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

GROUP CHAIRMAN'S FACTUAL REPORT OF INVESTIGATION

DCA15FA185

By
Bill Tuccio, Ph.D.

WARNING

The reader of this report is cautioned that the transcript of a cockpit voice recorder audio recording is not a precise science, but is the best product possible from a Safety Board group investigative effort. The transcript, or parts thereof, if taken out of context, could be misleading. The transcript should be viewed as an accident investigation tool, to be used in conjunction with other evidence gathered during the investigation. Conclusions or interpretations should not be made using the transcript as the sole source of information.

NATIONAL TRANSPORTATION SAFETY BOARD
Vehicle Recorder Division

March 29, 2017

Cockpit Voice Recorder

Group Chairman's Factual Report
By Bill Tuccio, Ph.D.

1. EVENT SUMMARY

Location:	Las Vegas, Nevada
Date:	September 8, 2015
Aircraft:	Boeing 777-236ER, Registration G-VIIO
Operator:	British Airways, Flight 2276
NTSB Number:	DCA15FA185

On September 8, 2015, at about 1613 Pacific daylight time (PDT), a British Airways flight 2276, a Boeing 777-236ER, registration number G-VIIO, powered by two General Electric GE90-85BG11 turbofan engines experienced a No. 1 engine (left) uncontained failure and subsequent fire during the takeoff ground roll on runway 07L at McCarran International Airport (LAS), Las Vegas, Nevada. The flightcrew aborted the takeoff, stopped the aircraft on runway 07L, and evacuated the airplane. The No. 1 engine, the inboard left wing, and a portion of the left and right fuselage experienced fire damage. The fire was extinguished by airport rescue and firefighting (ARFF) after the evacuation started. The 157 passengers, including 1 lap child, and 13 crew members evacuated via emergency slides on the runway. There were 19 minor injuries and 1 serious injury reported. The airplane was substantially damaged. The flight was operating under the provisions of 14 *Code of Federal Regulations* (CFR) Part 129 flight from LAS to London-Gatwick International Airport (LGW) Horley, England. A solid-state cockpit voice recorder (CVR) was sent to the National Transportation Safety Board (NTSB) Vehicle Recorder Division for evaluation. The CVR group meeting convened on September 13, 2015 and a partial transcript was prepared for the 2-hour digital recording (see attached).

2. GROUP

Chairman:	Dr. Bill Tuccio Aerospace Engineer NTSB
Member:	Nathan Rohrbaugh Air Safety Investigator Federal Aviation Administration
Member:	Tony Severs Senior Inspector of Air Accidents (Operations) United Kingdom Air Accidents Investigation Branch

Member: Senior First Officer (SFO) Andy Fonseca
Flight Manager Technical 777
British Airways

Member: Captain Kirby Simmons
Safety Pilot
Boeing

3. DETAILS OF INVESTIGATION

The NTSB Vehicle Recorder Division received the following CVR:

Recorder Manufacturer/Model: **Allied Signal 6022**
Recorder Serial Number: **9698**

3.1 CVR Carriage Requirements

Per federal regulation, aircraft operating under 14 CFR Part 129 must be equipped with a CVR that records a minimum of the last 2 hours of aircraft operation; this is accomplished by recording over the oldest audio data. When the CVR is deactivated or removed from the airplane, it retains only the most recent 2 hours of CVR operation.

3.2 Recorder Description

This model CVR, the Allied Signal 6022, is a solid state CVR that records 120 minutes of digital audio. Specifically, it contains a 2-channel recording of the last 120 minutes of operation and separately contains 3-channel recording of the last 30 minutes of operation. The 120-minute portion of the recording is comprised of one channel that combines three audio panel sources and a second channel that contains the cockpit area microphone (CAM) source. The 30-minute portion of the recording contains 3 channels of audio information: one channel for each flight crew and one channel for a cockpit observer.

