front left. He had more success opening the “hatches” in the “normal fashion.” Capt. Bushka wanted to get water into the airplane to begin extinguishing operations. He took a handline onto the wing and began spraying water into the airplane through the hatch. He left the wing and interior extinguishing from handlines ceased for 5 to 10 minutes. He returned to the wing with other ARFF firefighters and a handline from Foxtrot 7. This time he sprayed foam inside the hatch. Capt. Bushka recalled that burn through in the rear top of the airplane occurred about the time they switched to foam. Foxtrot 7 continued to use the snozzle on the left side of the airplane, piercing to the rear of the left wing. Capt. Bushka recalled that extinguishment of the interior fire was not effective until they began using the handlines and snozzle.

Capt. Bushka continued extinguishing from outside on the wing and then called Capt. Loesch to stop all other extinguishing operations while he went inside. He made entry into the airplane with handline through the “hatches.” The containers burned down to “about the bottom edge of the hatch opening,” and he crawled into the airplane to begin interior extinguishing. He put a lot of water and foam on the debris, heading from the overwing to the back of the airplane. The use of foam was effective to “get into debris.” Capt. Bushka said the visibility in the interior began to clear and they began the “overhaul” phase.

Capt. Bushka recommends that all the ARFF fire trucks be equipped with the snozzle.

*Chief Paul Flanagan⁵
28 years with the Philadelphia Fire Department
2½ years with Engine 78 ARFF*

Chief Flanagan explained that the crash phone rings in Engine 78 and the Fire Communication Center (FCC), which is located downtown. The Airport Emergency Center takes care of the initial notification, and calls for Alert 2’s and Alert 3’s.

Chief Flanagan received notification of the Alert 2, smoke indication, at home via telephone between 0020 and 0030. He went to the radio in his vehicle and tried to call the shift Captain to get more details. The Captain was too busy, so Chief Flanagan responded to the scene. The response from his house took approximately 20 minutes. He arrived at Engine 78 and proceeded onto the airport. He took taxiway Sierra-Alpha, to taxiway Sierra-Lima, to Runway 27R.

Chief Flanagan recalled that when he arrived at the accident site, all the ARFF trucks were on-scene, with extinguishing underway, and the airport was closed. Foxtrot 7 was being refilled with water at Engine 78. The emergency slide was inflated at the L1 doorway and he was

⁵ Interview not conducted as a Survival Factors/Airport and Emergency Response Group activity. Interview conducted with FAA Party Coordinator and Group Chairman upon arrival on scene, prior to Group being formed.

notified that the Medics transported three occupants. The “underbelly” door on the right side was open and the overwing exits on the right side had been opened when he arrived.

The Incident Commander had all the Battalion Chiefs open the available doors for access, with the cargo door being a priority. Chief Flanagan explained there was a problem getting the main cargo-loading door open. A UPS representative and firefighters were trying to open the cargo door with the manual hydraulic pump, located on the floor inside the L1 door. There was smoke coming out of the L1 door and the slide was obstructing the location where the handle needed to be inserted for the hydraulic pump. Firefighters had to remove the slide and place the ladder back up to the door. While firefighters tried to open the cargo door with the manual hydraulic pump, Chief Flanagan said another group of firefighters were standing on a “pallet truck” working on the cargo door itself. Chief Flanagan said ARFF was “not familiar with cargo,” which was “a problem in hindsight.”

Chief Flanagan described the visibility as “poor” and the smoke as “bad.” He told Capt. Alberici to get a thermal imaging camera and search for hot spots to identify where extinguishing operations need to be conducted. Initial snozzle piercing operations from Foxtrot 7, prior to refilling, used water only. Chief Flanagan noted that there were a lot of firefighters that seemed to be “inexperienced.” He recalled that burn through had not occurred at the time ARFF began using the snozzle. Foxtrot 7 arrived back to the scene after refilling and was positioned in back of the left wing. Foxtrot 7 was connected to another truck for water supply and resumed piercing operations, this time using foam.

Chief Flanagan looked into the containment, and/or possible off-loading of the fuel. He also met with Deputy Director of Airport Operations to discuss airport concerns and the use of MAC-III (mobile communication/command vehicle). They discussed returning the airport to an operational status, and alternate water supplies since the existing supply line stretched from the D Terminal and closed half of the airport.

The fire in the airplane was out by the time Chief Flanagan came out of his meeting, at approximately 0400. Firefighters went into the airplane to manage “hot spots” and a “fire control” time was recorded at 0407. Fire trucks began heading back to Engine 78 for servicing to get back into Index.

Chief Flanagan explained that Aircraft Familiarization Training consists of a 1 to 1½ hour video. He said Engine 78 is trying for ARFF Certification on the State level.

Fire Fighter Prince Gillard
9 years with the Philadelphia Fire Department
2½ years with Engine 78 ARFF

FF Gillard stated that on the night of the incident, he was working in Foxtrot 9, a Suburban used for medical assignments. Foxtrot 9 does not carry firefighting tools on board. Engine 78 got an alert for runway 27L. He proceeded in Foxtrot 9 to his standby position at the intersection of Whiskey and Sierra. The tower notified them (over radio) of the change to Runway 27R. He turned around and proceeded to his standby position for Runway 27R at the

intersection of Lima and Sierra, letting the “majors” pass. He stated that he knew the “majors” would be more important in the incident response. Foxtrot 9 took a position facing the airplane and to the right. FF Gillard responded in his “silvers” and had an SCBA. Once on scene, FF Gillard’s normal assignment is to help with ladders, hand lines, and tools, which he did. He explained that he has a support role at the site, and Captain Loesch gives him his assignments.

When they pulled up, FF Gillard saw the pilot, the co-pilot, and another gentleman exiting the plane. He saw them come down the “portable stairs,” and then they were taken to Medic 30. He helped the other firefighters in obtaining the tools needed, and then returned to Engine 78 to get an additional circular saw.

