

NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorders Division

Washington, D.C. 20594

December 21, 2001

Air Traffic Control Recording

Specialist's Report
by Joseph A. Gregor

A. ACCIDENT

Location: The Pentagon, Arlington, VA
Date: September 11, 2001
Time:¹
Aircraft: Boeing 757-200
NTSB Number: DCA01SA064

B. GROUP

N/A

C. SUMMARY

On September 11, 2001 American Airlines Flight 77, a Boeing 757 crashed into the Pentagon in Arlington, VA. A certified analog copy of air traffic control (ATC) transmissions recorded on September 11, 2001 at various tower, departure, and Air Route Traffic Control Center (ARTCC) positions along the route of flight was sent to the audio laboratory of the National Transportation Safety Board. These recordings were used to create an audio track and text transcript of the aircraft-ground communications from takeoff to accident time.

D. DETAILS OF INVESTIGATION

Transmissions between the accident aircraft and ATC were recorded and an analog copy was sent to the Safety Board's audio laboratory. The tapes cover the following ATC positions and time periods:

Facility	Time Period ¹ (UTC)	Position
IAD	1211 - 1226	LCW
	1215 - 1230	ND
	1218 - 1231	NH
ZDC	1220 - 1236	Sector 05R
ZDC	1226 - 1246	Sector 03R
ZID	1234 - 1309	HNN-R
	1249 - 1313	DAC-RA
	1249 - 1313	DAC-R

Sections of the tape recordings containing air-ground transmissions to and from the incident aircraft were digitized at a 22,050 Samples/second data rate and saved as standard Microsoft .wav files. Individual .wav files were combined into a single 43 minute 59 second long .wav file containing all transmissions to and from the incident aircraft from 1219:20 UTC (aircraft cleared for takeoff) to 1303:19 UTC. A transcript was obtained from the final composite recording. Times are approximate due to limitations inherent in the data obtained from the FAA.

Joseph A. Gregor 
Electrical Engineer

Transcript of ATC communications with a Boeing B-757-200 (American Airlines flight 77) which crashed into the Pentagon in Arlington, VA on September 11, 2001.

LEGEND

AAL-77	Radio transmission from American B-767-200, flight 77
LCW	Radio transmission from Local Control West
ND	Radio transmission from North Departure
NH	Radio transmission from North High
05R	Radio transmission from Sector 05 Radar position
03R	Radio transmission from Sector 03 Radar position
HNN-R	Radio transmission from Henderson Radar position
DAC-RA	Radio transmission from DAC Radar Associate position
DAC-R	Radio transmission from DAC Radar position
*	Unintelligible word
#	Expletive
()	Questionable insertion
[]	Editorial insertion
...	Pause
--	Interruption

Note 1: Times are expressed in universal coordinated time (UTC).

Note 2: Only radio transmissions to and from the accident aircraft were transcribed.

Note 3: Words shown with excess vowels, letters, or drawn out syllables are a phonetic representation of the words as spoken.

INTRA-COCKPIT COMMUNICATION

AIRCRAFT-TO-GROUND COMMUNICATION

Time (UTC) SOURCE	CONTENT	Time (UTC) SOURCE	CONTENT
Start of recording			
Start of transcript			
		1219:20 LCW	American seventy seven your departure frequency will be one two five point zero five runway three zero cleared for take off. [IAD 1211-1226 LCW]
		1219:27 AAL-77	twenty five point five cleared for take off runway ah three zero American seventy seven. [IAD 1211-1226 LCW]
		1220:26 LCW	American seventy seven turn left heading two seven zero contact departure. [IAD 1211-1226 LCW]
		1220:31 AAL-77	two seventy heading departure American seventy seven thanks sir good day. [IAD 1211-1226 LCW]
		1220:43 ND	American seventy seven Dulles departure radar contact climb and maintain five thousand. [IAD 1215-1230 ND]
		1220:47 AAL-77	five thousand American seventy seven. [IAD 1215-1230 ND]
		1222:05 ND	American seventy seven climb and maintain one one thousand eleven thousand. [IAD 1215-1230 ND]