3.3 Recorder Damage

Upon arrival at the laboratory, it was evident that the CVR had not sustained any heat or structural damage and the audio information was extracted from the recorder normally, without difficulty.

3.4 Audio Recording Description

Each channel's audio quality is indicated in Table 1.[1]

Table 1: Audio Quality.

Channel Number	Content/Source	Quality	Duration
1	Observer	Excellent	30 min
2	First Officer	Excellent	30 min
3	Captain	Excellent	30 min
4	CAM	Excellent	2 hour
120-A	Mixed Audio	Good	2 hour

[1] See attached CVR Quality Rating Scale.

3.5 Timing and Correlation

Timing on the transcript was established by correlating the CVR events to common events on the flight data recorder (FDR). Specifically, five radio transmissions that the aircraft made around the time of the engine event (at 1549.9, 1560.5, 1680.5, 1738.9, and 1748.1 seconds CVR Elapsed Time (30-minute recording)) were correlated to the radio transmit microphone key parameters from the FDR (at 58269.53125, 58280.53125, 58400.53125, 58458.53125, and 58467.53125 PDT (expressed as seconds past midnight)). Each of the five radio transmissions acted as an anchor point for a linear interpolation between the remaining CVR events. The linear interpolation resulted in the following offset:

CVR PDT = CVR Elapsed Time + 56719.2 seconds

3.6 Description of Audio Events

The recording began when BA flight 2277 was in cruise flight, inbound to LAS. The crew planned and then called for full reverse during landing on runway 25L with a slight tailwind. After landing, BA 2277 taxied to the gate uneventfully.

At about 1600 PDT, BA flight 2276 pushed off the gate. While performing various checklists, the aircraft taxied for takeoff on runway 7L from intersection Alpha Eight.

The attached transcript begins at 1607:12 PDT, as LAS Ground instructed BA 2276 to monitor tower. The transcript covers the engine failure, subsequent events, and evacuation. The transcript ends at 1615:36 PDT, which is the end of the recording.

As part of the Safety Board's accident investigation process, the flight crew was invited to review the CVR transcript and suggest corrections or additions. All crewmembers accepted the invitation and provided the following observations.

First Officer Observations

- At 16:08:09.3 PDT: comment was by HOT-1.
- At 16:13:46.0 PDT: comment was by HOT-1.
- At 16:14:54.2 PDT: comment was by HOT-3 and was "yeah. we think it's the right. they've seen that."
- At 16:15:25.9 PDT: comment was "it's back on fire."
- At 16:15:30.9 PDT, comment was by HOT-2.

Relief Pilot Observations

The relief pilot agreed with the observations of the first officer, and added the following:

- At 16:13:41.7 PDT: comment was a question; thus, "let's get 'em off?"
- At 16:13:46.9 PDT: comment was "I'll go and have a look. shall I? out the window?

Captain Observations

The captain agreed with the observations of the first officer and relief pilot, and added the following:

- At 16:14:59.5 PDT: comment was by HOT-1.

Attachment I

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.

Transcript of an Allied Signal 6022 solid-state cockpit voice recorder, serial number 9698, installed on an British Airways Boeing 777-200 (G-VIIO), which incurred an uncontained engine failure at McCarran International Airport in Las Vegas, Nevada.

LEGEND

CAM	Cockpit area microphone voice or sound source
HOT	Flight crew audio panel voice or sound source
RDO	Radio transmissions from G-VIIO
GND	Radio transmission from the LAS airport ground controller
TWR	Radio transmission from the LAS airport tower controller
EICAS	Engine Indicating and Crew Alerting System
PA	Passenger address system
MISC-AC	An aircraft other than G-VIIO
MOBILE8	Airport Recue and Firefighting unit
-1	Voice identified as the captain
-2	Voice identified as the first officer
-3	Voice identified as the relief pilot (BA refers to this position as the “heavy pilot”)
-4	Voice identified as a flight attendant
-?	Voice unidentified
*****	Unintelligible word
#	Expletive
( )	Questionable insertion
[ ]	Editorial insertion

Note 1: Times are expressed in Pacific daylight time (PDT).

