

NATIONAL TRANSPORTATION SAFETY BOARD
Office of Research and Engineering
Washington, D.C. 20594

September 29, 1997

Group Chairman's Factual Report of Investigation

Cockpit Voice Recorder

DCA-97-MA-059

A. ACCIDENT

Location: Miami International Airport
Miami, Florida

Date: August 7, 1997

Time: 1236:25 Eastern Daylight Time

Aircraft: FineAir Inc.
McDonnell Douglas DC-8-62, N27UA

B. GROUP

Chairman: James R. Cash
Electronics Engineer
National Transportation Safety Board

Member: Gene M. Kirkendall
Air Safety Inspector
Federal Aviation Administration

Member: Jim Sunamoto
Engineer
Pratt&Whitney Aircraft

Member: Terry Wagner
Captain
FineAir

Member: Steve Lund
Director Flight Safety
Douglas Products Div., Boeing Aircraft

C. SUMMARY

A Fairchild model A-100 cockpit voice recorder (CVR) s/n 5173 was brought to the audio laboratory of the National Transportation Safety Board. A transcript was prepared of the entire 32 minute good^o quality recording. (attached)

D. DETAILS OF INVESTIGATION

The exterior of the CVR showed signs of some minor denting and scratching. There were no signs of any fire or heat damage noted. The Dukane underwater locator beacon, that was installed on the CVR, operated normally when tested in the lab.

The recording consisted of three channels of good quality audio information. One channel contained the cockpit area microphone audio information. The other three channels contained the Captain's, the First Officer's, and the Second Officer's radio information.

The recording starts at 1205:30 EDT. and continues uninterrupted until 1236:25.4 EDT when electrical power is removed from the unit. When the recording starts, it appears that the crew is not in the cockpit. The first conversations that can be attributed to the crew of the accident flight are heard at 1213:28 EDT. The flight contacts ground control at 1232:59 EDT and requests taxi clearance. The flight is cleared for takeoff as the crew is finishing up the before take off checklist at 1234:31 EDT.

The takeoff appears normal until 1235:51.5 EDT when the Captain makes the statement "easy easy easy". The sound of the stall warning stick shaker is heard at 1236:02.2 EDT. This stick shaker remains activated until 1236:12.0 EDT. The stick shaker comes on again at 1236:17.8 EDT and remains on until the end of the recording. The recording stopped at 1236:25.4 EDT.

James R. Cash
Electronics Engineer

TRANSCRIPT OF A FAIRCHILD MODEL A-100 COCKPIT VOICE RECORDER
S/N 5173 WHICH WAS REMOVED FROM A FINEAIR, INC., MCDONNELL
DOUGLAS AIRCRAFT CO. DC-8-62 N27UA, WHICH WAS INVOLVED IN A
TAKEOFF ACCIDENT ON AUGUST 7, 1997 AT MIAMI INTERNATIONAL
AIRPORT, MIAMI, FLORIDA.

RDO Radio transmission from accident aircraft
CAM Cockpit Area Microphone sound or source
-1 Voice identified as Captain
-2 Voice identified as First Officer
-3 Voice identified as Second Officer
-4 Voice identified as male ground personnel
-? Voice unidentified
TWR Miami Local Controller (tower)
GND Miami Ground Controller
CLR Miami Clearance Controller
HOU Houston HF radio
UNK Unknown source
* Unintelligible word
@ Nonpertinent word
Expletive deleted
% Break in continuity
() Questionable text
(()) Editorial insertion
- Pause

Notes: All times are expressed in eastern daylight
 savings time. Only radio transmissions
 involving the accident aircraft were
 transcribed.

⁰ CVR Quality Rating Scale

The levels of recording quality are characterized by the following traits of the cockpit voice recorder information:

- | | |
|--------------------------|---|
| Excellent Quality | Virtually all of the crew conversations could be accurately and easily understood. The transcript that was developed may indicate only one or two words that were not intelligible. Any loss in the transcript is usually attributed to simultaneous cockpit/radio transmissions that obscure each other. |
| Good Quality | Most of the crew conversations could be accurately and easily understood. The transcript that was developed may indicate several words or phrases that were not intelligible. Any loss in the transcript can be attributed to minor technical deficiencies or momentary dropouts in the recording system or to a large number of simultaneous cockpit/radio transmissions that obscure each other. |
| Fair Quality | The majority of the crew conversations were intelligible. The transcript that was developed may indicate passages where conversations were unintelligible or fragmented. This type of recording is usually caused by cockpit noise that obscures portions of the voice signals or by a minor electrical or mechanical failure of the CVR system that distorts or obscures the audio information. |
| Poor Quality | Extraordinary means had to be used to make some of the crew conversations intelligible. The transcript that was developed may indicate fragmented phrases and conversations and may indicate extensive passages where conversations were missing or unintelligible. This type of recording is usually caused by a combination of a high cockpit noise level with a low voice signal (poor signal-to-noise ratio) or by a mechanical or electrical failure of the CVR system that severely distorts or obscures the audio information. |
| Unusable | Crew conversations may be discerned, but neither ordinary nor extraordinary means made it possible to develop a meaningful transcript of the conversations. This type of recording is usually caused by an almost total mechanical or electrical failure of the CVR system. |

