

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: New York, New York
Date: September 11, 2001
Time:¹
Aircraft: Boeing 767-200ER
NTSB Number: DCA01SA063

B. GROUP

N/A

C. SUMMARY

On September 11, 2001 United Airlines Flight 175, a Boeing 767 crashed into Tower 2 of the World Trade Center in New York City, New York. 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
BOS	1201:11 – 1220:33	LCE
BOS	1209:11 – 1228:58 1211:49 – 1224:53	ID SL
ZBW	1214 - 1236	Sector 47R
ZBW	1217 - 1233	Sector 46R
ZBW	1226 – 1245	Sector 20R
ZNY	1235 - 1254 1250 – 1308	Sector 42R

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 41 minute 11 second long .wav file containing all transmissions to and from the incident aircraft from 1213:26 UTC (aircraft cleared for takeoff) to 1254:37 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-767-200ER (American Airlines flight 175) which crashed into Tower 2 of the World Trade Center in New York City, New York on September 11, 2001.

LEGEND

AAL-175	Radio transmission from American B-767-200ER, flight 175
LCE	Radio transmission from Local Control East
ID	Radio transmission from Initial Departure
SL	Radio transmission from Lincoln Departure
47R	Radio transmission from Sector 47 Radar position
46R	Radio transmission from Sector 46 Radar position
20R	Radio transmission from Sector 20 Radar position
42R	Radio transmission from Sector 42 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
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Start of recording

Start of transcript

1213:26*
LCE

United one seventy five heavy runway niner cleared for takeoff traffic's holding in position on four right. [BOS 1202-1220 ICE]

1213:31*
UAL-175

cleared for takeoff runway niner Uniteds one seventy five heavy. [BOS 1202-1220 ICE]

1214:33*
LCE

United one seventy five heavy contact departure. [BOS 1202-1220 ICE]

1214:36*
UAL-175

departure Uniteds one seventy five heavy. [BOS 1202-1220 ICE]

1214:44*
UAL-175

departure Uniteds one seventy five heavy is with you out of twelve hundred. [BOS 1209-1228 Initial Departure]

1214:46*
ID

United one seventy five heavy Boston departure radar contact climb and maintain one four thousand. [BOS 1209-1228 Initial Departure]

INTRA-COCKPIT COMMUNICATION

AIRCRAFT-TO-GROUND COMMUNICATION

Time (UTC) SOURCE	CONTENT	Time (UTC) SOURCE	CONTENT
1214:51* UAL-175		1214:51* UAL-175	one four thousand Uniteds one seventy five heavy. [BOS 1209-1228 Initial Departure]
1215:41* ID		1215:41* ID	United one seventy five heavy turn right heading two one zero. [BOS 1209-1228 Initial Departure]
1215:45* UAL-175		1215:45* UAL-175	turn two one zero Uniteds one seventy five heavy. [BOS 1209-1228 Initial Departure]
1216:50* ID		1216:50* ID	United one seventy five heavy turn right heading two seven zero. [BOS 1209-1228 Initial Departure]
1216:53* UAL-175		1216:53* UAL-175	turn to two seven zero Uniteds one seventy five heavy. [BOS 1209-1228 Initial Departure]
1217:09* ID		1217:09* ID	United one seventy five heavy contact Boston approach one two seven point two good day. [BOS 1209-1228 Initial Departure]
1217:13* UAL-175		1217:13* UAL-175	two seven point two Uniteds one seventy five heavy good day. [BOS 1209-1228 Initial Departure]
1217:21* UAL-175		1217:21* UAL-175	Boston good morning Uniteds one seventy five heavy is out of eight thousand. [BOS 1211-1224 lincoln Departure]