INTRA-COCKPIT COMMUNICATION

AIRCRAFT-TO-GROUND COMMUNICATION

Time (UTC) SOURCE	CONTENT	Time (UTC) SOURCE	CONTENT
1222:08 AAL-77		1222:08 AAL-77	up to one thousand American seventy seven. [IAD 1215-1230 ND]
1223:23 ND		1223:23 ND	American seventy seven cleared direct LINDEN contact Dulles one one eight point six seven. [IAD 1215-1230 ND]
1223:28 AAL-77		1223:28 AAL-77	direct LINDEN eighteen sixty seven American ah seventy seven **. [IAD 1215-1230 ND]
1223:43 AAL-77		1223:43 AAL-77	* American ah seventy seven with you passing nine decimal one for eleven one one thousand. [IAD 1215-1230 NH]
1223:47 NH		1223:47 NH	American seven seven Dulles approach climb maintain one seven thousand. [IAD 1215-1230 NH]
1223:50 AAL-77		1223:50 AAL-77	one seven thousand American seventy seven. [IAD 1215-1230 NH]
1225:33 NH		1225:33 NH	American seventy seven contact Washington center one two zero point six five good flight. [IAD 1215-1230 NH]
1225:37 AAL-77		1225:37 AAL-77	twenty six five American seventy seven thank you maam good day. [IAD 1215-1230 NH]

INTRA-COCKPIT COMMUNICATION

AIRCRAFT-TO-GROUND COMMUNICATION

Time (UTC) SOURCE	CONTENT	Time (UTC) SOURCE	CONTENT
1225:49 AAL-77		1225:49 AAL-77	ah center American seventy seven with you passing one three decimal zero for one seven thousand. [ZDC 1220-1236 05R]
1225:57 05R		1225:57 05R	American seventy seven Washington center roger climb and maintain flight level two seven zero. [ZDC 1220-1236 05R]
1226:02 AAL-77		1226:02 AAL-77	two seven zero American seventy seven. [ZDC 1220-1236 05R]
1230:38 05R		1230:38 05R	American seventy seven contact Washington center one three three point two seven. [ZDC 1220-1236 05R]
1230:42 AAL-77		1230:42 AAL-77	ah thirty three twenty seven American seventy seven thanks sir good day. [ZDC 1220-1236 05R]
1231:05 AAL-77		1231:05 AAL-77	* American seventy seven passing two five decimal one for two seven oh. [ZDC 1223-1246 03R]
1231:21 03R		1231:21 03R	American seventy seven ah climb, climb maintain flight level two niner zero sir. [ZDC 1226-1246 03R]
1231:27 AAL-77		1231:27 AAL-77	two nine zero American seventy seven. [ZDC 1226-1246 03R]

INTRA-COCKPIT COMMUNICATION

AIRCRAFT-TO-GROUND COMMUNICATION

Time (UTC) SOURCE	CONTENT	Time (UTC) SOURCE	CONTENT
1234:14 03R		1234:14 03R	American seventy seven turn twenty degrees right vector for your climb. [ZDC 1226-1246 03R]
1234:17 AAL-77		1234:17 AAL-77	turn twenty right American seventy seven. [ZDC 1226-1246 03R]
1237:31 03R		1237:31 03R	American seventy seven recleared direct Charleston climb maintain cor -- correction recleared direct Henderson sir climb maintain flight level three nine zero. [ZDC 1226-1246 03R]
1237:39 AAL-77		1237:39 AAL-77	direct HENDERSON out of two nine for three nine oh requesting three five zero for a final American seventy seven. [ZDC 1226-1246 03R]
1237:55 AAL-77		1237:55 AAL-77	center American ah seventy seven you copy request for three five zero as a final? [ZDC 1226-1246 03R]
1237:59 03R		1237:59 03R	American seventy seven ah roger maintain flight level three five zero I'll show that as your final. [ZDC 1226-1246 03R]
1238:03 AAL-77		1238:03 AAL-77	ah three five zero for a final American seventy seven thank you sir. [ZDC 1226-1246 03R]