INTRA-COCKPIT COMMUNICATION

**TIME and
SOURCE**

CONTENT

1205:30
Start of Recording.

1205:34
Start of Transcript..

1213:28
CAM-1 you don't have any scratch paper back here do ya?

1213:30
CAM-3 sir.

1213:31
CAM-1 A piece of scratch paper I can use.

1213:36
CAM-3 scotch tape?

1213:37
CAM-1 no ah never mind I'll I'll.

1213:41
CAM-3 That's all that I got.

1213:42
CAM-1 naw I didn't need ah no I got what I need thanks.

1213:49
CAM-3 they had about a quarter inch missing on the skid.

1213:52
CAM-1 oh really.

1213:52
CAM-3 yeah I told the ah mechanic to ah.

AIR-GROUND COMMUNICATION

**TIME and
SOURCE**

CONTENT

INTRA-COCKPIT COMMUNICATION

TIME and
SOURCE

CONTENT

1213:55
CAM-1

repaint it.

1213:56
CAM-3

to repaint it.

1213:56
CAM-1

okay good.

1213:58
ATIS

— visibility one zero, four thousand scattered two five thousand scattered temperature three three dew point two four altimeter three zero zero four approaches are being conducted to parallel converging and intersecting runways arrivals expect ILS runway two seven right ILS runway two seven left localizer runway three zero bird activity in the vicinity of the airport advise on initial contact you have information fox-trot.

1214:32
CAM-3

he said blame it on him he said okay.

1214:37
CAM-1

you ah.

1214:40
CAM-3

tail skid story I got to get that off.

1214:44
CAM-1

who suppose to repaint the tail skid?

1214:46
CAM-2

who's suppose to what?

1214:47
CAM-3

repaint the tail skid.

AIR-GROUND COMMUNICATION

TIME and
SOURCE

CONTENT

INTRA-COCKPIT COMMUNICATION

TIME and SOURCE

CONTENT

1214:50
CAM-1 there is a little bit missing on the tail you got our flight
 plan? what are we one oh one?

1215:04
CAM-2 one oh one that's correct.

1215:20
CAM-2 so what's it look like?

1215:21
CAM-3 same old #.

1215:33
CAM-3 *.

1215:49
CAM-1 * make any difference.

AIR-GROUND COMMUNICATION

TIME and SOURCE

CONTENT

1215:07
RDO-1 clearance Fine Air one oh one heavy information fox-trot
 Santa Domingo.

1215:12
CLR Fine Air one oh one on request.

1215:14
RDO-1 rog.

1216:14
CLR Fine Air one oh one I'm showin' that you are proposin' at
 seventeen thirty are you departing earlier than that or
 what.

INTRA-COCKPIT COMMUNICATION

TIME and SOURCE

CONTENT

1216:36
CAM-2

want me to call radio ?

1216:37
CAM

[sound similar to that of over-speed warning clacker]].

1216:42
CAM-1

that's all right he's gonna fix it.

1216:48
CAM-3

hold up here for a second all right.

1216:51
CAM-1

okay don't move it.

1216:52
CAM-2

is it a mechanic.

AIR-GROUND COMMUNICATION

TIME and SOURCE

CONTENT

1216:20
RDO-1

nah they should have filed it for seventeen hundred okay
ah naw we'll take it when ever you can give it to me.

1216:25
CLR

okay I will get it thirty minutes prior to ah so it'll take a
couple minutes before I can change it.

1216:29
RDO-1

yeah we should be ready to go actually in about fifteen
minutes sir.

1216:39
RDO-1

and actually they should have filed it for sixteen hundred
but I guess they messed up.

1216:40
CLR

okay.

INTRA-COCKPIT COMMUNICATION

TIME and SOURCE

CONTENT

1216:53
CAM-1 yeah don't don't move it.