Captain Gary Loesch

Initial Incident Command

20 years with the Philadelphia Fire Department

2 years with Engine 78 ARFF

Capt. Loesch responded in Foxtrot 21, a Suburban mobile command post, to an Alert 1 that went out at about 1140. The Alert was dispatched to Runway 27L for a DC8 that was 5 miles out with a cargo fire light. The tower reported 20,700 pounds of fuel, but number of persons on board was not given. Enroute to his standby location, the dispatch was changed to Runway 27R. Capt. Loesch estimated this change added about 60 to 90 seconds to ARFF’s response time. Capt. Loesch was the first ARFF unit on runway. He was given information on the flight crew’s intent to evacuate, but was unsure who called the information in. The ARFF units were not in position prior to touchdown because of the change in the runway. The tower had reported the runway closed, and Foxtrot 21 lead Foxtrot 2 to the scene. Capt. Loesch radioed the Fire Communications Center (FCC) to give them information and info on the Alert 2.

Captain Loesch reported the following apparatus and ARFF personnel responded to the scene:

Foxtrot 2 - Lt. and driver – 1500 gallons and Purple K - RIV
Foxtrot 5 - Driver and turret operator – 3000 gallons
Foxtrot 6 - Driver and turret operator – 3000 gallons
Foxtrot 7 - Driver and turret operator – 3000 gallons, with Snozzle
Foxtrot 9 - Bronco - 2 firefighters
Foxtrot 10 - Structural engine – 2 firefighters – 500 gallons
Foxtrot 21 - Suburban – Command Post – Captain
Medic 30 - Medic Unit – 2 paramedics

The emergency slide was out of the L1 door and inflated when Captain Loesch “rolled up.” One crewmember came down the side, another was in the doorway, and a third crewmember came off the cockpit rope. Capt. Loesch saw smoke coming out of the L1 door during the evacuation. He alerted Medic 30 to proceed to the crew for care. He saw the crew move away from the plane and towards the ARFF responder’s equipment. Capt. Loesch intercepted the crew and asked for the airplane captain. He asked the airplane captain what he “had”; they said a fire light indicator. Capt. Loesch asked if they were carrying hazmat on-board.

The airplane captain said there was hazmat, and he thought it was in “Section 15” but he had no manifest on him. He asked the airplane captain if the crew donned oxygen, which they did.

Foxtrot 21 ordered all ARFF vehicles to take up “standard position” around the airplane. Capt. Loesch notified the FCC to “strike out Box 6355,” which was a code to send predetermined off-airport responders, consisting of 4 engines, 2 ladders, 2 chiefs, 2 squads and a Deputy Chief, to Gate 11. Capt. Loesch ordered SCBA’s to be used when he found out hazmat was onboard. Lieutenant Wells (Foxtrot 2) placed a ladder at the L1 door, over the emergency slide, in order to enter the cockpit to look for manifest and attempt entry into front cargo area. A dual agent (water/powder) line was placed in service through the L1 door.

Capt. Loesch ordered all non-drivers of Foxtrot 5, Foxtrot 6, and Foxtrot 7, plus the crew of Foxtrot 9 and Foxtrot 10, to open the “lower compartment doors” to check for smoke and fire. Capt. Loesch conducted a “360-degree” walk around for size up. There was “medium” smoke observed coming out of the tail of the airplane. He ordered a ladder raised to the main cargo door and the handle pulled, but he saw no movement to the door.

Capt. Loesch scanned the fuselage with a handheld Thermal Imager Camera (TIC) and found no hotspots. Lt. Wells told him that they were unable to locate the manifest because the smoke in the cockpit was too heavy. He called Airport 10 to get a UPS representative and a copy of the manifest. Capt. Loesch said he was concerned about hazmat volatility and water reactivity, as well as the exact location of “Section 15.” He also requested the fuel capacity. He was informed the lower cargo hold was clear of smoke and fire, and firefighters told him they could not make entry into the airplane from that area. The crash charts available for ARFF crews were for the passenger version of DC8, not cargo.

Capt. Loesch contacted the Deputy Chief via radio on the South Tac 1 frequency and gave him a status report. This was his first contact with a senior officer from an off-airport company. The Deputy Chief was enroute to the Gate 11 staging area. Foxtrot 21 notified the Deputy Chief that escorts would be waiting for him. Capt. Loesch also contacted Airport 10 and requested Chief Flanagan to be paged. The Deputy Chief called to notify he was entering the airfield and bringing half of the companies from the staging area with him, including Battalion 7 and Battalion 11. Capt. Loesch gave the Deputy Chief a face-to-face change of command upon arrival at scene. After the change of command, Capt. Loesch took over handling tactical operations for ARFF crews, remaining the only point of contact with the ARFF units.

Capt. Loesch requested hazmat information and a manifest again, Airport 10 reported that he was working on it. Approximately 15 minutes into the incident, Capt. Loesch learned that Medic 30 was transporting the crew to the hospital, and he requested another Medic unit. He ordered the ladder repositioned to the right wing with Battalion 11 and some ARFF crew members, who were using an air chisel to make a larger entry area. The first time he saw any hot spots on the TIC was while the firefighters were on the right wing, and Battalion 11 visually confirmed fire was present. Capt. Loesch ordered Engine 69 to enter the cockpit and look for the hazmat manifest again. They removed a black bag with maps and logbooks from the flightdeck, however it did not contain any hazmat information. The bag was given to UPS representatives who were at the scene. He notified the Deputy Chief of his desire to pierce the airplane and

informed the UPS representative, who was with Airport 10, of his intentions. The first pierce attempts were on the right side of the airplane, forward of the wing, where he picked up the hot spot. The piercing attempt was made to the top of the airplane. The tip slipped and did not pierce the fuselage. He ordered the truck to reposition to the rear of the wing and attempted another penetration to the top. This attempt was unsuccessful and tip once again slipped and moved the snozzle out of place.