INTRA-COCKPIT COMMUNICATION

AIRCRAFT-TO-GROUND COMMUNICATION

Time (UTC) SOURCE	CONTENT	Time (UTC) SOURCE	CONTENT
1239:30 03R		American seventy seven amend your altitude maintain flight level three three zero for traffic. [ZDC 1226-1246 03R]	
1239:36 AAL-77		American seven seven stop at three three zero. [ZDC 1226-1246 03R]	
1240:03 03R		American seventy seven contact Indy center one two zero point two seven. [ZDC 1226-1246 03R]	
1240:06 AAL-77		twenty twenty seven American seventy seven thanks sir good day. [ZDC 1226-1246 03R]	
1240:13* AAL-77		center American seventy seven with you level three three zero. [ZDC 1234-1409 HNN-R]	
1240:15* HNN-R		American seventy seven Indy center roger squawk, three seven four three. [ZDC 1234-1409 HNN-R]	
1240:19* AAL-77		three seven four three American seventy seven. [ZDC 1234-1409 HNN-R]	
1243:51* HNN-R		American seventy seven climb and maintain flight level three five zero. [ZDC 1234-1409 HNN-R]	
1243:55* AAL-77		thirty three, three five oh American seventy seven. [ZDC 1234-1409 HNN-R]	

INTRA-COCKPIT COMMUNICATION

AIRCRAFT-TO-GROUND COMMUNICATION

Time (UTC) SOURCE	CONTENT	Time (UTC) SOURCE	CONTENT
1247:16* HNN-R		1247:16* HNN-R	American seventy seven turn ten degrees to the right vectors for traffic. [ZDC 1234-1409 HNN-R]
1247:20* AAL-77		1247:20* AAL-77	ten right American seven seven. [ZDC 1234-1409 HNN-R]
1250:47 HNN-R		1250:47 HNN-R	American seventy seven cleared direct ah FALMOUTH. [ZDC 1234-1409 HNN-R]
1250:51* AAL-77		1250:51* AAL-77	ah direct FALMOUTH American seventy seven thanks. [ZDC 1234-1409 HNN-R]
1256:32* HNN-R		1256:32* HNN-R	American seventy seven Indy. [ZDC 1234-1409 HNN-R]
1256:46* HNN-R		1256:46* HNN-R	American seventy seven Indy. [ZDC 1234-1409 HNN-R]
1256:53* HNN-R		1256:53* HNN-R	American seventy seven American Indy. [ZDC 1234-1409 HNN-R]
1257:12* HNN-R		1257:12* HNN-R	American seventy seven American Indy radio check how do you read? [ZDC 1234-1409 HNN-R]
1257:27* HNN-R		1257:27* HNN-R	American ah seventy seven American radio check how do you read? [ZDC 1234-1409 HNN-R]

INTRA-COCKPIT COMMUNICATION

AIRCRAFT-TO-GROUND COMMUNICATION

Time (UTC) SOURCE	CONTENT	Time (UTC) SOURCE	CONTENT
1258:16* HNN-R		1258:16* HNN-R	American seventy seven Indy radio check how do you read? [ZDC 1234-1409 HNN-R]
1258:20* DAC-RA		1258:20* DAC-RA	American seventy seven center. [ZDC 1249-1317 DAC-RA]
1258:41* HNN-R		1258:41* HNN-R	American ah seventy seven ah Indy center how do you read? [ZDC 1234-1409 HNN-R]
1258:51* HNN-R		1258:51* HNN-R	American seventy seven Indy radio check how do you read? [ZDC 1234-1409 HNN-R]
1259:32* DAC-RA		1259:32* DAC-RA	American seventy seven center. [ZDC 1249-1317 DAC-RA]
1300:25* HNN-R		1300:25* HNN-R	American seventy seven Indy. [ZDC 1234-1409 HNN-R]
1300:56* DAC-RA		1300:56* DAC-RA	Indy center calling American seventy seven American seventy seven. [ZDC 1249-1317 DAC-RA]
1300:56* DAC-R		1300:56* DAC-R	Indy center calling American seventy seven American seventy seven. [ZDC 1249-1317 DAC-R]
1303:06* HNN-R		1303:06* HNN-R	American seventy seven Indy. [ZDC 1234-1409 HNN-R]