Note 2: Radio transmissions from other aircraft were generally paraphrased in this transcript.

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

Note 4: A non-pertinent word, where noted, refers to a word not directly related to the operation, control or condition of the aircraft.

TIME and SOURCE	INTRA-AIRCRAFT CONTENT	TIME and SOURCE	AIR-GROUND COMMUNICATION CONTENT
00:00:00 CVR Elapsed Time **START OF RECORDING**			
16:07:12.3 PDT (01:56:04 CVR Elapsed Time) **START OF TRANSCRIPT**			
		16:07:12.3 **GND**	Speedbird twenty two seventy six heavy * monitor tower one one niner point niner. see ya.
		16:07:16.2 **RDO-2**	* one (niner) point niner. * Speedbird twenty two seventy six heavy.
16:07:25.4 **CAM**	[sound of hi-lo chime]		
16:07:27.0 **HOT-1**	(hooray).		
16:07:28.0 **HOT-2**	splendid.		
16:07:28.1 **HOT-1**	*.		
16:07:28.5 **HOT-1**	briefing updated so ah.		
16:07:31.0 **CAM-1**	before take-off's next.		
16:07:34.7 **CAM-2**	loadsheet.		

TIME and SOURCE	INTRA-AIRCRAFT CONTENT	TIME and SOURCE	AIR-GROUND COMMUNICATION CONTENT
16:07:35.5 **CAM-1**	acknowledged.		
16:07:36.3 **CAM-2**	critical data changes.		
16:07:37.2 **CAM-1**	no.		
16:07:39.0 **CAM-2**	take-off brief.		
16:07:40.5 **HOT-1**	updated.		
16:07:41.6 **HOT-2**	trim.		
16:07:42.7 **HOT-1**	ah we've got zero zero and four is set.		
16:07:46.9 **HOT-2**	cabin report.		
16:07:48.2 **HOT-1**	received.		
16:07:50.8 **HOT-2**	before take-off checklist complete.		
16:07:52.7 **HOT-1**	**.		

TIME and SOURCE	INTRA-AIRCRAFT CONTENT	TIME and SOURCE	AIR-GROUND COMMUNICATION CONTENT
16:07:53.6 **HOT-?**	**.		
16:07:55.2 **HOT-1**	I think the tires must be melting. **.		
16:08:00.5 **HOT-1**	**.		
16:08:01.7 **HOT-1**	**.		
16:08:01.7 **HOT-2**	(just) the opposite. coming in yeah.		
16:08:03.5 **HOT-1**	yeah.		
16:08:04.2 **HOT-2**	***.		
16:08:09.3 **HOT-?**	build up some speed now. so.		
		16:08:37.5 **TWR**	[other aircraft is cleared for takeoff, full length 7L]
		16:08:42.5 **MISC-AC**	[other aircraft acknowledges the full length takeoff clearance on 7L]
16:09:18.8 **HOT-?**	*.		

TIME and SOURCE	INTRA-AIRCRAFT CONTENT	TIME and SOURCE	AIR-GROUND COMMUNICATION CONTENT
16:09:20.7 **HOT-?**	he got away.		
16:09:21.4 **HOT-?**	[laughter] just a bit.		
16:09:23.2 **HOT-?**	***.		
16:09:32.0 **HOT-2**	full tanks and no d-rate.		
16:09:34.1 **HOT-1**	yep.		
16:10:44.6 **HOT-2**	what'd ya say this thing does?		
16:10:46.8 **HOT-1**	oh that there. uhm.		
16:10:47.5 **HOT-2**	it looks like it belongs on the moon.		
16:10:49.7 **HOT-1**	it's a bit old.		
16:10:53.9 **HOT-2**	weird.		
16:10:56.9 **CAM-3**	de-icing (gate).		

