

**From:** [REDACTED]  
**To:** [REDACTED]  
**Cc:** [REDACTED]  
**Subject:** RE: CEN20LA175 (N31704) - Update  
**Date:** Wednesday, May 27, 2020 11:37:51 AM  
**Attachments:** [image001.png](#)  
[image002.png](#)  
[image003.png](#)  
[image004.png](#)  
[image005.png](#)  
[image006.png](#)  
[image007.png](#)

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Hi Mike,

Here are the answers to the questions that were posed. I am still working on obtaining electronic copies of the requested documents.

1. What was the airplane's airspeed during the approach?

About 110 KIAS

2. What was the airplane's airspeed during the touchdown?

About 90 KIAS

3. Did the airplane experience any side-loading during the touchdown?

No. Landing was normal and about 5 seconds after touchdown the left wing dropped and the aircraft began to yaw left.

**Matt Payne**  
Director of Safety

[REDACTED] DFW Airport, Texas 75261  
o: [REDACTED] | c: [REDACTED]



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**From:** Hodges Michael [REDACTED]  
**Sent:** Wednesday, May 27, 2020 10:11 AM  
**To:** Henry, Dan [REDACTED]  
**Cc:** Payne, Matthew [REDACTED]; Love, Casey [REDACTED];  
[REDACTED]; Bridgman, Harold M (FAA) [REDACTED]  
**Subject:** RE: CEN20LA175 (N31704) - Update

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Hi Dan,

I don't have an issue with that since nothing was wrong with the engines and propellers.

I think the potential areas of interest is the flight control system, the landing gear system, and the steering system – as long as they are not touched or removed, that is fine.

Textron Aviation is coordinating with their Beech 1900 engineering staff about the path forward, so we should have an answer here soon on what we are going to do.

Thanks.

Mike

Mike J. Hodges, MS, AHP  
Air Safety Investigator  
Central Regional Office - Colorado  
Office of Aviation Safety  
National Transportation Safety Board

4760 Oakland Street, Suite 500  
Denver, Colorado 80239-2793  
United States of America  
<http://www.nts.gov>

Cellular/SMS: [REDACTED]

Facsimile: [REDACTED]

[REDACTED]

Response Operations Center (24/7): 1-844-373-9922

Integrity - Transparency - Independence - Excellence

"From tragedy we draw knowledge to improve the safety of us all."

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**From:** Henry, Dan [REDACTED]

**Sent:** Tuesday, May 26, 2020 20:38

**To:** Hodges Michael [REDACTED]

**Subject:** Re: CEN20LA175 (N31704) - Update

[CAUTION] This email originated from outside of the organization. Do not click any links or open attachments unless you recognize the sender and know the content is safe.

We will work on getting this info for you tomorrow. Are we able to remove the LH Power Section of the engine to send out for inspection/repair or do you want us to wait until the investigation is complete?

Sent from my iPhone

On May 26, 2020, at 5:11 PM, Hodges Michael [REDACTED] wrote:

**EXTERNAL EMAIL - Please exercise caution when opening attachments or links.**

Hello everyone,

Just an FYI – the preliminary report (based off preliminary information, subject to change, and may contain errors) for CEN20LA175 was just published today:

<https://app.nts.gov/pdfgenerator/ReportGeneratorFile.ashx?EventID=20200509X12228&AKey=1&RType=Prelim&IType=LA>

Matt and Dan - I have a few additional questions and one request for Ameriflight please:

1. What was the airplane's airspeed during the approach?
2. What was the airplane's airspeed during the touchdown?
3. Did the airplane experience any side-loading during the touchdown?
4. Can you please submit electronic copies to me of:
  - a. The manifest/cargo/dispatch documents for the accident flight.
  - b. The weight and balance documents for the airplane.

Thank you. Have a great week.

Mike

Mike J. Hodges, MS, AHP  
Air Safety Investigator  
Central Regional Office - Colorado  
Office of Aviation Safety  
National Transportation Safety Board

4760 Oakland Street, Suite 500  
Denver, Colorado 80239-2793  
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Cellular/SMS: [REDACTED]  
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|                         |  |                 |  |                    |  |          |  |                         |  |  |  |                               |  |  |  |
|-------------------------|--|-----------------|--|--------------------|--|----------|--|-------------------------|--|--|--|-------------------------------|--|--|--|
| A/C#1: Be-1900          |  | N#: 31274       |  | A/C#2: Be-1900     |  | N#:      |  | <b>AMERIFLIGHT</b>      |  |  |  | <b>UPS 1830</b>               |  |  |  |
| Preflt(Capt sign):      |  |                 |  | Preflt(Capt sign): |  |          |  | Local Date: 05 08 20    |  |  |  | SUMMER DST TIMES              |  |  |  |
| Leg # 1 to #2           |  | AML pg#: 253407 |  | Leg # to #:        |  | AML pg#: |  | mm dd yy                |  |  |  | Local Time Days: TuWThF       |  |  |  |
| Beginning               |  | 4/11/2.9        |  | Beginning:         |  |          |  |                         |  |  |  |                               |  |  |  |
| + This Flight:          |  |                 |  | + This Flight:     |  |          |  | Captain: K. N. P. A. L. |  |  |  | ID#: [Redacted] Leg # 1 to #2 |  |  |  |
| Total A/C Time:         |  |                 |  | Total A/C Time:    |  |          |  | F/O:                    |  |  |  | ID#: [Redacted] Leg # to #:   |  |  |  |
| Next Mx. Due Is: WEEKLY |  |                 |  | Next Mx. Due Is:   |  |          |  | Captain:                |  |  |  | ID#: [Redacted] Leg # to #:   |  |  |  |
| at Time/Date: 16 MAY 20 |  |                 |  | at Time/Date:      |  |          |  | F/O:                    |  |  |  | ID#: [Redacted] Leg # to #:   |  |  |  |