A UPS representative came on scene with an “L-shaped bar” that had a fitting on the end used to manually open the main deck cargo door located on the forward left fuselage. The UPS representative suggested that they manually open the main cargo door, which Heavy Rescue was already working on with fire department cutting tools. He requested a K-loader [used to load/unload cargo containers] to offload the “igloos” [cargo containers] if needed. The UPS representative offered to climb the ladder and open the door manually. When the UPS representative climbed up to the top of the ladder, he identified that the slide had to be removed because it was blocking the manual pump access door. ARFF removed the slide from the door, the UPS representative climbed back up the ladder, and the access door was opened. The UPS representative attempted manual cranking but nothing happened to the cargo door. Heavy rescue tried to crank it and it still would not open. Capt. Loesch does not know how long they continued working on the crank.

The manifest arrived, containing only hazmat information. It was a red and white paper. Battalion 1 was the hazmat chief and he received the paperwork. There was one liter of flammable and explosive material on board. The hazmat was located in area 15 and 4. A UPS representative explained where these areas were, one area forward of the wing and one aft.

Capt. Loesch said he decided not to “lead off” with foam lines because he was saving foam for a possible fuel fire. He used water through hand lines at the L1 door for protection and a hand line on the right side over wing for extinguishment. Foxtrot 6 was positioned at the right tail area with one line still in use. The right rear entry door was opened and some UPS boxes were offloaded. He ordered Foxtrot 7 to reposition to the left side tail section. The TIC was showing fire in that area and he wanted to attempt to pierce that location.

All off-duty ARFF Captains were called back to the airport at this time. Captain Alberici was assigned to the TIC and Foxtrot 7 for piercing operations. Foxtrot 5 was repositioned to the left side of the airplane to supply water to Foxtrot 7. Chief Flanagan requested Foxtrot 21 begin cutting operations over the left wing. Foxtrot 21 assigned Captain Bushka to the task with help from structural manpower, however attempts to cut into the over wing area chewed up cutting blades. Captain O’Neill handled logistics.

The Deputy Chief requested the closest hydrant location from Airport 10 and it was determined to be at Gate D15. Captain Loesch asked operations about the feasibility of offloading the remaining fuel, but he received a negative response.

The UPS dolly and K-loader arrived and the Heavy Rescue unit used it as a working platform as they tried to get access into main deck cargo door. He requested Airport 10 to have ice melt delivered for the wing surface and ground area around the airplane. He was concerned

about the support of the tail with the Snuzzle pouring so much water and foam into the plane so he requested a “T-support,” but UPS reported it out-of-service. During this time he was notified the “tail tanks” were empty. At this point Foxtrot 7 switched from water to foam for the Snuzzle and a hand line. A 3-inch supply line was run from Gate D15 to Foxtrot 6 and Foxtrot 7. Capt. Loesch reported Foxtrot 7 had to leave the scene once for re-service back at Engine 78 and Foxtrot 5 re-serviced three times before the supply line was established. MAC3, a Mobile Command unit, arrived at the scene. The fire vented some time between 0200 and 0230. Once the fire vented all operations went to foam only. Once the fire was knocked down, Battalion 11, along with an ARFF firefighter, made entry from the left over-wing exit. There were hand lines in operation inside the fuselage by approximately 0330. The containers were burned down at this point so they could move around in the interior. Foxtrot 6 and Foxtrot 7 were the only units to apply foam to the airplane and used a total of 475 gallons.

Capt. Loesch said that there were two onboard recording cameras on board the ARFF trucks, one was not turned on and one had technical problems with recording. There was also one Forward-looking infrared (FLIR) camera, which was out-of-service.

Capt. Loesch indicated that he did not believe that the responding structural companies or the Heavy Rescue Unit train with the ARFF crews, with the exception of the triennial drill. He indicated that he was not familiar with the manual main deck cargo door opening procedures or cargo airplane, but he does train on other commercial passenger airplane.

Fire Fighter Paul Morris

18 years with the Philadelphia Fire Department

1 year with Engine 78 ARFF

FF Morris stated that he drove Foxtrot 7 on the night of the accident. He was originally dispatched to Runway 27L when the airplane was supposed to be five minutes out. As he turned onto taxiway Sierra for staging, the runway was changed to Runway 27R. He turned onto taxiway Mike to head to the new staging position and saw the airplane ahead on the runway. It had already stopped. He positioned the apparatus at a 45-degree angle between the front nose and the left wing. He noticed the L1 door was open, the chute was out and the pilots were walking away. He saw “light” smoke coming from the L1 door. He said that he helped stretch a line from Foxtrot 2 to the L1 door.

FF Morris said that someone asked him to make sure the video recording device was working on Foxtrot 7. He tried to put a tape into the machine, but he had trouble because the machine kicked the tape back out. He continued pushing the tape back in until he saw a recording light come on. Although there is a FLIR camera installed on the Snuzzle tip, FF Morris said it is a bad design that does not let you see much.

FF Morris tried to use Foxtrot 7’s piercing snuzzle to pierce the roof area in front of the wing on the right side, but the way the snuzzle is designed, it does not really allow for piercings from that angle. They repositioned the truck behind the wing, on the right side, and attempted to do the same thing. The result was worse. The airplane folded the snuzzle piercing tip back and the light on the tip broke. They had to pull down the boom that the snuzzle is mounted on and

manually readjust it. FF Morris was surprised it worked after that. They repositioned the truck again, to the left side behind the wing and pierced at a 90-degree angle to the airplane. The Captain had a handheld thermal imaging camera and told him where to pierce. They used water at first and then changed to foam. FF Morris did not notice a big difference in the extinguishment from when they were using water versus using foam.

FF Morris returned once to Engine 78 to refill Foxtrot 7 with water. When the apparatus returned to the scene, he positioned it in the same spot, and continued to pierce the airplane. At this time Foxtrot 7's water was supplied by a relay and there was no more water problems.