1216:54
CAM-1 what are we doin'? safety wirin' it, which one's disconnect?

1217:01
CAM-1 number two is disconnected?

1217:03
CAM-3 it's not disconnected it's ah it's ah safety wire missing.

1217:07
CAM-1 ah okay.

1217:08
CAM-2 I'll move forward if you want.

1217:09
CAM-3 no it's all right.

1217:10
CAM-1 okay, I mean the generator's okay it just the safety wire on the disconnect switch is ah okay.

AIR-GROUND COMMUNICATION

TIME and SOURCE

CONTENT

1217:30
CLR Fine Air one oh one cleared to Santa Domingo via the Miami eight departure swim transition then as filled maintain five thousand departure frequency will be one two five point five squawk one four zero seven where are you parked?

1217:39
RDO-1 okay fourteen oh seven on the squawk and we're up in the northeast corner.

INTRA-COCKPIT COMMUNICATION

TIME and SOURCE

CONTENT

1217:54
CAM-2 alrighy swim one oh eight.

1217:56
CAM-1 correcto.

1217:57
CAM-1 seventeen one one oh eight.

1218:27
CAM-1 as soon as they're done with everything out there we can go.

1218:56
CAM-4 all * out there.

1218:57
CAM-1 thank you.

AIR-GROUND COMMUNICATION

TIME and SOURCE

CONTENT

1217:43
CLR ground point eight.

1217:45
RDO-1 thanks.

1219:01
RDO-2 Houston hello hello Houston Fine Air three ah Fine Air two seven on thirteen in Miami.

1219:22
RDO-2 Houston Houston Fine Air two seven in Miami on thirteen.

1219:41
RDO-2 Miami radio Miami radio Fine Air two seven on thirteen in Miami.

INTRA-COCKPIT COMMUNICATION

TIME and SOURCE

CONTENT

1220:34
CAM ((sound of selcall chime))

1221:28
CAM-2 Franco said all of the freight's down there already.

1221:30
CAM-1 I'm sure it is we're three and a half hours late so be just down and back.

1221:33
CAM-2 this is the second trip though.

1221:34
CAM-1 this is the second trip right but it was still scheduled to go out at nine but they got delayed in San Juan so.

AIR-GROUND COMMUNICATION

TIME and SOURCE

CONTENT

1220:10
RDO-2 Houston Houston radio Fine Air two seven on thirteen in Miami.

1220:15
HOU Fine Air two seven Houston.

1220:17
RDO-2 roger Houston Fine Air two seven request a selcall check on lima mike charlie delta.

1220:23
HOU lima mike charlie delta standby ((sound of selcall tones)).

1220:35
RDO-2 selcall checks for Fine Air two seven Houston thank you.

1220:39
HOU good day sir.

INTRA-COCKPIT COMMUNICATION

TIME and
SOURCE

CONTENT

1221:39
CAM-2 he called me this morning about it.

1221:43
CAM-1 really.

1221:44
CAM-2 yeah I don't know who was on it.

1221:45
CAM-1 well I mean I've been on it since last night yesterday
afternoon.

1221:48
CAM-2 John called me about eight thirty this morning hay you son
of a # get up you're flyin' at twelve o'clock.

1221:56
CAM-1 ((sound of laugh)) we're you on stand-by?

1222:03
CAM-2 I don't think so I was goin' to Orlando the last two weeks I
flew Saturday, Sunday, Monday night last night today
Saturday Saturday I flew to you know that San Padro
Guatemala five five and a half hours there no air-
conditioning they got little kids fifteen years old loadin' the
airplane.

1222:21
CAM-1 what in San Perdo? I hate that # place.

1222:24
CAM-2 so I went out and bought this and got a * attitude.

AIR-GROUND COMMUNICATION

TIME and
SOURCE

CONTENT

INTRA-COCKPIT COMMUNICATION

**TIME and
SOURCE**

CONTENT

1222:29
CAM-2 then I went to Salvador the next day and I told them look if they don't have an air-conditioner down there I not gettin' on the airplane I'm gunna get off.

1222:34
CAM-1 yeah.

1222:35
CAM-3 they've taken care of that stuff.

1222:36
CAM-1 they took care they took care of that okay, tail stand tail stand done.

1222:38
CAM-3 yeah.

1222:39
CAM-1 okay good are we ready basically?

1222:41
CAM-3 ah no they they just pulled up with the spray so.

1222:44
CAM-1 okay fine.

1222:45
CAM-3 it'll be like a couple of minutes.

1222:46
CAM-1 okay and they still got a belly open huh?

