

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



CEN23FA071

AIRWORTHINESS

Group Chair's Factual Report - Addendum

April 16, 2024

A. ACCIDENT

Location: Galliano, Louisiana
Date: December 29, 2022
Time: 0834 central standard time
Helicopter: Bell 407, registration N595RL

B. AIRWORTHINESS GROUP

Group Chair	Chihoon Shin National Transportation Safety Board Washington, District of Columbia
Group Member	Gary Howe Bell Fort Worth, Texas
Group Member	Dave Riser Rolls-Royce Indianapolis, Indiana
Group Member	Curtis Hudson Rotorcraft Leasing Company Broussard, Louisiana
Group Member	Robert Hardwick Federal Aviation Administration Baton Rouge, Louisiana

C. SUMMARY

On December 29, 2022, about 0834 central standard time, a Bell 407 helicopter, N595RL, operated by Rotorcraft Leasing Company (RLC), was destroyed when it crashed during takeoff from an offshore oil platform¹ in the Gulf of Mexico. The pilot and three passengers were fatally injured. The helicopter was operated as a Title 14 *Code of Federal Regulations* Part 135 flight.

¹ The offshore oil platform was operated by Walter Oil and Gas Corporation.

D. ADDITIONAL INFORMATION

1.0 Lateral Servo Actuator Debris Analysis

During the lateral servo actuator examination in May 5, 2023, a hydraulic fluid sample as well as debris collected from filtration during flushing of the actuator and clear debris from the spool were retained for further analysis at the National Transportation Safety Board Materials Lab in Washington, District of Columbia (DC).

The hydraulic fluid was sent to a third-party, independent lab to analyze for the presence of barium. Analysis of the hydraulic fluid revealed the barium level was 2 parts per million (PPM), which was within the specification for MIL-PRF-5606, a military performance specification for hydraulic fluid, which required less than 10 PPM of barium. The only element outside of specification was sodium. **Attachment 1** contains the results of the fluid analysis.

The debris collected from filtration (**Figure 1**) was examined using a Fourier transform infrared (FTIR) spectrometer with a diamond attenuated total reflectance (ATR) accessory. **Appendix A** shows the spectral peaks from this examination. A spectral library search was performed as well as a mixture analysis. The spectra were consistent with a mixture of materials such as surfactants and anti-corrosion products found in hydraulic fluid. The base material likely absorbed or was coated with hydraulic fluid, masking identification of the particulate material.



Figure 1. The debris collected from filtration during flushing of the actuator.

The clear debris from the spool (**Figure 2**) was examined using FTIR. No significant peaks were found in the FTIR spectrum indicating a lack of carbon and hydrogen bonds, consistent with it being an inorganic substance. The debris was examined using scanning electron microscopy (SEM) and semi-quantitative standardless energy dispersive X-ray spectroscopy (EDS). The EDS analysis found the presence of aluminum, sodium, chlorine, and oxygen. The sodium and chlorine present were consistent with sodium chloride. The aluminum and oxygen were indicative of aluminum oxide.

