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Subject: ERA23FA181 - Security Video Study (Email)
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Email Report Instructions

The narrative and attachments from this email report may be used in other reports at the discretion of the IIC. This email, including attachments (if applicable), should also be placed in the public docket by the IIC.

Email Report

The Vehicle Recorder Division received the following security video recordings: **"Video sequences_1.g64x"**

The security video files were determined to have been generated by a Gentec security camera system.

The file **"Video sequences_1.g64x"** included three video streams, each capturing a lighting element associated with the accident aircraft. Additionally, the NTSB received three .mp4 file type conversions of the same video. Both sets of recordings were reviewed for this study. It was determined that the proprietary Gentec files used a type of modified MPEG-4 Advanced Video Coding (AVC) encoding/decoding algorithm. Additionally, the converted .mp4 files used a more conventional MPEG-4 Advanced Video Coding (AVC) H.264 encoding/decoding algorithm.

This type of encoding scheme is typically used for lossy compression, meaning that the encoding algorithm uses approximations and partial data discarding to represent the content to reduce data size. The end result is composed of various types of frames and/or slices called I frames/slices, P frames/slices, and B frames/slices, where frames are the complete image and slices are a region of the frame separately encoded from other regions of the same frame. I frames (intra-coded picture) represent the complete image, P-frames (predicted picture) contain changes in the image from the previous frame, and B-frames (Bidirectional predicted picture) use changes between the current frame and both preceding and following frames. These combination of frames are used to reduce the overall data size of the final playback file. Usage of this type of encoding/decoding scheme can result in visual compression artifacts.

In portions of the recording, the lighting element associated with the accident aircraft has trailing pixels. These trailing pixels could potentially be associated with visual compression artifacts associated with the lossy compression algorithm. Not enough information was available to determine if the trailing pixels were associated with lossy compression, or some other element of the accident aircraft.

The original recording, **"Video sequences_1.g64x"** is attached to the docket as a shelf item.

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