1222:47
CAM-3 yeah I'm gunna go down and see what *.

AIR-GROUND COMMUNICATION

**TIME and
SOURCE**

CONTENT

INTRA-COCKPIT COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
1222:52 CAM-1	okay we **.
1222:54 CAM-2	* I'm gunna tell you the rest of my story.
1222:59 CAM-1	yeah so what else happened.
1223:00 CAM-2	so on Sunday in ah Salvador I told them that and man that's the first time I ever seen that they pulled up the air-conditioning cart and plugged it into the side of the Airplane where it goes cold air comin' in here, it was great.
1223:11 CAM-1	that's the way it should be it should be that way everywhere.
1223:13 CAM-2	first time.
1223:14 CAM-1	cheap ##.
1223:16 CAM-2	boy you got that right.
1223:17 CAM-1	yeah (sound of laugh).
1223:19 CAM-2	I'm serious.
1223:19 CAM-1	really.

AIR-GROUND COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
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INTRA-COCKPIT COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
1223:20 CAM-2	voice recorder.
1223:20 CAM-1	checked.
1223:21 CAM-2	emergency exit lights.
1223:22 CAM-1	armed.
1223:22 CAM-2	navigation lights.
1223:23 CAM-1	are on.
1223:26 CAM-2	pitot heat.
1223:26 CAM-1	is checked and off.
1223:27 CAM-2	stall warning.
1223:28 CAM-1	is checked.
1223:28 CAM-2	reverser stowed switch.
1223:29 CAM-1	normal.

AIR-GROUND COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
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INTRA-COCKPIT COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
1223:29 CAM-2	windshield heat.
1223:30 CAM-1	warm up.
1223:31 CAM-2	engine, scoops and PT2 switches.
1223:32 CAM-1	they're off.
1223:32 CAM-2	ignition switches.
1223:33 CAM-1	they're off.
1223:33 CAM-2	air brake handle and pressure.
1223:34 CAM-1	safetied and checked.
1223:35 CAM-2	static selectors.
1223:36 CAM-1	they're normal.
1223:37 CAM-2	normal airspeed mode selectors.
1223:38 CAM-1	not installed.

AIR-GROUND COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
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INTRA-COCKPIT COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
1223:39 CAM-2	over-speed warnings.
1223:40 CAM-1	checked.
1223:40 CAM-2	standby horizon.
1223:41 CAM-1	checked on.
1223:42 CAM-2	ground proximity warning.
1223:42 CAM-1	checked.
1223:43 CAM-2	compasses.
1223:43 CAM-1	three sixty heading excuse me mag sync and cross checked.
1223:47 CAM-2	mag sync and cross checked, flight director system flight instruments.
1223:49 CAM-1	set cross checked.
1223:50 CAM-2	altimeter pressure and radio.
1223:51 CAM-1	oh four is the altimeter.

AIR-GROUND COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
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INTRA-COCKPIT COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
1223:53 CAM-2	oh four is set.
1223:54 CAM-1	and cross checked.
1223:54 CAM-2	gear lever.
1223:55 CAM-1	down and three green.
1223:56 CAM-2	fuel flow indicators.
1223:56 CAM-1	zeroed.
1223:57 CAM-2	radios, radar and transponder.
1223:58 CAM-1	checked stand-by.
1223:58 CAM-2	windshear system.
1223:59 CAM-1	tested.
1223:59 CAM-2	long range nav.
1224:00 CAM-1	checked set.

AIR-GROUND COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
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INTRA-COCKPIT COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
1224:00 CAM-2	PTC.
1224:01 CAM-1	checked override.
1224:02 CAM-2	ground spoilers.
1224:02 CAM-1	checked light out.
1224:03 CAM-2	power levers.
1224:03 CAM-1	forward idle.
1224:04 CAM-2	fuel shutoff levers.
1224:04 CAM-1	off.
1224:05 CAM-2	stabilizer-hydraulic electric.
1224:06 CAM-1	is checked.
1224:06 CAM-2	auto-pilot.
1224:07 CAM-1	checked off.

AIR-GROUND COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
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INTRA-COCKPIT COMMUNICATION

TIME and SOURCE

CONTENT

1224:07
CAM-2 rudder and aileron trim.

1224:08
CAM-1 free and zero.

1224:08
CAM-2 navigation manuals.

1224:09
CAM-1 got em.

1224:10
CAM-2 down to the line.

1224:11
CAM-2 yeah three hours ago huh.