INTRA-COCKPIT COMMUNICATION

AIRCRAFT-TO-GROUND COMMUNICATION

Time (UTC) SOURCE	CONTENT	Time (UTC) SOURCE	CONTENT
		~1315:15 AAL-683	[called AAL-77 on guard at center request]. [ZDC 1249-1317 DAC-RA]

End of transcript

*times verified via FAA timecode reader.

1219:20 LCW American seventy seven your departure frequency will be one two five point zero five runway three zero cleared for take off. [IAD 1211-1226 LCW]

1219:27 AAL-77 twenty five point five cleared for take off runway ah three zero American seventy seven. [IAD 1211-1226 LCW]

1220:26 LCW American seventy seven turn left heading two seven zero contact departure. [IAD 1211-1226 LCW]

1220:31 AAL-77 two seventy heading departure American seventy seven thanks sir good day. [IAD 1211-1226 LCW]

1220:43 ND American seventy seven Dulles departure radar contact climb and maintain five thousand. [IAD 1215-1230 ND]

1220:47 AAL-77 five thousand American seventy seven. [IAD 1215-1230 ND]

1222:05 ND American seventy seven climb and maintain one one thousand eleven thousand. [IAD 1215-1230 ND]

1222:08 AAL-77 up to one one thousand American seventy seven. [IAD 1215-1230 ND]

1223:23 ND American seventy seven cleared direct LINDEN contact Dulles one one eight point six seven. [IAD 1215-1230 ND]

1223:28 AAL-77 direct LINDEN eighteen sixty seven American ah seventy seven **. [IAD 1215-1230 ND]

1223:43 AAL-77 * American ah seventy seven with you passing nine decimal one for eleven one one thousand. [IAD 1215-1230 NH]

1223:47 NH American seven seven Dulles approach climb maintain one seven thousand. [IAD 1215-1230 NH]

1223:50 AAL-77 one seven thousand American seventy seven. [IAD 1215-1230 NH]

1225:33 NH American seventy seven contact Washington center one two zero point six five good flight. [IAD 1215-1230 NH]

1225:37 AAL-77 twenty six five American seventy seven thank you maam good day. [IAD 1215-1230 NH]

1225:49 AAL-77 ah center American seventy seven with you passing one three decimal zero for one seven thousand. [ZDC 1220-1236 05R]

1225:57 05R American seventy seven Washington center roger climb and maintain flight level two seven zero. [ZDC 1220-1236 05R]

1226:02 AAL-77 two seven zero American seventy seven. [ZDC 1220-1236 05R]

1230:38 05R American seventy seven contact Washington center one three three point two seven. [ZDC 1220-1236 05R]

1230:42 AAL-77 ah thirty three twenty seven American seventy seven thanks sir good day. [ZDC 1220-1236 05R]

1231:05 AAL-77 * American seventy seven passing two five decimal one for two seven oh. [ZDC 1223-1246 03R]

1231:21 03R American seventy seven ah climb, climb maintain flight level two niner zero sir. [ZDC 1226-1246 03R]

1231:27 AAL-77 two nine zero American seventy seven. [ZDC 1226-1246 03R]

1234:14 03R American seventy seven turn twenty degrees right vector for your climb. [ZDC 1226-1246 03R]

1234:17 AAL-77 turn twenty right American seventy seven. [ZDC 1226-1246 03R]

1237:31 03R American seventy seven recleared direct Charleston climb maintain cor -- correction recleared direct Henderson sir climb maintain flight level three niner zero. [ZDC 1226-1246 03R]

