



MEMORANDUM FOR RECORD

Investigator: Brian C. Rayner
Senior Air Safety Investigator
Eastern Region

Date: April 28, 2016
Reference: Email Excerpt
Witness: Mark Stuntzner (Bell Helicopter)
NTSB Accident Number: ERA16LA160 Baltimore, MD

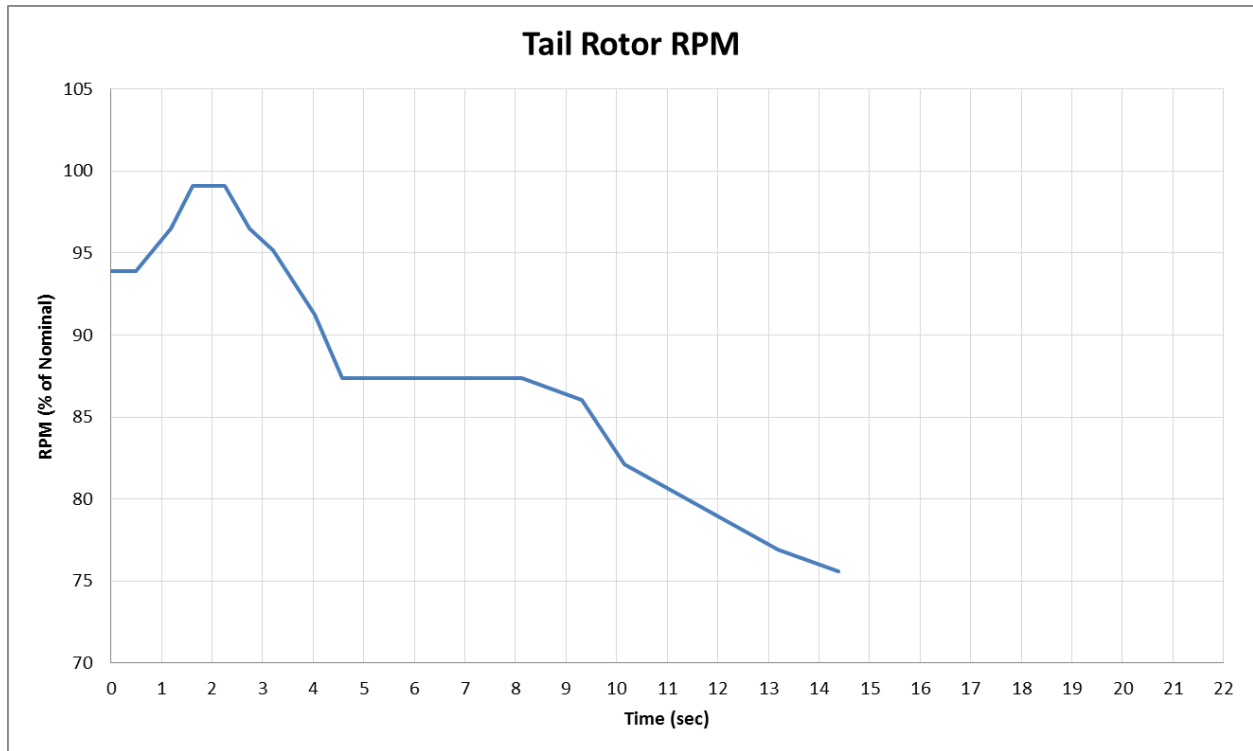
Narrative:

The following was excerpted from the body of an email which explained the Tail Rotor Speed Time history data and graph attached. The analysis was performed by Bell engineers based on the audio captured from a witness video forwarded by police who responded to the accident scene.

"Attached is a plot of T/R rpm for the flight up to about 14 seconds into the video. You will note from the spectrograms that the T/R harmonic frequencies were relatively strong, but the sound signatures for Nr, N1, and N2 were too faint to analyze. As you know the Nr and T/R rpm are mechanically linked in-flight, so the T/R rpm should correspond to the Nr. You also may note that the first rpm data points are about 93% rpm and then go up to 99%. The helicopter was spinning right at the beginning of the video and then the pilot statement states that he lowered collective after initial onset of the right yaw/spin. Lowering of the collective would allow a drooping Nr to recover somewhat. I agree with the pilot that he suffered Loss of Tail Rotor Effectiveness (he mentions ETL instead of LTE, just a slight mistake)."

See attachments graphed below:

Tail Rotor RPM Time History Graph



Data Graph

Tail Rotor Speed

time (sec) Freq (Hz) Percentage of Nominal

0.009737918	40	93.87467731
0.49663383	40	93.87467731
1.188026	41.11111	96.48230697
1.6067565	42.22222	99.08993663
1.8891561	42.22222	99.08993663
2.2494591	42.22222	99.08993663
2.736355	41.11111	96.48230697
3.213513	40.55556	95.17849331
4.0314981	38.88889	91.26704764
4.5768216	37.22222	87.35560197
5.8037993	37.22222	87.35560197
6.9236599	37.22222	87.35560197
8.1311617	37.22222	87.35560197
9.3094498	36.66667	86.05178831
10.156649	35	82.14034264
13.185141	32.77778	76.92508331
14.382905	32.22222	75.62126731