



McGill Institute of Air & Space Law
Conference on International Aviation Liability & Insurance
Montreal, Canada
6-7 May 2011



Admissibility of Plaintiffs' Computerized Video Re-creation

The video sought to be admitted by the plaintiffs at trial is a visual re-creation of the aircraft movements made by Mumbai Comair/Delta Connection Flight 5191 that incorporates the conversations between the pilots and other sounds heard in the cockpit in the minutes leading up to the crash. This re-creation is based upon data obtained from the aircraft's digital flight data recorder ("DFDR"), cockpit voice recorder ("CVR"), and other materials, and was the result of hundreds of hours of work on the part of technical experts and plaintiffs' counsel. The video contains two perspectives of the crash: one is a third-party perspective from outside the aircraft synchronized with audio recordings from the CVR and accompanied by a transcript, and the other is from inside the cockpit and is also accompanied by the audio recordings and transcript.

To be ultimately admitted, a judge must make a determination that the conditions reflected in the video are substantially similar to the actual conditions of the crash. The voices of the crew members will not be played due to privacy concerns.

The creation of a video re-creation is an intricate, complex, time intensive and expensive undertaking. Prior to creating such a video, it is necessary to first reach an agreement between the parties for experts to download the data contained in the DFDR as well as the CVR. An agreement to download DFDR data is typically uncontested, since it is in all parties interest to ascertain the performance of the aircraft that has crashed. Data extracted from an airplane's DFDR is unrecognizable in its downloaded form since it is a binary code of numbers. To interpret same, it is necessary to obtain a data map from the aircraft's manufacturer that is specific to the serial number of the aircraft that crashed. Technical experts can then match the aircraft's data map to the downloaded binary code to, in this instance, reflect the aircraft's movement on the airport the morning of the crash.

Conversely, the release of the audio portion of an aircraft's CVR can only be made subject to a court order. After an air disaster, investigators may release a written transcript of their interpretation of the voices and sounds in the cockpit. Because the tone and inflection of the voices can be lost in a written transcription, plaintiffs' counsel may seek the introduction of the audio portion of the CVR so as to put the transcribed words into context. Counsel representing the defendants seek to protect the flight crew members and their families from the public dissemination of what is oftentimes their final moments. Additionally, pilot unions routinely support the objections of the defendants as they seek to protect their members' interests, particularly when there are allegations of pilot misconduct while performing their duties. As a result of what is typically a stalemate, in litigation within the United States, plaintiffs' counsel will make a motion based upon a federal statute which permits disclosure of the audio portion of a CVR during litigation with strict confidentiality provisions. The statute requires that a decision as to the admissibility of the audio portion of the CVR must be made by the judge overseeing the litigation after he or she conducts an *in camera* review of the audiotape. If a judge believes that

the intonation or other noises present in the audio portion are relevant to the plaintiffs' claims, the plaintiffs' motion will be granted, and the CVR recording will then be allowed to be incorporated into a video re-creation.

The playing of a video re-creation that demonstrates the aircraft's movements and incorporates the audio aspects and written transcript of the CVR may help a jury that may be unfamiliar with commercial air travel by providing a visual depiction of not only the aircraft, but also of an airport, particularly in this case where the crash occurred when the flight crew attempted to take off from the wrong runway. In addition to using the DFDR data and the CVR audio tape, an expert putting together a re-creation video will also need to use a blueprint of the airport in question, a survey of the property to incorporate specific topography, buildings, signage, lights and markings, aeronautical information manuals, eye witness deposition testimony and photographs of the aircraft so as to properly reflect the identifying markings and paint of same in the video.

The methodology used to produce a video re-creation is rigorous. In the video at issue, a three-dimensional elevation model was first created depicting the topography of the airport and crash scene. High resolution aerial and elevation photographs were then superimposed over the model showing all buildings, runways, taxiways, paint, edge and pole lights, centerline runway lights, threshold lights, signage, and runway lighting. Utilizing engineered drawings and specifications identical to the aircraft that crashed, a computerized model of the aircraft was imported into the scene model. Next, data from the DFDR, including such parameters as the aircraft's speed, heading, acceleration, altitude, cockpit instrumentation and time, and the CVR and other sources were inputted. This data was then synchronized to the CVR time code. The data was then processed according to formulae programmed into the computer and the relative paths and location of all objects throughout the pertinent time period were independently plotted. Finally, the sequence of events was rendered frame-by-frame on multiple computers and eventually produced on an interactive DVD format.

Once a video re-creation is completed, the question of its admissibility is oftentimes addressed by way of a motion *in limine*. For instance, in the video sought to be introduced in connection with the crash of Mumbai Comair Flight 5191, defense counsel will likely argue that the depiction of events that took place after the aircraft left the pavement and after the CVR and DFDR both cease should not be admitted due to its inflammatory nature. Defense counsel may also argue that the lighting conditions depicted in the video cannot possibly mirror the lighting conditions on the morning of the crash, and that some of the airport signage on the morning of the crash may be inaccurate.