FF Morris stated that his next order was to take a 1 ¾-inch hand line off of Foxtrot 7 and go up a ladder onto the left wing. He then flowed a "stream" of foam through an "access panel" onto the hot spots. Burn-through had occurred by this time. FF Morris entered the airplane through the left side over wing exit and proceeded aft applying foam from the hand line. Containers had melted down allowing him to see and allowing access the back of the airplane.

Fire Fighter Glenn Nicholas
28 years with the Philadelphia Fire Department
2 months with Engine 78 ARFF

FF Nicholas was assigned to drive Foxtrot 9. He departed the station in response to an emergency. While he was enroute to Runway 27L, he was redirected to Runway 27R. When he arrived on scene the airplane's emergency exit chute was deployed and the crew was standing on the runway. FF Nicholas put on his structural gear and SCBA. He began stretching hand lines and setting ladders. He set a ladder at the main deck cargo door but had no luck in opening the door. He opened the lower level cargo door in front of the wing and checked for fire, but there was no smoke or fire damage. FF Nicholas reported seeing smoke, "light to medium," coming out of the L1 door. He then stretched a hand line to the L1 door and "stood by."

During the emergency event he pulled a hand line to the right wing and set a supplemental line to Foxtrot 6 from Engine 50. He stood by the L1 door while the Heavy Rescue Unit attempted to gain entry through the main deck cargo door. FF Nicholas then went with Foxtrot 2 to refill the truck with water. Upon his return to the scene he "stood by" and started picking up equipment. He continued to assist in the fire fighting efforts, but was not allowed to enter the airplane since he is new.

Captain Dennis O'Neill
29 years with the Philadelphia Fire Department
15 years with Engine 78 ARFF

Capt. Lynch called Capt. O'Neill to respond to the accident from home. When he arrived on scene, he assumed the job of logistics officer, which included water and foam re-supply at Station 78. He stayed at Engine 78 until approximately 0200, to ensure the outside companies were instructed on how to re-service the ARFF vehicles.

Capt. O'Neill went to the scene and did "360-degree" survey. When he arrived at the scene, burn-through had already occurred and he saw the two left over wing hatches and the right rear door were open. He noted they were using water on the airplane and he suggested they change to foam. Foxtrot 7 applied foam from the snozzle, and Foxtrot 6 applied foam from the bumper turret into the rear cargo door. On scene, Capt. O'Neill handled truck related logistics, such as refueling. Towards the end of the event, Capt. O'Neill helped to secure equipment, and spread salt. He also transported another firefighter back to the station to bring the command bus to the scene. Capt. O'Neill said he had no problem with getting the equipment.

Fire Fighter Walter Pytel
35 years with the Philadelphia Fire Department
5 years with Engine 78 ARFF

FF Pytel was assigned as driver of Foxtrot 6, a rapid intervention vehicle. He responded to an alert on 27L. Enroute to his assigned taxiway for staging, the runway was changed to Runway 27R. It was reported over the radio the airplane already landed. FF Pytel turned the truck around and entered Runway 27R at taxiway Mike and was ordered to take a position at the aft of the airplane. Firefighter Pytel stayed with the ARFF truck.

When the right rear galley door was opened, FF Pytel repositioned Foxtrot 6 more towards the side of the tail to support entry efforts. When fire was visible in the right rear door, he "played a stream of water" from the bumper turret of his truck into the door. He discharged water forward into the airplane, and then repositioned to apply water toward the rear interior of the airplane. FF Pytel repositioned once again to "play a stream of water" straight into the doorway, and attempted to bounce the stream off the ceiling. He reported that the bumper turret discharge on Foxtrot 6 was at high flow.

Foxtrot 6 was re-supplied with water from another pumper for most of the night. He applied water for the first hour of the operation, then changed to applying foam intermittently for approximately 45 minutes. When foam was applied "it calmed it down quickly". FF Pytel reported switching to water again after foam application. He shut down the bumper turret as hand lines were taken off Foxtrot 6 and used for the interior fire attack. "Turret man" Rearden came out of the airplane, and exited down the right rear ladder. He estimated the burn-through time was 0215, approximately 2 hours into the emergency.

Activity seemed to slow and command ordered him to take a break for about a half hour. They used a heat-seeking camera and told to him to open up the turret again with water and foam. When the fire was under control, Foxtrot 2 and Foxtrot 7 returned to station and Foxtrot 6 remained at the scene until 0645.

Fire Fighter Adolph Raco
28 years with the Philadelphia Fire Department
15 years with Engine 78 ARFF

FF Raco stated that on the night of the accident he was the driver of Foxtrot 5. He was dispatched to Runway 27L. As he was headed towards his standby position, the assignment

changed to Runway 27R. He entered Runway 27R on taxiway November to get to his new standby position.

FF Raco circled around the plane and positioned the apparatus behind the wing, towards the tail, on the left side. He stood-by with the apparatus while other firefighters took hand lines off Foxtrot 5 and positioned themselves on the other side of the airplane at the cargo bays. When the water tank was almost empty, he informed officers and went back to the station to use the hydrant to refill. FF Raco noted that the 1 ¾-inch hand lines drained the tank, not the “master stream.”

When he returned from refilling, he reconnected the 1 ¾-inch hand line and repositioned to the right side of the tail. He was “streaming water” into the right rear door from his bumper turret. He extinguished the visible fire inside the right rear door. Foxtrot 6 also played a stream in the same door. He noted that there was visible headway with Foxtrot 5 and Foxtrot 6 discharging into the rear door. FF Raco said either Captain Loesch or Lieutenant Wells were giving him the orders. He had to refill again and when he returned to the scene he positioned in the same place and was ordered to standby. FF Raco explained that since Foxtrot 6 and Foxtrot 7 were using hand lines, he had to standby and stay mobile in case he was needed somewhere else. He stood by until about 0600 and then returned to station to assist in returning the airport to index.

FF Raco was not sure if he refilled two or three times. The first time he refilled was about the time Captain Lynch and Captain Bushka arrived, and they returned in the truck with him to the scene.