1224:26
CAM-2 yeah I did a Panama San Jose last night not last but the night before got back yesterday morning we were gone nine hours and had seven hours blocked.

1224:35
CAM-1 that good.

1224:35
CAM-2 that was freakin' sweet.

1224:36
CAM-1 that's real nice, where the hell I did somethin' like that on some trip too where it turned out that way we got a it was unbelievable where you get-- I got back from Vera Copas not yester- well when was it not it wasn't yesterday it was the day before yesterday.

AIR-GROUND COMMUNICATION

TIME and SOURCE

CONTENT

INTRA-COCKPIT COMMUNICATION

**TIME and
SOURCE**

CONTENT

1224:58
CAM-2 how long were you down there?

1224:59
CAM-1 it was a short trip actually it only took two days we left Monday we left Monday we went to ah Port of Spain Vera Copas had about fourteen hours on the ground there and went back Quito Guayecle Miami next day two day trip had twenty hours, nineteen hours and fifty nine minutes exactly.

1225:13
CAM ((sound of ground start cart starts)) .

1225:18
CAM-2 sweet.

1225:20
CAM-1 yeah everything we could get out of it in forty eight less than forty eight hours.

1225:24
CAM-2 preflight.

1225:24
CAM-1 complete.

1225:25
CAM-3 complete.

1225:25
CAM-2 fuel dump system.

1225:27
CAM-3 retract handle on board.

1225:28
CAM-2 oxygen interphone.

AIR-GROUND COMMUNICATION

**TIME and
SOURCE**

CONTENT

INTRA-COCKPIT COMMUNICATION

AIR-GROUND COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>	<u>TIME and SOURCE</u>	<u>CONTENT</u>
1225:28 CAM-1	checked on set.		
1225:30 CAM-3	checked on 100%.		
1225:31 CAM-2	flight recorder.		
1225:32 CAM-3	checked and set.		
1225:33 CAM-2	radio rack blowers.		
1225:33 CAM-3	on.		
1225:34 CAM-2	smoke detector.		
1225:34 CAM-3	set.		
1225:35 CAM-2	electrical panel.		
1225:36 CAM-3	checked and set.		
1225:36 CAM-2	flight engineers quadrant.		
1225:37 CAM-3	checked and set.		

INTRA-COCKPIT COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
1225:37 CAM-2	stand by rudder power.
1225:38 CAM-3	checked and off.
1225:39 CAM-2	alternate ground spoiler power.
1225:40 CAM-3	normal.
1225:40 CAM-2	all warning lights.
1225:41 CAM-1	checked.
1225:42 CAM-3	checked.
1225:42 CAM-2	pneumatic switches and cross feeds.
1225:43 CAM-3	off and normal.
1225:44 CAM-2	T/C and freon.
1225:45 CAM-3	off.
1225:45 CAM-2	deice system.

AIR-GROUND COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
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INTRA-COCKPIT COMMUNICATION

**TIME and
SOURCE**

CONTENT

1225:46
CAM-3 checked.

1225:47
CAM-2 fuel oil and hydraulic quantity.

1225:48
CAM-3 fifteen * flight plan load.

1225:49
CAM-2 blow away jet.

1225:50
CAM-3 light on.

1225:50
CAM-2 fire warning system.

1225:51
CAM-3 tested.

1225:51
CAM-2 gear pins.

1225:52
CAM-3 three onboard on in the nose.

1225:53
CAM-2 windshield anti-fog circuit breakers.

1225:54
CAM-3 pulled.

1225:55
CAM-2 anti-skid's off lights checked preparatory checklist's complete.

AIR-GROUND COMMUNICATION

**TIME and
SOURCE**

CONTENT

INTRA-COCKPIT COMMUNICATION

**TIME and
SOURCE**

CONTENT

1225:57
CAM-1 before start please.

1225:59
CAM-3 log book forms cargo manifest on board- parking brake.

1225:59
CAM-1 is set.

1226:01
CAM-3 cargo door is visually checked closed and locked.

1226:05
CAM-3 recirc fans and packs off starter arm switch.

1226:05
CAM-1 armed.

1226:07
CAM-3 rotating beacon.

1226:07
CAM-1 on.

1226:08
CAM-3 starting pressure's checked -- before start checklist's complete ready on three.

1226:18
CAM-1 turning three.

1226:20
CAM-3 okay valve's open.

1226:21
CAM-1 rotation.