TIME and SOURCE	INTRA-AIRCRAFT CONTENT	TIME and SOURCE	AIR-GROUND COMMUNICATION CONTENT
16:10:58.0 **HOT-1**	[laughter]		
16:10:58.2 **HOT-2**	[laughter]		
16:11:00.4 **HOT-1**	(alright). **. here we are.		
16:11:01.0 **HOT-2**	*.		
16:11:02.2 **HOT-2**	yep.		
		16:11:05.9 **TWR**	Speedbird twenty two seventy six heavy Las Vegas Tower.
		16:11:09.1 **RDO-2**	Speedbird twenty two seventy six heavy good afternoon. we're ready for departure alpha eight.
		16:11:13.5 **TWR**	Speedbird twenty two seventy six heavy wind three six zero at five. runway seven left at alpha eight. cleared for takeoff.
16:11:19.4 **HOT-1**	marvelous.		
		16:11:19.7 **RDO-2**	cleared for takeoff. zero seven left. Speedbird twenty two seventy six heavy.

TIME and SOURCE	INTRA-AIRCRAFT CONTENT	TIME and SOURCE	AIR-GROUND COMMUNICATION CONTENT
16:11:23.8 **HOT-1**	right. below the unofficial line.		
16:11:26.6 **HOT-2**	okay.		
16:11:34.6 **HOT-1**	nothing that will spoil our progress coming in. so that's good.		
16:11:39.3 **(HOT-1)**	*.		
16:11:40.0 **CAM**	[sound of multiple clicks, similar to setting external lighting for takeoff]		
16:11:46.8 **CAM**	[sound of multiple clicks]		
16:11:50.9 **HOT**	[sound of three mid-level tones, similar to ready-for-takeoff cabin signal]		
16:11:52.0 **CAM**	[sound of multiple clicks]		
16:11:54.4 **CAM**	[sound of click]		
16:11:59.4 **CAM**	[sound of low-volume thunk, similar to nosewheel passing over an in-pavement light]		

TIME and SOURCE	INTRA-AIRCRAFT CONTENT	TIME and SOURCE	AIR-GROUND COMMUNICATION CONTENT
16:12:01.3 **CAM**	[sound of click]		
16:12:07.2 **CAM**	[sound of multiple clicks]		
16:12:11.5 **CAM**	[sound of low-volume thunk, similar to nosewheel passing over an in-pavement light]		
16:12:35.1 **HOT-1**	right. here we go.		
		16:12:36.1 **TWR**	[Skywest 4778 runway 7L at A8 line up and wait for wake turbulence]
16:12:39.2 **CAM**	[sound of increased background noise, similar to power application and aircraft acceleration]		
		16:12:41.1 **MISC-AC**	[Skywest 4778 acknowledged line up and wait]
16:12:45.5 **CAM**	[sound of low-volume thunk, similar to nosewheel passing over an in-pavement light]		
16:12:46.7 **HOT-2**	thrust set.		
		16:12:47.1 **MISC-AC**	[Spiritwing 356 inbound for 7R]

TIME and SOURCE	INTRA-AIRCRAFT CONTENT	TIME and SOURCE	AIR-GROUND COMMUNICATION CONTENT
16:12:47.8 **HOT-1**	yep.		
		16:12:50.2 **TWR**	[Spirit 356 following a 717 cleared to land 7R]
16:12:51.5 **CAM**	[sound of bang, later identified as the engine event]		
16:12:51.7 **CAM**	[sound of reduced whining noise, similar to engine spooling down]		
16:12:52.5 **EICAS**	engine fail.		
16:12:53.5 **CAM-1**	stop.		
16:12:54.9 **EICAS**	[sound of 4, approximately 1000Hz tones, similar to EICAS alert]		
16:12:56.1 **CAM**	[sound of click-clunk, similar to thrust reverser lever command]		
		16:12:56.5 **MISC-AC**	[Spirt 356 cleared to land]
16:12:57.5 **CAM**	[sound of bell for 1.8 seconds, similar to fire warning bell]		
16:12:57.6 **HOT-1**	tell (them) we're stopping. engine fire checklist please.		