FF Raco said there are FLIR cameras on Foxtrot 2 and Foxtrot 7, but neither were operational during the incident. He indicated that there were no FLIR cameras on Foxtrot 5 or Foxtrot 6.

*Fire Fighter Gerald Reardon
23 years with the Philadelphia Fire Department
2 years with Engine 78 ARFF*

FF Reardon was assigned to Foxtrot 6 as the turret operator. He said that he was first dispatched to Runway 27L. They (he and the driver) started to take their standby positions, but the assignment changed to Runway 27R. They positioned the apparatus aft almost directly behind and slightly to the right side of, the airplane. Capt. Loesch assigned vehicle positions and informed them that hazmat was on board.

FF Reardon put a SCBA pack on and got out of the truck. He proceeded to the airplane to see how he could help. He grabbed a 20-foot ladder and placed it to the rear lower cargo hold. He described seeing plenty of smoke from the exterior outflow valve but when he went into the right rear lower hold, there was no smoke. He crawled in the direction of the nose of the airplane and found it was sealed off; then he went towards the tail and found it sealed off also. FF Reardon then placed a ladder to the left side lower cargo door and could not open it.

He was asked to standby the main deck cargo door with a waterline while Heavy Rescue attempted to gain access. FF Reardon gave the hose line to another firefighter to continue standing-by and looked for something else to do. He noticed that Foxtrot 7 was able to hit the fire with the Snuzzle and saw two crews “playing a line” from outside the opening on the wing on the left side of the airplane. FF Reardon explained that sometimes when the fire is deep seated, the way to extinguish it is to get right in and soak it completely. So, Chief Kukowski, Captain Bushka, and he went into the airplane with a foam line. They entered the airplane through the openings on the left wing and the roof was still intact where he entered. He went in and began to extinguish the hot spots. FF Reardon started grabbing handfuls of debris turning them over to extinguish the hot embers below. He did not know what it was, but he started throwing smoldering debris out the window. He was working towards the aft and noticed that in some of the places the floor was hard, and in some of the places the floor was weak. When FF Reardon got towards the back, he saw the roof was “vented.” He took a break then went further back into the airplane. As he got towards the back of the airplane, he noticed a crew came up a ladder through the rear right door with a hose line from Foxtrot 6. They were working on hot spots from the back. FF Reardon went forward again and noticed another hand line had been brought in through the left over wing exit. His last position was between the exits, where he flooded the area. He was told to go take a break and exited off the wing.

FF Reardon noticed, as he got out of the airplane, that there was significant char from about five feet forward of the left over wing exit, but it was clear after that. After that he assisted others in taking up equipment.

Fire Fighter Alvin Valentin
17 years with the Philadelphia Fire Department
3 years with Engine 78 ARFF

FF Valentin was assigned as turret operator on Foxtrot 7. The Alert came out around 2330. He was on “watch” so he answered the crash phone. They told him “smoke in the cargo area, 3 crew, landing runway 27L.” He was also given fuel amounts, but did not remember what they were. Foxtrot 7 left for the runway but was redirected to Runway 27R along the way. He entered the runway from Taxiway Mike, and set up the vehicle on the left forward of the airplane. He saw one crewmember moving away from the airplane, but did not notice any others. The chute was deployed, and the L1 door had “medium” smoke coming out.

FF Valentin pulled a ladder off Foxtrot10 and put the ladder up to the L1 door. He entered the airplane to search for crewmembers and fire. He said the dome light was on in the cockpit. He came out, moved the ladder, and attempted to open the main deck cargo door. He moved the handle but it seemed stuck so he used the “haligan” tool on the handle and it started free spinning. When FF Valentin realized there was nothing he could do to open the cargo door, he went to the right side of the airplane and opened the two lower level cargo doors; there was no fire or smoke in those areas. Heavy Rescue tried to open the main deck cargo door and wanted him to go in and put out the fire. He waited for a while and when the cargo door never opened he left.

He retrieved another ladder and got on the wing on the right side. He saw smoke “drifting over plane.” He retrieved an axe for FF Bailey to use to open the door over the wing. When they removed the door, they saw fire around the top of the containers. He stated there was no noticeable change in the fire and smoke when the doors were opened. From the wing he was able to see the outside of the fuselage was bubbling but there was no burn-through yet. FF Valentin opened the right aft over wing hatch. He then got off the wing and assisted in refilling Foxtrot 2 and Foxtrot 5, rewinding a “booster reel,” and retrieving extra batteries. After the fire was knocked down he entered the airplane from the rear with a hand line and foamed down the interior.

Fire Fighter Jeff Walters

13 years with the Philadelphia Fire Department

2 ½ years with Engine 78 ARFF

FF Walters was assigned as a turret operator on Foxtrot 5. He responded to the alert, and the driver positioned the apparatus to the rear of the airplane on the left side. He “suited up” upon arrival and noticed “light to medium” smoke coming from the rear of the airplane. At the scene the driver stayed with the apparatus and he exited the vehicle. He placed ladders as instructed by Lt. Wells. One ladder was placed on the right wing in the middle, and another by the rear exit. He also recalled placing a “Little Giant” ladder on the right side of the airplane. Then FF Walters “stood by” inside the L1 door with a dual agent booster line from Foxtrot 2, as ordered by the Captain of Heavy Rescue.

Lieutenant Dennis Wells

28 years with the Philadelphia Fire Department

8 ½ years with Engine 78 ARFF

Lt. Wells was assigned as the Foxtrot 2 Officer, which is the first truck to respond. The alarm bell went off and the firelights went on. The airplane was reported to be five minutes out and Lt. Wells proceeded to the Runway 27L standby positions via taxiway Sierra. When the airplane was about 3 minutes out, and Foxtrot 2 was at the taxiway Mike and Sierra intersection, the runway was changed to 27R. As they drove to their new standby position, the tower radioed that the airplane had landed and the crew was evacuating. Foxtrot 2 made a U-turn on Taxiway Sierra, to Taxiway Papa then to Taxiway Uniform. Lt. Wells noted that he could not see the airplane because it was too dark. The airplane was shut down, and Runway 27R was then closed. He saw the “chute” was deployed, the cockpit window was open with the rope deployed, and “medium to heavy” smoke was coming through the L1 door. He saw the three crewmembers on the ground and had to swerve to avoid them.