AIR-GROUND COMMUNICATION

**TIME and
SOURCE**

CONTENT

INTRA-COCKPIT COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
1226:25 CAM-3	oil pressure.
1226:30 CAM-3	N-1.
1226:31 CAM-1	fifteen fuel on, flow normal, light up.
1226:44 CAM-1	thirty five release how about four.
1226:46 CAM-3	valve closed.
1226:50 CAM-1	ready four.
1226:50 CAM-3	ready four.
1226:51 CAM-1	turn four.
1226:52 CAM-3	okay valve open.
1226:54 CAM-2	nothing turning?
1226:57 CAM-3	oil pressure.
1226:59 CAM-2	three's stable.

AIR-GROUND COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
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INTRA-COCKPIT COMMUNICATION

**TIME and
SOURCE**

CONTENT

1227:03
CAM-3 N-1.

1227:05
CAM-1 fifteen, fuel on flow normal, light up.

1227:19
CAM-1 thirty five released.

1227:20
CAM-3 valve closed.

1227:22
CAM-1 ship's power please.

1227:23
CAM-3 stand-by.

1227:29
CAM-3 internal.

1227:29
CAM ((sound of power interruption to the CVR)).

1227:35
CAM ((sound of ground engine cart noise decreases)).

1227:58
CAM ((sound of altitude alert warning)).

1228:01
CAM-2 yes,.

1228:03
CAM-1 # things.

AIR-GROUND COMMUNICATION

**TIME and
SOURCE**

CONTENT

INTRA-COCKPIT COMMUNICATION

**TIME and
SOURCE**

CONTENT

1229:08
CAM-1 *

1229:38
CAM-2 what time do you want to push back?

1229:40
CAM-1 about twenty ah ah seven.

1230:19
CAM-3 you only get one eighty three on the EPR.

1230:20
CAM-2 yeah *.

1230:21
CAM-1 listen it's a short taxi why don't you go ahead and fly this one.

1230:32
CAM-3 green light on.

1230:33
CAM-1 you might want to de-brief now because you don't have much time.

1230:34
CAM-2 max power let's do bleeds off ** after takeoff -.

1230:37
CAM-1 okay that's cool.

AIR-GROUND COMMUNICATION

**TIME and
SOURCE**

CONTENT

AIR-GROUND COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>	<u>TIME and SOURCE</u>	<u>CONTENT</u>
1230:38 CAM-2	- standard Fine Air procedures a problem prior to Vee-one which is a hundred and thirty knots the pilot in command will abort the airplane we'll treat anything after Vee one as an in-flight emergency no action will be taken below a thousand feet except to silence the master fire bell at a thousand feet we will accelerate the airplane clean it up then work on the problem if Pat assumes control I'll work the problem with you and plan for a right down wind for two seven right two seven left visual .		
1231:03 CAM-1	yeah sounds good.		
1231:05 CAM-2	any questions one oh eight outbound Virginia Key swim transition.		
1231:06 CAM-1	sounds good Sheez what is this guy doin' down here.		
1231:07 CAM-2	they're gettin' worse.		
1231:10 CAM-3	yeah they are.		
1231:11 CAM-1	I'm tellin' you.		
1231:12 CAM-3	haven't improved since yesterday.		
1231:22 CAM-1	okay you got brake pressure.		

INTRA-COCKPIT COMMUNICATION

INTRA-COCKPIT COMMUNICATION

**TIME and
SOURCE**

CONTENT

1231:24
CAM-2 ready on two.

1231:25
CAM-3 ready on two?

1231:25
CAM-2 turnin' two.

1231:27
CAM-3 okay valve open, oil pressure, N-1.

1231:37
CAM-2 two's fifteen percent, fuel's on light up, thirty five's, release.

1231:50
CAM-3 okay valves closed ready one.

1231:51
CAM-2 turning one.

1231:53
CAM-3 valve open, oil pressure, N-1.

1232:00
CAM-2 N-2's fifteen percent and fuel's on, flow normal, light up.

1232:12
CAM-2 thirty five release.

1232:13
CAM-3 okay valve closed.

1232:16
CAM ((two sounds, similar to rain removal testing)).

AIR-GROUND COMMUNICATION

**TIME and
SOURCE**

CONTENT

INTRA-COCKPIT COMMUNICATION

**TIME and
SOURCE**

CONTENT

1232:20
CAM-1 after start when ever you're ready.

1232:22
CAM-3 okay.

1232:27
CAM-3 okay after start - rain removal.

1232:28
CAM-1 checked off.

1232:29
CAM-2 checked off.

1232:30
CAM-3 gust lock.

1232:30
CAM-2 off.

1232:32
CAM-3 electrical panel checked no lights.