INTRA-COCKPIT COMMUNICATION

AIRCRAFT-TO-GROUND COMMUNICATION

Time (UTC) SOURCE	CONTENT	Time (UTC) SOURCE	CONTENT
1217:25* SL		1217:25* SL	United one seventy five heavy Boston approach fly heading two seven zero. [BOS 1211-1224 lincoln Departure]
1217:28* UAL-175		1217:28* UAL-175	two seven zero on the heading Uniteds one seventy five. [BOS 1211-1224 lincoln Departure]
1219:08* SL		1219:08* SL	United one seventy five heavy contact Boston center one three three point four two. [BOS 1211-1224 lincoln Departure]
1219:13* UAL-175		1219:13* UAL-175	three three four two Uniteds one seventy five heavy good day. [BOS 1211-1224 lincoln Departure]
1219:24 UAL-175		1219:24 UAL-175	Boston good morning Uniteds one seventy five heavy heavy out of eleven seven for one four thousand. [ZBW 1219-1230 Sector 47R]
1219:42 47R		1219:42 47R	United one seventy five Boston center climb maintain flight level two three zero you're cleared direct BIGGO. [ZBW 1219-1230 Sector 47R]
1219:48 UAL-175		1219:48 UAL-175	direct BIGGO up to two three zero United one seventy five heavy. [ZBW 1219-1230 Sector 47R]
1222:06 47R		1222:06 47R	United one seventy five contact Boston center one two seven point eight two. [ZBW 1219-1230 Sector 47R]

INTRA-COCKPIT COMMUNICATION

AIRCRAFT-TO-GROUND COMMUNICATION

Time (UTC) SOURCE	CONTENT	Time (UTC) SOURCE	CONTENT
1222:10 UAL-175		1222:10 UAL-175	two seven eight two United one seventy five so long. [ZBW 1219-1230 Sector 47R]
1222:33 UAL-175		1222:33 UAL-175	Boston morning United one seventy five's out of uh nineteen for two three oh. [ZBW 1222-1227 Sector 46R]
1222:37 46R		1222:37 46R	United one seventy five Boston uh center roger. [ZBW 1222-1227 Sector 46R]
1227:09 47R		1227:09 47R	United one seventy five you with me? [ZBW 1219-1230 Sector 47R]
1227:19 46R		1227:19 46R	United one seventy five contact the ah Boston center on ah one three three point four two. [ZBW 1222-1227 Sector 46R]
1227:25 UAL-175		1227:25 UAL-175	'kay three four two United one seventy five so long. [ZBW 1222-1227 Sector 46R]
1227:34 UAL-175		1227:34 UAL-175	Boston United ah one seventy five two three oh. [ZBW 1219-1230 Sector 47R]
1227:37 47R		1227:37 47R	United one seventy five Boston center roger climb and maintain flight level three five zero. [ZBW 1219-1230 Sector 47R]

INTRA-COCKPIT COMMUNICATION

AIRCRAFT-TO-GROUND COMMUNICATION

Time (UTC)
SOURCE

Time (UTC)
SOURCE

CONTENT

CONTENT

1227:42
UAL-175

up to three five zero we want to request three one zero if it's smooth for United one seventy five. [ZBW 1219-1230 Sector 47R]

1228:43
UAL-175

Boston Uniteds one seventy five like to request three one oh if it's smooth. [ZBW 1219-1230 Sector 47R]

1228:49
47R

United one seventy nine you say you want three one oh? [ZBW 1219-1230 Sector 47R]

1228:51
UAL-175

yes sir if it's smooth for Uniteds one seventy five heavy. [ZBW 1219-1230 Sector 47R]

1228:54
47R

United one seventy nine maintain ah flight level that's ah correction there I have one seventy five maintain flight level three one zero. [ZBW 1219-1230 Sector 47R]

1228:58
UAL-175

three one zero Uniteds one seventy five we'd like to keep that as a final. [ZBW 1219-1230 Sector 47R]

1230:50
47R

United one seventy five maintain three one oh and contact the Boston center on one two five point five seven. [ZBW 1219-1230 Sector 47R]

1230:56
UAL-175

two five five seven we'll maintain three one oh Uniteds one seventy five. [ZBW 1219-1230 Sector 47R]