The driver positioned Foxtrot 2 at the nose of the plane. Lt. Wells had a ladder brought to the L1 door while he put on his SCBA and uniform. He stretched a dual agent hose line from under the bumper of Foxtrot 2. He took it up the ladder and into the cockpit, which was “smoke charged.” Lt. Wells searched for a manifest and looked for possible forward access but could not locate any. He pulled apart the plastic [smoke curtain] to look toward the rear of the cargo area but could not see anything.

Lt. Wells laddered the airplane to try to open the main deck cargo door. He pulled the handle but could not budge the door. He came down the ladder and relocated to the right wing to try to gain access. He beat the over wing door with an axe to gain access. When Lt. Wells opened the over wing exit he noticed the cargo containers “right there” and access for the water hose was limited. He noticed fire rolling above, forward and aft. He knocked down the fire with a water line, and the smoke was darkening.

Lt. Wells recalled that Foxtrot 7 was hindered by the positioning of off airport units and was repositioned to the left side of the airplane. In that location, Foxtrot 7 was able to make several successful penetrations discharging almost all foam onto the fire. They were directed where to pierce from outside of the truck. Lt. Wells stayed primarily with Foxtrot 7. The elevated boom nozzle was used to extinguish the fire through the vented roof. Lt. Wells laddered the tail on the right side and took in a hand line with FF Valentin. They foamed down the containers and hot spots.

*Fire Fighter Charlie Witherspoon
18 years with the Philadelphia Fire Department
10 years with Engine 78 ARFF*

FF Witherspoon heard the alert before midnight; he was about to begin “watch” and was resting in the bunkroom. He was the driver for Foxtrot 2. Leaving the station he heard that there was Alert on Runway 27L. The airplane was coming in with smoke in the cockpit. As they left the station coming out onto taxiway Sierra, the runway was changed to 27R. FF Witherspoon also heard that the airplane “just touched down”. They changed direction to go to the airplane and heard a call that the runway was closed and they were cleared to proceed to plane. Foxtrot 2 was positioned on nose of airplane. FF Witherspoon was able to see that the chute was deployed and smoke was coming from the from L1 door. He did not see any of the crew.

FF Witherspoon and Lt. Wells extended the dual-agent bumper line to be used in the front of the plane. He assisted the Lt. with putting on his gear and SCBA, and then he checked the FLIR system to get it on-line and check the recording capability. He reported that there were images but they were not distinct. He noticed the driver of Foxtrot 7 to his right, and asked him to see that his camera was working. FF Witherspoon climbed into Foxtrot 7 to get the FLIR set up for recording. The FLIR was operational and all lights indicated it was recording. At this point, he stayed in Foxtrot 7 and another firefighter got into Foxtrot 2.

Foxtrot 7 was redirected from the left side of the airplane to right. FF Witherspoon scanned for a heat signature and to get access to the plane. He positioned F7 in front of the right wing and tried to pierce the airplane based on direction from Capt. Loesch. The first attempt was unsuccessful and he was directed to move Foxtrot 7 farther back towards the tail of the airplane. FF Witherspoon realized that there was a ladder where he needed to be, and instead, moved closer to the airplane. A Chief directed him to try to pierce the airplane from the top. FF Witherspoon told the officer he was outside the limitation for piercing the airplane without the boom being at a 90-degree angle to the airplane, but he tried it anyway. This action was not effective and it broke a part off the housing on the tip. His Lt. asked FF Witherspoon to bring the tip down so he could reset it. Then Lt. Wells told him to go to the left side of the plane and pierce

there. This is where the first penetration was made. FF Witherspoon began to flow water and foam, mainly water. Lt. Wells was outside directing the placement of where to penetrate based on what he saw in the TIC.

FF Witherspoon pierced the airplane two times before he had to go back to Engine 78 to refill with water. Foxtrot 5 was already at the station refilling with water. After refilling, he returned to the same position, on the right side of the airplane, and resumed piercing the fuselage. At this point, he was only flowing foam and he had a water relay from another truck. FF Witherspoon did notice a dramatic difference in the fire when he switched from mainly water to strictly foam application. Captain Alberici had taken over the direction of locating hot spots and directing the piercings.

A handline was pulled off Foxtrot 7 and used to cover the cutting operations on the left overwing. FF Witherspoon got a red light that all the foam on Foxtrot 7 was used and he had to return to the station to refill. He returned to the scene at the same position and made additional piercings. His piercing points went from forward to aft, and had difficulty extinguishing the fire in the rear. Each piercing took about 2-3 minutes of discharge before going to the next piercing position. FF Witherspoon flowed agent through the “master stream” through the hole in the airplane roof.

The fire had ventilated through the roof after FF Witherspoon left for the first water refill, but prior to his return to the scene. He estimated that each refill trip, to the station and back, took approximately 10 minutes.

6.3 Paramedics

*Paramedic Donald “Tony” Bryan
17 years with the Philadelphia Fire Department
9 years with Engine 78 ARFF*

Paramedic Bryan was assigned to Medic 30 (M30), which responds to all alert calls. He indicated that he saw the airplane with the main entry door open and the slide inflated. When he arrived on scene he saw two pilots exiting the airplane. Paramedic Bryan did not notice any flames but saw some smoke coming out of the airplane. He indicated he saw a rope but did not see anyone actually use it to evacuate.

Paramedic Bryan reported the crew came over to the side and talked to the M30 crew. M30 asked if they were “Okay” and they said they were. He asked if they had shortness of breath or chest pains and the crew said “no.” He asked the crew to come over to the Medic unit. There was some “raspy” in their throat and they were coughing and hacking a little. He asked how long the crew was in the smoke and they said that they believed they were only exposed to the smoke for less than a minute. Paramedic Bryan recalled giving the crew physical exams for vitals, personal information, and pulsox. The pulsox results were normal for all three crewmembers. He put them on supplemental oxygen and transported to University of Pennsylvania Hospital for follow up exams.