1232:33
CAM-3 aileron and rudder power.

1232:34
CAM-1 clear.

1232:35
CAM-2 clear right.

1232:41
CAM-3 lights out hydraulics' checked, door lights checked out engine pneumatic bleeds off ground equipment.

AIR-GROUND COMMUNICATION

**TIME and
SOURCE**

CONTENT

INTRA-COCKPIT COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
1232:50 CAM-1	clear left.
1232:50 CAM-2	clear right.
1232:51 CAM-3	nose gear pin.
1232:52 CAM-1	I saw it.
1232:53 CAM-3	okay cockpit door is closed, starter arm switch.
1232:54 CAM-1	it's off.
1232:56 CAM-3	pitot heat.
1232:57 CAM-1	it's on lights out.
1232:58 CAM-3	after start checklist complete.

AIR-GROUND COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
1232:59 RDO-2	Miami ground Fine Air one oh one heavy Jurassic park ready taxi.
1233:02 GND	Fine Air one oh one heavy Miami ground taxi runway two seven right.
1233:05 RDO-2	taxi two seven right Fine Air one oh one heavy.

INTRA-COCKPIT COMMUNICATION

**TIME and
SOURCE**

CONTENT

1233:08
CAM-1 and ah we can block this baby at thirty one and let's go
flaps one five and taxi and take off checklist.

1233:15
CAM ((sound of clicks)).

1233:17
CAM-2 cleared to taxi two seven *.

1233:19
CAM-1 okay.

1233:26
CAM-3 okay taxi takeoff check.

1233:27
CAM-3 brakes.

1233:28
CAM-1 they're checked.

1233:28
CAM-3 flaps and slots.

1233:29
CAM-2 fifteen fifteen slots lights out.

1233:31
CAM-3 anti-ice, anti-ice, de-ice and PT2.

1233:33
CAM-2 they're off.

AIR-GROUND COMMUNICATION

**TIME and
SOURCE**

CONTENT

INTRA-COCKPIT COMMUNICATION**TIME and
SOURCE****CONTENT**

1233:34
CAM-3 yaw damper.

1233:34
CAM-1 checked and on.

1233:36
CAM-3 okay flight recorder is on T/C's and bleeds are off spoiler pump is normal pressure's checked, fuel system is set and flight controls.

1233:45
CAM-1 ready.

1233:45
CAM-3 ready.

1233:46
CAM-2 ailerons left.

1233:47
CAM-3 double drop rise.

1233:47
CAM-2 neutral.

1233:48
CAM-3 double drop rise.

1233:49
CAM-2 ailerons right.

1233:50
CAM-3 double drop rise.

1233:50
CAM-2 neutral.

AIR-GROUND COMMUNICATION**TIME and
SOURCE****CONTENT**

INTRA-COCKPIT COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
1233:51 CAM-3	double drop rise.
1233:53 CAM-2	EPI down, EPI aft indication.
1233:56 CAM-1	rudder left.
1233:56 CAM-3	drop rise.
1233:57 CAM-1	neutral.
1233:58 CAM-3	drop rise.
1233:58 CAM-1	rudder right.
1233:59 CAM-3	drop rise.
1234:00 CAM-1	neutral.
1234:00 CAM-3	drop rise.
1234:01 CAM-1	checked.
1234:04 CAM	((sound of trim-in-motion tone)).

AIR-GROUND COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
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INTRA-COCKPIT COMMUNICATION

**TIME and
SOURCE**

CONTENT

1234:07
CAM-1 data please.

1234:08
CAM-3 okay takeoff data.

1234:11
CAM-1 completed left center.

1234:12
CAM-2 set right.

1234:15
CAM-1 I need thirty seconds.

1234:15
CAM-3 stabilizer and trim tabs.

1234:19
CAM-2 two point four indicated zero zero.

1234:22
CAM-3 takeoff and departure briefing completed radios and flight director.

AIR-GROUND COMMUNICATION

**TIME and
SOURCE**

CONTENT

1234:02
GND Fine Air one oh one heavy monitor tower one one eight point three we'll see ya.

1234:05
RDO-2 eighteen three see ya later.

1234:14
TWR Fine Air one oh one are you ready to go.

1234:16
RDO-2 about thirty seconds.

INTRA-COCKPIT COMMUNICATION

**TIME and
SOURCE**

CONTENT

1234:24
CAM-2 set for departure and cross checked.

1234:26
CAM-3 seat-belts and shoulder harness.

1234:26
CAM-1 on.

1234:27
CAM-2 on.