INTRA-COCKPIT COMMUNICATION

AIRCRAFT-TO-GROUND COMMUNICATION

Time (UTC) SOURCE	CONTENT	Time (UTC) SOURCE	CONTENT
1231:04* UAL-175		1231:04* UAL-175	Boston morning Uniteds one seventy five is out of two eight oh for three one oh. [ZBW 1231-1239 Sector 20R]
1231:08* 20R		1231:08* 20R	United one seventy five Boston center roger good morning. [ZBW 1231-1239 Sector 20R]
1237:03* 20R		1237:03* 20R	United one seventy five Boston. [ZBW 1231-1239 Sector 20R]
1237:06* UAL-175		1237:06* UAL-175	one seventy five go ahead sir. [ZBW 1231-1239 Sector 20R]
1237:08* 20R		1237:08* 20R	roger do you have traffic look at uh your twelve to one o'clock at about uh ten miles south bound see if you can see an American seventy sixty seven out there please. [ZBW 1231-1239 Sector 20R]
1237:18* UAL-175		1237:18* UAL-175	okay were looking negative contact United one seventy five. [ZBW 1231-1239 Sector 20R]
1238:00* 20R		1238:00* 20R	okay United one seventy five do you have him at your twelve o'clock now and five, ten miles. [ZBW 1231-1239 Sector 20R]
1238:04* UAL-175		1238:04* UAL-175	affirmative we have him uh he looks uh about ah twenty ah yeah about twenty nine, twenty eight thousand. [ZBW 1231-1239 Sector 20R]

INTRA-COCKPIT COMMUNICATION

AIRCRAFT-TO-GROUND COMMUNICATION

Time (UTC) SOURCE	CONTENT	Time (UTC) SOURCE	CONTENT
1238:11* 20R		1238:11* 20R	okay thank you. [ZBW 1231-1239 Sector 20R]
1238:24* 20R		1238:24* 20R	United one seventy five turn thirty degrees to the right I want to keep you away from this traffic . [ZBW 1231-1239 Sector 20R]
1238:28* UAL-175		1238:28* UAL-175	thirty degrees to the right United one seventy five heavy. [ZBW 1231-1239 Sector 20R]
1239:33* 20R		1239:33* 20R	United one seventy five cleared direct SPARTA. [ZBW 1231-1239 Sector 20R]
1239:36* UAL-175		1239:36* UAL-175	direct SPARTA United one seventy five. [ZBW 1231-1239 Sector 20R]
1239:41* 20R		1239:41* 20R	United one seventy five contact New York center one two seven point one seven. [ZBW 1231-1239 Sector 20R]
1239:44* UAL-175		1239:44* UAL-175	one two seven one seven United one seventy five. [ZBW 1231-1239 Sector 20R]
1240:32* UAL-175		1240:32* UAL-175	center good morning United one seventy five heavy three one oh. [ZNY 1237-1307 Sector 42R]

INTRA-COCKPIT COMMUNICATION

AIRCRAFT-TO-GROUND COMMUNICATION

Time (UTC) SOURCE	CONTENT	Time (UTC) SOURCE	CONTENT
1240:37* R42		1240:37* R42	United one seventy five * -- correction United one seventy five New York center roger. [ZNY 1237-1307 Sector 42R]
1241:28* UAL-175		1241:28* UAL-175	New York United one seventy five heavy. [ZNY 1237-1307 Sector 42R]
1241:31* R42		1241:31* R42	United one seventy five go ahead. [ZNY 1237-1307 Sector 42R]
1241:33* UAL-175		1241:33* UAL-175	ya we figured we'd wait to go to you center ah we heard a suspicious transmission on our departure out of Boston ah with someone ah, ah sound like someone sound like someone keyed the mike and said ah everyone ah stay in your seats. [ZNY 1237-1307 Sector 42R]
1241:51 R42		1241:51 R42	oh okay I'll pass that along over here. [ZNY 1237-1307 Sector 42R]
1241:55* UAL-175		1241:55* UAL-175	that's ah cut out. [ZNY 1237-1307 Sector 42R]
1242:12* UAL-175		1242:12* UAL-175	did you copy that? [ZNY 1237-1307 Sector 42R]
1251:42* R42		1251:42* R42	United one seventy five recycle your transponder and squawk code of one four seven zero. [ZNY 1237-1307 Sector 42R]

INTRA-COCKPIT COMMUNICATION

AIRCRAFT-TO-GROUND COMMUNICATION

Time (UTC) SOURCE	CONTENT	Time (UTC) SOURCE	CONTENT
1251:53* R42		United one seventy five New York. [ZNY 1237-1307 Sector 42R]	
1252:09* R42		United one seventy five do you read New York? [ZNY 1237-1307 Sector 42R]	
1252:20* R42		United, United one seventy five do you read New York? [ZNY 1237-1307 Sector 42R]	
1253:52 R42		United one seventy five New York. [ZNY 1237-1307 Sector 42R]	
1254:33 R42		United one seventy five do you read New York? [ZNY 1237-1307 Sector 42R]	

End of transcript

*times verified via FAA timecode reader.