After Paramedic Bryan dropped off the crewmembers, he indicated that M30 called ES5 (Supervisor of South Philadelphia Medics) and they were told to return to the station to cover other calls since other medic units had relieved them on the accident scene. M30 returned to E78 and that completed Paramedic Bryan's involvement in the incident.

Paramedic Paul Gac

10 years with the Philadelphia Fire Department

6 years with Engine 78 ARFF

Paramedic Gac indicated that the Alert 1 came in at about 2345. M30 followed the Capt. out of the station; they were the last unit out. He watched the landing and thought it looked normal. When he drove up to the airplane he saw the slide coming out and two crewmembers use it. Paramedic Gac pulled his unit up to the scene about 100 feet from the left wing tip and saw the crew in a huddle by the nose of the airplane. They were on the pilot's side, about 20 feet away from the airplane. He saw smoke coming from the L1 door.

Paramedic Gac asked them if they were the flight crew and if there were any other personnel on board. They told him that they were the crew and there was no one else on board. He asked their physical condition and they reported no injuries but their throats were sore. Two crewmembers were in short sleeves and the flight engineer had a topcoat on. They all smelled heavily of smoke.

The M30 crew then moved the crew to the squad. Paramedic Gac reported that they all moved fine and were clear spoken. He sat them on the bench inside the truck and conducted quick physicals on them. The crewmembers denied any loss of consciousness. Paramedic Gac noted that the Flight Engineer appeared to be more heavily covered in soot. The captain and first officer reported sore throats and the flight engineer reported soreness in his chest. He put the crew on pulsox, which all read between 98 and 100 percent. He gave all three crewmembers supplemental oxygen as a precaution. Paramedic Gac said the crew looked good and all vitals were reported normal. M30 then transported the crew to University of Pennsylvania Hospital.

Paramedic Gac recalled two comments the flight crew made. The First Officer indicated that the warning came on at 5,000 feet, just as they were turning final. He indicated he reset the alarm and it came on again. He also recalled he Flight Engineer indicated he had opened the emergency slide.

Paramedic Gac also overheard Foxtrot 21 asking the crewmembers if they had Hazmat on board. The crew replied that they did, but they did not have the manifest.

6.4 UPS Maintenance

Joseph Crilly

Maintenance Supervisor

Mechanic with UPS for 10 years

Line Maintenance Supervisor with UPS for 6 years

Mr. Crilly reported that he received a call from a ramp supervisor indicating there was an airplane enroute with a problem. This information was determined through monitoring ATC radio transmissions, which ramp supervisors do so they are aware of incoming traffic and can work ramp traffic flow sequencing. The ramp supervisor indicated that he had heard something about a smoke indication, and the crew had declared an emergency and was heading in. Mr. Crilly told Greg Kouba (another supervisor) about the problem and that they had to get out to the airfield. They began to prepare for recovery (a tug, a tow bar and a brake rider) towing of the airplane, and assumed that the crew would be evacuating the airplane. Mr. Crilly was not sure of the extent of the situation at that time.

The UPS Assistant Chief Pilot (Reed) approached Mr. Crilly and indicated the need to get a van to transport the crew from the scene. The Assistant Chief Pilot got into the crew van with Mr. Crilly and they proceeded to Taxiway Uniform, where they met airport operations for escort. Instead of being escorted, Mr. Crilly and the Assistant Chief Pilot got into the airport operations vehicle. As they drove to the airplane, the airport operations employee told them that there was a fire on the airplane and they were going to have to pierce the airplane. Mr. Crilly told them to “do whatever was necessary.”

As they approached the airplane in the airport operations vehicle, the airport operations employee asked Mr. Crilly if he knew how to get the main cargo door open. Upon arrival at the airplane, the crew door was observed to be open, slide deployed, cockpit window open and the Captain’s escape tape was deployed. Mr. Crilly indicated he was amazed at the extent of smoke coming from the airplane. He indicated he believed the right rear galley door was open at this time and he observed that the FD had surrounded the airplane with trucks. Mr. Crilly talked to the fire chief near the main deck cargo door and informed the fire chief that without power the only way to open the door was via a manual pump. He told the fire chief that the tool needed to manually operate the door was in the flightdeck and someone would have to get into the flightdeck to get it. Mr. Crilly described the tool as “sort of like a wrench or breaker bar with a socket at a right angle.” Smoke was now coming out of the L1 door “big time” and also coming out of the cockpit window. Mr. Crilly offered to get a tool from another DC-8 parked on the ramp to open the door, as he thought it was a better option than sending someone in the smoke. The fire chief instructed him to go get it and the airport operations employee took him to UPS to get the tool.

When they returned to the airplane after retrieving the tool, a firefighter was in the “vestibule” area of the airplane, by the L1 doorway, wearing an SCBA. There was another firefighter who wanted to help and Mr. Crilly instructed him to get a ladder to the main cargo door. He instructed that someone needed to open the vent door, then grab the handle and turn it to the unlock position. The other firefighter was still in the L1 doorway and Mr. Crilly went up

the ladder and stood on the sill of the L1 door to show the firefighter where the control panel was. He instructed the firefighter to open the control panel door, which is a large panel (about 5-inches by 12-inches) on the floor, and to locate the T-handle. He said they needed to pull up on the handle while turning. But when the panel was opened, the T-handle was found inside, broken from the piston. He believed the firefighter indicated that they had already tried the T-handle. At that point, Mr. Crilly asked the firefighter if he had pliers. The firefighter did, and pulled them from his pocket. He instructed the firefighter to pull up and twist the pliers, while Mr. Crilly pumped the bar. He told the firefighter that the T-handle must remain pulled up to maintain the open position.