1237:39 AAL-77 direct HENDERSON out of two nine for three nine oh requesting three five zero for a final American seventy seven. [ZDC 1226-1246 03R]

1237:55 AAL-77 center American ah seventy seven you copy request for three five zero as a final? [ZDC 1226-1246 03R]

1237:59 03R American seventy seven ah roger maintain flight level three five zero I'll show that as your flinal. [ZDC 1226-1246 03R]

1238:03 AAL-77 ah three five zero for a final American seventy seven thank you
 sir. [ZDC 1226-1246 03R]
 1239:30 03R American seventy seven amend your altitude maintain flight
 level three three zero for traffic. [ZDC 1226-1246 03R]
 1239:36 AAL-77 American seven seven stop at three three zero. [ZDC 1226-1246
 03R]
 1240:03 03R American seventy seven contact Indy center one two zero point
 two seven. [ZDC 1226-1246 03R]
 1240:06 AAL-77 twenty twenty seven American seventy seven thanks sir good day.
 [ZDC 1226-1246 03R]
 1240:13 AAL-77 center American seventy seven with you level three three zero.
 [ZDC 1234-1409 HNN-R]
 1240:15 HNN-R American seventy seven Indy center roger squawk, three seven
 four three. [ZDC 1234-1409 HNN-R]
 1240:19 AAL-77 three seven four three American seventy seven. [ZDC 1234-1409
 HNN-R]
 1243:51 HNN-R American seventy seven climb and maintain flight level three
 five zero. [ZDC 1234-1409 HNN-R]
 1243:55 AAL-77 thirty three, three five oh American seventy seven. [ZDC 1234-
 1409 HNN-R]
 1247:16 HNN-R American seventy seven turn ten degrees to the right vectors
 for traffic. [ZDC 1234-1409 HNN-R]
 1247:20 AAL-77 ten right American seven seven. [ZDC 1234-1409 HNN-R]
 1250:47 HNN-R American seventy seven cleared direct ah FALMOUTH. [ZDC 1234-
 1409 HNN-R]
 1250:51 AAL-77 ah direct FALMOUTH American seventy seven thanks. [ZDC 1234-
 1409 HNN-R]
 1256:32 HNN-R American seventy seven Indy. [ZDC 1234-1409 HNN-R]
 1256:46 HNN-R American seventy seven Indy. [ZDC 1234-1409 HNN-R]
 1256:53 HNN-R American seventy seven American Indy. [ZDC 1234-1409 HNN-R]
 1257:12 HNN-R American seventy seven American Indy radio check how do you
 read? [ZDC 1234-1409 HNN-R]
 1257:27 HNN-R American ah seventy seven American radio check how do you read?
 [ZDC 1234-1409 HNN-R]
 1258:16 HNN-R American seventy seven Indy radio check how do you read? [ZDC
 1234-1409 HNN-R]
 1258:20 DAC-RA American seventy seven center. [ZDC 1249-1317 DAC-RA]
 1258:41 HNN-R American ah seventy seven ah Indy center how do you read? [ZDC
 1234-1409 HNN-R]
 1258:51 HNN-R American seventy seven Indy radio check how do you read? [ZDC
 1234-1409 HNN-R]
 1259:32 DAC-RA American seventy seven center. [ZDC 1249-1317 DAC-RA]
 1300:25 HNN-R American seventy seven Indy. [ZDC 1234-1409 HNN-R]
 1300:56 DAC-RA Indy center calling American seventy seven American seventy
 seven. [ZDC 1249-1317 DAC-RA]
 1300:56 DAC-R Indy center calling American seventy seven American seventy
 seven. [ZDC 1249-1317 DAC-R]
 1303:06 HNN-R American seventy seven Indy. [ZDC 1234-1409 HNN-R]
 ~1315:15 AAL-683 [called AAL-77 on guard at center request]. [ZDC 1249-1317 DAC-
 RA]