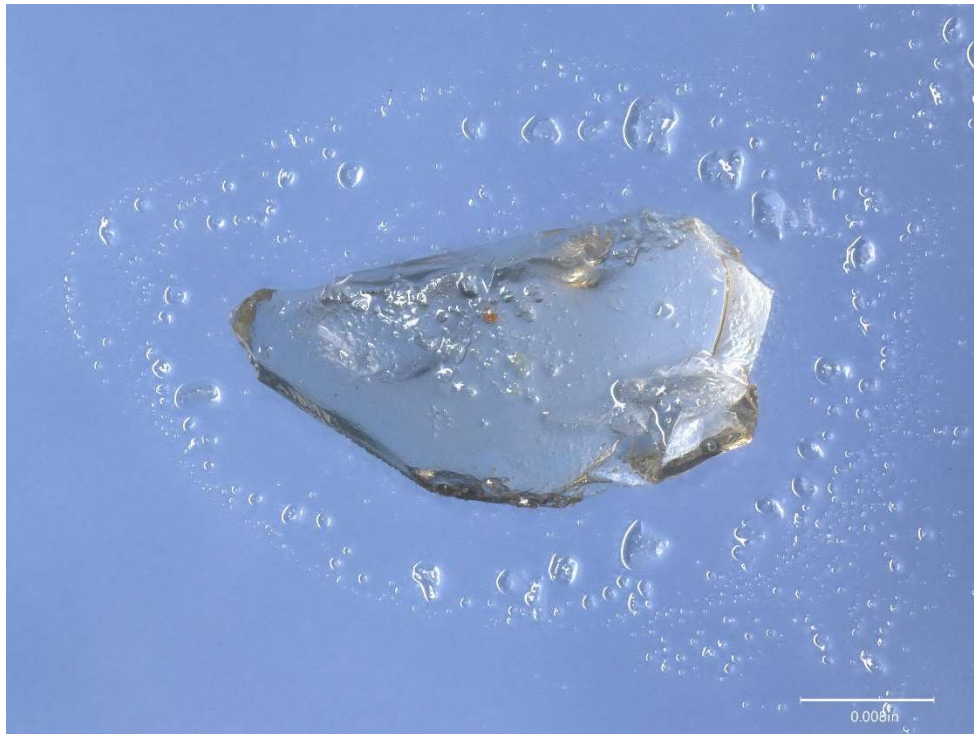


Figure 3. The clear debris from the spool of the actuator.

E. LIST OF ATTACHMENTS

Attachment 1 - Hydraulic fluid analysis results

Submitted by:

Chihoon Shin
Aerospace Engineer - Helicopters

APPENDIX A

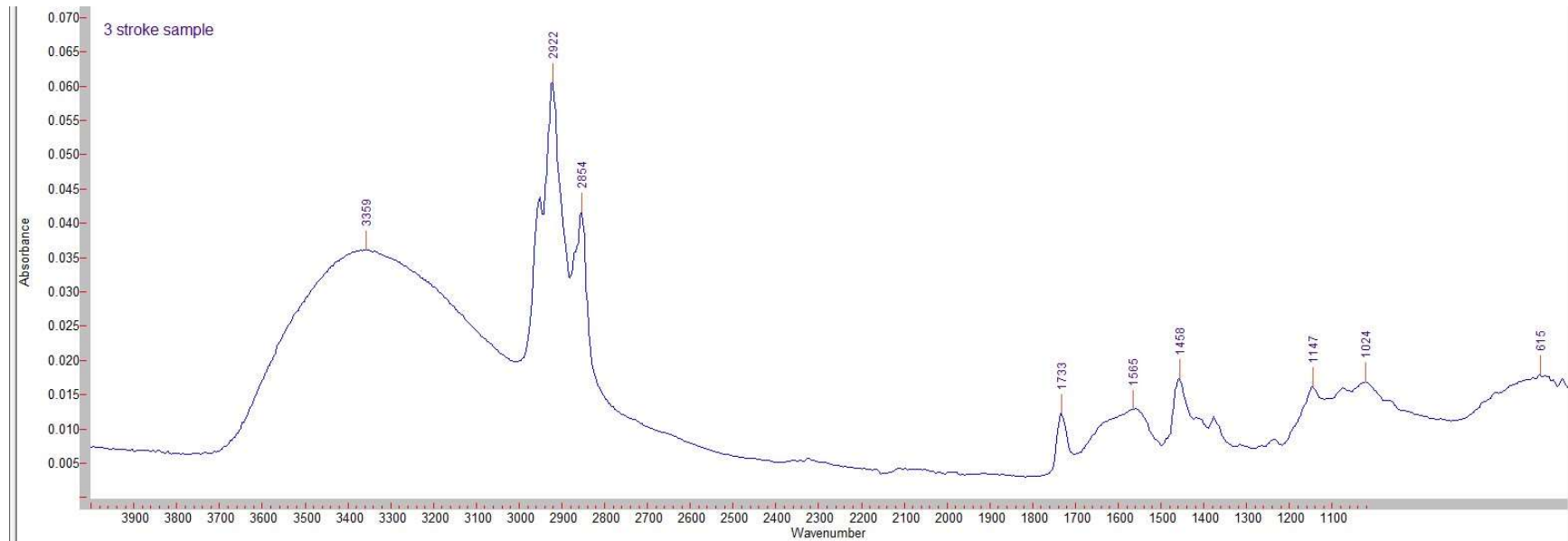


Figure A-1. The spectra of the debris collected during filtration of the hydraulic fluid from the lateral servo actuator.