1213:26 LCE United one seventy five heavy runway niner cleared for takeoff traffic's holding in position on four right. [BOS 1202-1220 lCE]

1213:31 UAL-175 cleared for takeoff runway niner Uniteds one seventy five heavy. [BOS 1202-1220 lCE]

1214:33 LCE United one seventy five heavy contact departure. [BOS 1202-1220 lCE]

1214:36 UAL-175 departure Uniteds one seventy five heavy. [BOS 1202-1220 lCE]

1214:44 UAL-175 departure Uniteds one seventy five heavy is with you out of twelve hundred. [BOS 1209-1228 Initial Departure]

1214:46 ID United one seventy five heavy Boston departure radar contact climb and maintain one four thousand. [BOS 1209-1228 Initial Departure]

1214:51 UAL-175 one four thousand Uniteds one seventy five heavy. [BOS 1209-1228 Initial Departure]

1215:41 ID United one seventy five heavy turn right heading two one zero. [BOS 1209-1228 Initial Departure]

1215:45 UAL-175 turn two one zero Uniteds one seventy five heavy. [BOS 1209-1228 Initial Departure]

1216:50 ID United one seventy five heavy turn right heading two seven zero. [BOS 1209-1228 Initial Departure]

1216:53 UAL-175 turn to two seven zero Uniteds one seventy five heavy. [BOS 1209-1228 Initial Departure]

1217:09 ID United one seventy five heavy contact Boston approach one two seven point two good day. [BOS 1209-1228 Initial Departure]

1217:13 UAL-175 two seven point two Uniteds one seventy five heavy good day. [BOS 1209-1228 Initial Departure]

1217:21 UAL-175 Boston good morning Uniteds one seventy five heavy is out of eight thousand. [BOS 1211-1224 lincoln Departure]

1217:25 SL United one seventy five heavy Boston approach fly heading two seven zero. [BOS 1211-1224 lincoln Departure]

1217:28 UAL-175 two seven zero on the heading Uniteds one seventy five. [BOS 1211-1224 lincoln Departure]

1219:08 SL United one seventy five heavy contact Boston center one three three point four two. [BOS 1211-1224 lincoln Departure]

1219:13 UAL-175 three three four two Uniteds one seventy five heavy good day. [BOS 1211-1224 lincoln Departure]

1219:24 UAL-175 Boston good morning Uniteds one seventy five heavy heavy out of eleven seven for one four thousand. [ZBW 1219-1230 Sector 47R]

1219:42 47R United one seventy five Boston center climb maintain flight level two three zero you're cleared direct BIGGO. [ZBW 1219-1230 Sector 47R]

1219:48 UAL-175 direct BIGGO up to two three zero United one seventy five heavy. [ZBW 1219-1230 Sector 47R]

1222:06 47R United one seventy five contact Boston center one two seven point eight two. [ZBW 1219-1230 Sector 47R]

1222:10 UAL-175 two seven eight two United one seventy five so long. [ZBW 1219-1230 Sector 47R]

1222:33 UAL-175 Boston morning United one seventy five's out of uh nineteen for two three oh. [ZBW 1222-1227 Sector 46R]

1222:37 46R United one seventy five Boston uh center roger. [ZBW 1222-1227 Sector 46R]

1227:09 47R United one seventy five you with me? [ZBW 1219-1230 Sector 47R]

1227:19 46R United one seventy five contact the ah Boston center on ah one three three point four two. [ZBW 1222-1227 Sector 46R]

1227:25 UAL-175 'kay three four two United one seventy five so long. [ZBW 1222-1227 Sector 46R]

1227:34 UAL-175 Boston United ah one seventy five two three oh. [ZBW 1219-1230 Sector 47R]

1227:37 47R United one seventy five Boston center roger climb and maintain flight level three five zero. [ZBW 1219-1230 Sector 47R]

1227:42 UAL-175 up to three five zero we want to request three one zero if it's smooth for United one seventy five. [ZBW 1219-1230 Sector 47R]

1228:43 UAL-175 Boston Uniteds one seventy five like to request three one oh if it's smooth. [ZBW 1219-1230 Sector 47R]

1228:49 47R United one seventy nine you say you want three one oh? [ZBW 1219-1230 Sector 47R]