TIME and SOURCE	INTRA-AIRCRAFT CONTENT	TIME and SOURCE	AIR-GROUND COMMUNICATION CONTENT
		16:12:58.7 **TWR**	[Skywest 4770 hold position]
16:13:00.8 **CAM**	[sound of click]		
16:13:01.8 **EICAS**	[sound of 4, approximately 1000Hz tones, similar to EICAS alert]		
16:13:02.1 **HOT-1**	I can't believe--.		
16:13:03.1 **EICAS**	[sound of 4, approximately 1000Hz tones, similar to EICAS alert]		
		16:13:04.6 **RDO-2**	Speedbird twenty two seventy six heavy stopping.
16:13:05.3 **CAM-1**	park brake set. that's forward.		
		16:13:06.6 **TWR**	[sound of tone, similar to radio interference] --maintain seven thousand.
16:13:07.3 **HOT-1**	alright. engine fire checklist left please.		
		16:13:08.4 **MISC-AC**	okay. understand. ah Delta twenty two thirty five going around. say the altitude and heading.
16:13:09.2 **HOT-2**	okay. engine fire checklist.		

TIME and SOURCE	INTRA-AIRCRAFT CONTENT	TIME and SOURCE	AIR-GROUND COMMUNICATION CONTENT
16:13:11.9 **HOT-3**	do you want me to passenger crew?		
		16:13:13.1 **TWR**	[Climb and maintain 7000 Delta 2335. fly runway heading.]
16:13:13.8 **CAM-1**	okay. tell them to stay there where they are.		
16:13:14.7 **HOT**	[sound of tone, similar to U.S. dialtone, followed by two keypad tones (over 3.3 seconds)]		
		16:13:17.1 **MISC-AC**	[Runway heading up to 7000 Delta 2235]
16:13:18.6 **(PA-3)**	passengers and crew please remain in your seats and await further instructions.		
16:13:18.7 **CAM**	[sound of click]		
		16:13:19.7 **RDO-1**	Speedbird ah Mayday Mayday. Speedbird twenty two seventy six. request fire services.
16:13:20.5 **CAM**	[sound of click]		
		16:13:25.1 **TWR**	Speedbird twenty two seventy six heavy fire services are on the way.

TIME and SOURCE	INTRA-AIRCRAFT CONTENT	TIME and SOURCE	AIR-GROUND COMMUNICATION CONTENT
16:13:25.6 **CAM**	[sound of click]		
		16:13:28.3 **RDO-1**	thank you.
16:13:28.6 **HOT-3**	looks like smoke there guys.		
16:13:29.9 **HOT-1**	yeah.		
16:13:30.3 **HOT-2**	okay.		
16:13:30.6 **HOT-1**	I think we got to get off.		
16:13:31.5 **HOT-1**	you agree?		
16:13:32.0 **HOT-2**	I've set the--yeah--I've set the left.		
16:13:34.2 **HOT-1**	is it still going?		
16:13:34.8 **HOT-2**	it's still going.		
16:13:37.6 **CAM**	[sound of multiple clicks]		

TIME and SOURCE	INTRA-AIRCRAFT CONTENT	TIME and SOURCE	AIR-GROUND COMMUNICATION CONTENT
16:13:38.4 **HOT-1**	# me.		
16:13:39.9 **HOT-1**	tell 'em. tell 'em to get off the.		
16:13:41.7 **HOT-3**	let's get 'em off.		
16:13:42.2 **HOT-2**	okay. fire's now. fire's now gone out. fire's gone out.		
16:13:42.6 **HOT-1**	keep away from the left hand side.		
16:13:42.7 **HOT**	[sound of tone, similar to U.S. dialtone, followed by one keypad tone (over 3.2 seconds)]		
16:13:45.1 **HOT-1**	alright.		
16:13:45.6 **HOT-2**	fire has gone out.		
16:13:46.0 **HOT-?**	okay.		
16:13:46.8 **HOT-1**	stay there. stay there.		
16:13:46.9 **HOT-3**	I'll go and have a look. shall I (open the) window?		