The slide was still inflated and the small panel on the floor where the pump handle is inserted was blocked by the girt bar. Mr. Crilly indicated that they needed to disengage the slide by pulling the pins on the girt bar. Mr. Crilly tried to help the firefighter disconnect the slide, but since the slide was inflated and the ladder was on top, movement of the girt bar was impossible. He instructed the firefighter to use his thumbs to disengage the slide, and then climbed down the ladder. The firefighters on the ground pulled the ladder from the doorway. The firefighter “monkeyed around” with the girt bar and it was successfully disengaged. The slide was thrown under the airplane belly.

Firefighters on the ground replaced the ladder to the L1 doorway and Mr. Crilly went back up to meet the firefighter. He noted that there was more smoke this time. The smaller panel was now accessible but had been jammed tight in place with foot traffic. He requested a flat screwdriver, which the firefighter did not have. Mr. Crilly used the keys to the company vehicle to pry the panel loose. He inserted the bar into the pump hole, and thought it would be “1-2-3 to get in.” At this time, he took notice that the lock/unlock handle on the cargo door was already in the unlocked (downward 45 degree) position, which he thought was odd because he did not think it should be unlocked yet. Mr. Crilly indicated that that you can manually unlock the door by pushing down on the handle.

If the T-handle is up and turned to the unlock position, the hand pump can trip the lock mechanism. The firefighter held the T-handle piston in the up position with pliers and Mr. Crilly pumped the handle. He indicated the pump was building pressure, which he could tell by the feel of the handle. He built up a lot of pressure and the door did not budge. He confirmed with the firefighter that he had the piston in the open position. The door was still not moving. Mr. Crilly stopped pumping and told the firefighter he had to “check things out.”

Mr. Crilly confirmed the vent door was open and had a firefighter climb the ladder at the cargo door to locate the hex nut. He explained that the hex nut will unlock the door clips and hydraulic would typically actuate the lock release. He handed the firefighter the tool and demonstrated how to unlock the door using the tool. The bar would not move and he told the firefighter to really “give it some force,” but the firefighter still could not move it. Mr. Crilly climbed the L1 door ladder again and tried to manually pump again but still nothing. At this time the K-loader arrived at the scene.

Mr. Crilly came down from the ladder and walked to one of the fire trucks to rest. He indicated he was getting light headed from the smoke inhalation while he knelt in the L1

doorway. The K-loader was placed at the cargo door and used as a platform for the firefighters with cutting saws. He told the firefighters that he was unsuccessful in manually opening the door, and the firefighters informed him that they would cut into it. Mr. Crilly again said to “do whatever was necessary.” The firefighter asked him the best way to cut the door and Mr. Crilly answered that there are 6 to 7 latches at the bottom of the door. He got on the K-loader with the firefighters in black gear and showed them where to cut. At this time, he noticed fire going through the roof. He observed that it did not appear that they were having much success cutting. He tried the hex nut again and then showed the firefighters where to cut to this best of his knowledge. Mr. Crilly explained that there is an access panel at each latch and he felt they would be good cut points. He indicated to cut along the bottom of the access panels, but above the sill. The saw blades were “chewed up pretty quickly.”

Mr. Crilly got off the K-loader and saw that firefighters were on the wing cutting into the airplane between the left over wing exits. The left over wing exits had not been opened during this operation. He explained to the firefighters how to open the exits from the exterior by pushing in on the access panel on top of the exit door. This activates a plunger that releases the door and it “just falls in.”

Mr. Crilly then walked to the right side and saw that both over wing exits were open, as well as the rear galley door. The chief asked him how to open the left rear galley door, which was partially opened. He informed the chief that it appeared it was opened properly, but may be jammed by either structural damage or debris. The door was able to open far enough to just clear the door jam. The smoke was “really coming out of the doorway.”

At this point Mr. Crilly indicated he noticed they were really getting a lot of water on the fire and it was starting to take effect. He commented that he was amazed at how much it took to knockdown the fire. He recalled the Snozzle was in operation when he arrived on the scene and that they appeared to be searching for fire with cameras and piercing in those areas.

He went back to the K-loader to see how the firefighters were doing and if they needed help. They were still working on the door, but they were not having much success. He indicated that the “guy in charge” of the crew on the K-loader wanted to use an acetylene torch. The fuselage skin had been removed, and he showed them where to cut. He stayed with them during the operation, but the crew used the acetylene torch and the “jaws” with little to no progress.

Mr. Crilly then assisted the NTSB in retrieving the FDR and CVR from the rear galley area. The NTSB gave them permission to move the airplane from the fire scene and Mr. Crilly “rode the brakes” in the cockpit as the airplane was towed off the runway to the UPS ramp.

Courtney H. Liedler

Survival Factors Investigator

7.0 Attachments

1. Interior Arrangements for UPS DC-8 Cargo Airplane
2. UPS Service Engineering Order Number DC8-5210-3206-B
3. UPS DC-8 Maintenance Manual - External Access Door Diagram
4. UPS DC-8 Systems Manual - Emergency Equipment Location and Forward Area Installation Diagrams
5. UPS Boeing DC-8 Aircraft Maintenance Manual, Escape Tapes – Maintenance Practices
6. PHL Airport Diagram
7. PHL Airport Self-Inspection Report for February 07, 2006
8. PHL Operations Section – Shift Highlights for February 07, 2006
9. PHL Field Condition Report for February 08, 2006
10. Notices to Airmen (NOTAMs)
11. PHL Triennial Drill Information
12. City of Philadelphia Fire Communication Center Dispatch Log
13. Standby Positions for Aircraft Rescue and Firefighting Vehicles at PHL
14. Philadelphia Fire Department Report of Alarm (Incident Report)
15. PHL Aircraft Rescue and Firefighting Equipment List
16. PHL Aircraft Rescue and Firefighting Training Records
17. Written Statements from UPS and Off-Airport Fire Departments Regarding Hazmat Information

References:

1. Philadelphia International Airport - Airport Certification Manual, dated December 03, 2004, approved February 08, 2005.