1228:51 UAL-175 yes sir if it's smooth for Uniteds one seventy five heavy. [ZBW 1219-1230 Sector 47R]

1228:54 47R United one seventy nine maintain ah flight level that's ah correction there I have one seventy five maintain flight level three one zero. [ZBW 1219-1230 Sector 47R]

1228:58 UAL-175 three one zero Uniteds one seventy five we'd like to keep that as a final. [ZBW 1219-1230 Sector 47R]

1230:50 47R United one seventy five maintain three one oh and contact the Boston center on one two five point five seven. [ZBW 1219-1230 Sector 47R]

1230:56 UAL-175 two five five seven we'll maintain three one oh Uniteds one seventy five. [ZBW 1219-1230 Sector 47R]

1231:04 UAL-175 Boston morning Uniteds one seventy five is out of two eight oh for three one oh. [ZBW 1231-1239 Sector 20R]

1231:08 20R United one seventy five Boston center roger good morning. [ZBW 1231-1239 Sector 20R]

1237:03 20R United one seventy five Boston. [ZBW 1231-1239 Sector 20R]

1237:06 UAL-175 one seventy five go ahead sir. [ZBW 1231-1239 Sector 20R]

1237:08 20R roger do you have traffic look at uh your twelve to one o'clock at about uh ten miles south bound see if you can see an American seventy sixty seven out there please. [ZBW 1231-1239 Sector 20R]

1237:18 UAL-175 okay were looking negative contact United one seventy five. [ZBW 1231-1239 Sector 20R]

1238:00 20R okay United one seventy five do you have him at your twelve o'clock now and five, ten miles. [ZBW 1231-1239 Sector 20R]

1238:04 UAL-175 affirmative we have him uh he looks uh about ah twenty ah yeah about twenty nine, twenty eight thousand. [ZBW 1231-1239 Sector 20R]

1238:11 20R okay thank you. [ZBW 1231-1239 Sector 20R]

1238:24 20R United one seventy five turn thirty degrees to the right I want to keep you away from this traffic. [ZBW 1231-1239 Sector 20R]

1238:28 UAL-175 thirty degrees to the right United one seventy five heavy. [ZBW 1231-1239 Sector 20R]

1239:33 20R United one seventy five cleared direct SPARTA. [ZBW 1231-1239 Sector 20R]

1239:36 UAL-175 direct SPARTA United one seventy five. [ZBW 1231-1239 Sector 20R]

1239:41 20R United one seventy five contact New York center one two seven point one seven. [ZBW 1231-1239 Sector 20R]

1239:44 UAL-175 one two seven one seven United one seventy five. [ZBW 1231-1239 Sector 20R]

1240:32 UAL-175 center good morning United one seventy five heavy three one oh. [ZNY 1237-1307 Sector 42R]
1240:37 R42 United one seventy five * -- correction United one seventy five New York center roger. [ZNY 1237-1307 Sector 42R]
1241:28 UAL-175 New York United one seventy five heavy. [ZNY 1237-1307 Sector 42R]
1241:31 R42 United one seventy five go ahead. [ZNY 1237-1307 Sector 42R]
1241:33 UAL-175 ya we figured we'd wait to go to you center ah we heard a suspicious transmission on our departure out of Boston ah with someone ah, ah sound like someone sound like someone keyed the mike and said ah everyone ah stay in your seats. [ZNY 1237-1307 Sector 42R]
1241:51 R42 oh okay I'll pass that along over here. [ZNY 1237-1307 Sector 42R]
1241:55 UAL-175 that's ah cut out. [ZNY 1237-1307 Sector 42R]
1242:12 UAL-175 did you copy that? [ZNY 1237-1307 Sector 42R]
1251:42 R42 United one seventy five recycle your transponder and squawk code of one four seven zero. [ZNY 1237-1307 Sector 42R]
1251:53 R42 United one seventy five New York. [ZNY 1237-1307 Sector 42R]
1252:09 R42 United one seventy five do you read New York? [ZNY 1237-1307 Sector 42R]
1252:20 R42 United, United one seventy five do you read New York? [ZNY 1237-1307 Sector 42R]
1253:52 R42 United one seventy five New York. [ZNY 1237-1307 Sector 42R]
1254:33 R42 United one seventy five do you read New York? [ZNY 1237-1307 Sector 42R]