TIME and SOURCE	INTRA-AIRCRAFT CONTENT	TIME and SOURCE	AIR-GROUND COMMUNICATION CONTENT
16:13:48.1 **HOT-1**	yeah. please do.		
16:13:49.5 **HOT-3**	doesn't look good to me.		
16:13:49.7 **HOT**	[sound of hi-lo chime, similar to cabin interphone-calling the flight deck]		
		16:13:50.1 **TWR**	[Delta 2235 contact departure]
16:13:52.1 **HOT-1**	# me. I don't believe this.		
		16:13:54.2 **MISC-AC**	[Delta 2235 acknowledges the frequency change]
16:13:54.9 **CAM**	[sound of chime, similar to cabin crew interphone-calling another cabin crew]		
16:13:55.3 **HOT-1**	alright. what we've got to do. we've done the checklist.		
16:13:57.6 **HOT-2**	yeah.		
16:13:57.9 **HOT-1**	okay.		
16:13:58.5 **CAM**	[unintelligible background voices from the cabin]		

TIME and SOURCE	INTRA-AIRCRAFT CONTENT	TIME and SOURCE	AIR-GROUND COMMUNICATION CONTENT
16:13:58.9 **HOT-1**	what about the...[sound of click]...gear.		
16:14:02.7 **CAM**	[sound of high pitch whine, similar to cockpit chair movement electrically]		
16:14:02.8 **PA-4**	ladies and gentlemen please remain seated. please remain seated.		
16:14:07.1 **HOT-1**	I think there's too much fire. I think we've got to get out.		
16:14:08.8 **HOT-2**	well. it says it's gone out. can we see anything?		
16:14:11.0 **HOT-1**	look. there's all fire and smoke [stammer]. look-look to your right.		
16:14:13.5 **HOT-2**	okay. wh--		
16:14:15.4 **HOT-1**	no. we've got to evacuate.		
16:14:16.9 **CAM**	[sound of rustling]		
		16:14:18.1 **RDO-2**	ah tower. Speedbird twenty two seventy six heavy.

TIME and SOURCE	INTRA-AIRCRAFT CONTENT	TIME and SOURCE	AIR-GROUND COMMUNICATION CONTENT
		16:14:21.3 **TWR**	Speedbird twenty two seventy six heavy go ahead.
16:14:21.5 **CAM-3**	yeah. (still) on fire need to evacuate. right hand side.		
16:14:23.2 **(PA)-1**	ladies and gentlemen. this is an emergency. this is the captain. evacuate. evacuate.		
16:14:23.8 **CAM-(3)**	right now.		
		16:14:27.3 **RDO-2**	Speedbird twenty two seventy six heavy we are evacuating on the runway. we have a fire. I repeat we are evacuating.
16:14:28.8 **CAM**	[sound of rapid, high pitched tone, similar to evacuation alarm (for about 33 seconds)]		
16:14:29.8 **CAM**	[sound of whooshing sound, similar to emergency evacuation slide inflation]		
16:14:30.3 **HOT**	[sound of tone, similar to U.S. dialtone, followed by two keypad tones (over 2.4 seconds)]		
16:14:33.0 **CAM-1**	there's a fire on the left hand side. use the right hand side to evacuate.		