1234:27
CAM-3 okay at the line.

1234:30
CAM-1 I got this guy.

1234:36.6
CAM-1 below the line please.

1234:39.7
CAM-3 anti skid.

AIR-GROUND COMMUNICATION

**TIME and
SOURCE**

CONTENT

1234:28
RDO-2 Fine Air one oh one is ready for takeoff two seven right.

1234:31
TWR Fine Air one oh one's traffic's five mile final seven four seven two seven right fly heading two seven zero cleared for takeoff.

1234:35.9
RDO-2 cleared for take off two seven right Fine Air one oh one heavy.

INTRA-COCKPIT COMMUNICATION

**TIME and
SOURCE**

CONTENT

1234:40.0
CAM-1 on light's checked.

1234:42.2
CAM-3 stand-by rudder pump's on continuous ignition.

1234:42.8
CAM-2 all engines.

1234:43.9
CAM-3 transponder DME.

1234:44.4
CAM-2 on on.

1234:45.2
CAM-3 okay landing lights.

1234:46.1
CAM-1 they're on.

1234:47.0
CAM-3 okay checklist complete.

1234:50.0
CAM-1 this guy's pretty pretty close to I think we'll need to take it rollin' he looks like he is closer than four miles to me I don't want him to go around, we're not that heavy anyway *.

1235:01.4
CAM-1 I'll just stand them up here, take it on the roll , okay you're spooled.

1235:02.1
CAM ((sound of increasing engine sounds)).

AIR-GROUND COMMUNICATION

**TIME and
SOURCE**

CONTENT

INTRA-COCKPIT COMMUNICATION

AIR-GROUND COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>	<u>TIME and SOURCE</u>	<u>CONTENT</u>
1235:07.6 CAM-3	okay four spooled and ah stable.		
1235:10.6 CAM-2	max power.		
1235:13.2 CAM-1	just like auto throttles.		
1235:15.2 CAM-2	yeah.		
1235:17.3 CAM-2	airspeed on the right.		
1235:19.5 CAM-1	okay comin' up on sixty knots power's set.		
1235:26.2 CAM-1	eighty, you got the steer on the rudders.		
1235:36.7 CAM-3	okay number four's is (heatin' up a little).		
1235:39.6 CAM	((Sound of thump).		
1235:43.1 CAM-1	vee one.		
1235:47.3 CAM	((sound of thump)).		
1235:49.9 CAM-1	rotate.		

INTRA-COCKPIT COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
1235:51.5 CAM-1	easy easy easy easy.
1235:55.6 CAM-1	vee two.
1235:56.9 CAM-1	positive rate.
1235:58.7 CAM-2	gear up.
1235:00.0 CAM-2	what's goin' on.
1236:01.3 CAM-1	whoa #.
1236:01.7 CAM-1	##.
1236:01.8 CAM	((sound of trim-in-motion tone)).
1236:02.2 CAM	((sound of stick shaker starts)).
1236:02.8 CAM	((sound of trim-in-motion tone)).
1236:04.5 CAM	((sound of trim-in-motion tone)).
1236:05.6 CAM	((sound of trim-in-motion tone)).

AIR-GROUND COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
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INTRA-COCKPIT COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
1236:07.4 CAM-1	oh no # no.
1236:07.5 CAM	((sound of trim-in-motion tone)).
1236:08.8 CAM	((sound of trim-in-motion tone)).
1236:09.3 CAM-1	oh no # No.
1236:12.0 CAM	((stick shaker stops)).
1236:13.3 CAM-1	# # #.
1236:15.1 CAM-1	hold on hold on keep it light easy #.
1236:17.8 CAM	((stall warning starts and continues until end of recording)).
1236:17.6 GPWS	too low gear.
1236:19.2 CAM-1	oh #.
1236:19.4 GPWS	too low - terrain terrain.
1236:20.73 CAM	((sound similar to engine surge)).

AIR-GROUND COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
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INTRA-COCKPIT COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
1236:20.8 CAM-1	oh # #.
1236:20.81 CAM	((sound similar to engine surge)).
1236:20.88 CAM	((sound similar to engine surge)).
1236:21.9 GPWS	woop woop pull up.
1236:21.96 CAM	((sound similar to engine surge)).
1236:22.73 CAM	((sound similar to engine surge)).
1236:22.85 CAM	((sound similar to engine surge)).
1236:22.9 CAM-2	something - what's happening.
1236:24.5 CAM-2	oh no.
1236:25.4	end of recording.

AIR-GROUND COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
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