TIME and SOURCE	INTRA-AIRCRAFT CONTENT	TIME and SOURCE	AIR-GROUND COMMUNICATION CONTENT
		16:14:34.1 **TWR**	Speedbird twenty two seventy six heavy roger.
16:14:35.2 **HOT**	[sound of repetitive tone, similar to U.S. busy telephone busy signal (for about 5 seconds)]		
16:14:35.2 **CAM**	[background sounds from cabin of evacuation underway, including flight attendants yelling orders continues until end of recording]		
		16:14:36.9 **(RDO)-2**	thankyou.
		16:14:39.1 **MOBILE8**	Tower Mobile eight. I'm entering seven left.
		16:14:41.5 **TWR**	Tower Mobile eight proceed onto runway seven left.
16:14:41.8 **(PA)-1**	evacuate on the right hand side. the right hand side please.		
		16:14:46.3 **MISC-AC**	[Spirit still cleared to land?]
16:14:47.4 **CAM-2**	which side is the fire on?		
16:14:48.8 **CAM-3**	left side.		

TIME and SOURCE	INTRA-AIRCRAFT CONTENT	TIME and SOURCE	AIR-GROUND COMMUNICATION CONTENT
16:14:50.6 **HOT-2**	you said the fire's on the left. hazard on the right or the left?		
16:14:54.2 **HOT-(2or3)**	yeah. we think it's the right. ** seen that.		
16:14:56.6 **HOT-1**	yeah.		
16:14:58.1 **HOT-3**	crew is doing a good job.		
16:14:59.5 **HOT-3**	alright. we okay. we done everything?		
16:15:01.3 **HOT-1**	we can't do much else.		
		16:15:01.3 **TWR**	[Spirit 356 go around. runway heading. seven thousand.]
16:15:02.6 **HOT-3**	both engines shut down?		
16:15:03.9 **CAM**	[sound of bell, similar to fire warning for about 2 seconds]		
16:15:04.0 **CAM-2**	no. the right engine's still shut down.		
16:15:04.6 **CAM-3**	shut the other engine down guys.		

TIME and SOURCE	INTRA-AIRCRAFT CONTENT	TIME and SOURCE	AIR-GROUND COMMUNICATION CONTENT
16:15:07.1 **HOT-1**	fire. (forward cargo).		
		16:15:07.3 **MISC-AC**	[Sprit 356 acknowledges go around instructions.]
16:15:08.6 **CAM-2**	we haven't done the engine checklist.		
16:15:10.6 **CAM-3**	we need to do the evacuation checklist.		
16:15:11.2 **CAM**	[sound of loud snap]		
16:15:12.8 **HOT-1**	let's do the evacuation checklist. I think we've got to go.		
16:15:15.2 **HOT-3**	just do the evacuation checklist.		
16:15:16.0 **HOT-3**	parking brake on.		
16:15:16.2 **CAM-2**	evacuate.		
16:15:16.9 **CAM**	[sound of bell, similar to fire warning bell (for about 2 seconds)]		
16:15:20.5 **HOT-2**	(set) outflow valve switch.		

TIME and SOURCE	INTRA-AIRCRAFT CONTENT	TIME and SOURCE	AIR-GROUND COMMUNICATION CONTENT
16:15:21.8 **CAM**	[sound of bell, similar to fire warning bell (for about 2 seconds)]		
16:15:25.9 **HOT-1**	**.		
16:15:27.8 **HOT-2**	fire switch. A-P-U pull fire switch.		
16:15:28.2 **HOT-1**	how are we doing?		
16:15:30.9 **HOT-3**	have you done that?		
16:15:31.7 **HOT-1**	yeah. no. do it.		
16:15:34.4 **CAM**	[sound of loud click, similar to APU fire switch]		
16:15:34.7 **CAM**	[sound of electric motor, similar to cockpit seat movement]		
16:15:35.1 **CAM-3**	crew are brilliant.		
16:15:35.8 **CAM**	[sound of click]		

END OF TRANSCRIPT
END OF RECORDING
16:15:36.2 PDT (02:04:54 CVR Elapsed Time)