| Show | Leg | Flight | From | To  | Fuel Added | lbs. loaded | Cargo Info total wt. % Cap | lbs un-loaded | Sched Dep. | Block Out | Delay Code | Off  | On   | Block In | Sched Arr. | Delay Code | Flight Time | Block Time | Fuel Burn | Fuel Rem'g | Ldg CP/FO | Night Idg. |
|------|-----|--------|------|-----|------------|-------------|----------------------------|---------------|------------|-----------|------------|------|------|----------|------------|------------|-------------|------------|-----------|------------|-----------|------------|
| 0615 | 1   | 1830   | SAT  | CRP | —          | 2218        | 2218 75                    | 2218          | 0645       | 0745      | CLL        | 0745 | 0805 | 0830     | 0732       |            | 40          | 50         | 800       | 200        | CP        |            |
| 1900 | 2   | 1829   | CRP  | SAT | 94         | 631         | 631 25                     | 631           | 2000       | 2000      | —          | 2005 |      |          | 2047       |            |             |            |           |            | CP        |            |
|      |     |        |      |     |            |             |                            |               |            |           |            |      |      |          |            |            |             |            |           |            |           |            |
|      |     |        |      |     |            |             |                            |               |            |           |            |      |      |          |            |            |             |            |           |            |           |            |
|      |     |        |      |     |            |             |                            |               |            |           |            |      |      |          |            |            |             |            |           |            |           |            |
|      |     |        |      |     |            |             |                            |               |            |           |            |      |      |          |            |            |             |            |           |            |           |            |

gallons   pounds   pounds   volume   pounds

Starting Date: 2/15/2009   Schedule Rev: 2/13/2009   R/S Rev: 11/7/2013

Totals:   hrs. + tenths   pounds   HAZMAT CALL  
AM Number: [Redacted]  
PM Number: [Redacted]

AM Disp. Rel. Name:   PM Disp. Rel. Name:   Other Legs From   to   Disp. Rel. Name:

\*\*If out of radio range phone dispatch with an ETA to destination prior to launch.

**\*\*PLEASE FILL OUT\*\***

LAST UPS DRIVER SHOW TIME: \_\_\_\_\_

FINISHED LOADING AT: \_\_\_\_\_

\*\*Fax completed runsheet to Dispatch [Redacted]

CRP Driver Show Time AM   Number of Drivers

REMARKS: \_\_\_\_\_

|                           |                              |                          |                            |
|---------------------------|------------------------------|--------------------------|----------------------------|
| AC Airport Conditions     | AMM Aircraft Maintenance     | CH Customer Held Flight  | LCF Late Connecting Flight |
| AMC Crew                  | AMO Amf Delay, Other         | CLU Customer Load/Unload | NR Non-Revenue Leg         |
| AMF Fueling               | ATC ATC Instructions/Routing | CO Customer Delay, Other | PL Delay On Previous Leg   |
| AML Amf Loading/Unloading | CDL Customer Driver Late     | FAA FAA Incurred Delay   | WX Weather                 |

# AMERIFLIGHT® BE-1900 UB CARGO LOAD MANIFEST

Ameriflight, LLC

Burbank, CA 91505

| POSITION                 | WEIGHT |                 |                 |                 |           |
|--------------------------|--------|-----------------|-----------------|-----------------|-----------|
| Jumpseat Zone<br>Max 230 | —      | Cntr Load       |                 |                 |           |
| Zone 1<br>Max 1200       | 573    | 1-4<br>Max 4500 | Cntr Load       |                 |           |
| Zone 2<br>Max 1200       | 614    |                 | 2-5<br>Max 2000 | Cntr Load       |           |
| Zone 3<br>Max 1200       | 493    |                 |                 | 3-5<br>Max 1500 | Cntr Load |
| Zone 4<br>Max 1200       | 393    |                 |                 | 4-5<br>Max 800  |           |
| Zone 5<br>Max 1300       | 143    |                 |                 |                 |           |
| Zone 6<br>Max 630        | —      |                 |                 |                 |           |
| Total Cargo              | 2216   | %Bulk           | 25              |                 |           |

|               |       |             |
|---------------|-------|-------------|
| Captain       | 180   |             |
| First Officer | —     |             |
| ACM Jmp Seat  | 40    |             |
| Acft Empty Wt | 8616  | Index -10.2 |
| Acft's ZFW    | 11432 |             |

|            |       |             |
|------------|-------|-------------|
| Ramp Fuel  | 2000  |             |
| Ramp Wt    | 14232 |             |
| Taxi Fuel  | 90    |             |
| Takeoff Wt | 14182 | Index -19.5 |

|               |       |             |
|---------------|-------|-------------|
| Est Fuel Burn | 600   |             |
| Landing Wt    | 13582 | Index -19.5 |

| TRIP INFORMATION |          |
|------------------|----------|
| Flight Number    | 1830     |
| Date             | 8 MAY 20 |
| Aircraft N#      | 31704    |
| Departure        | SAT      |
| Destination      | CRP      |

|                              |         |
|------------------------------|---------|
| Captain's Printed Name       | KINBALE |
| First Officer's Printed Name | —       |
| ACM Jump Seat Printed Name   | —       |

|         |      |
|---------|------|
| Fwd Lmt |      |
| Index   | -256 |
| Aft Lmt |      |
| Index   | +3.1 |

|               |       |
|---------------|-------|
| Max T/O Wt    | 16600 |
| Max Op T/O Wt | 16600 |

I certify that this aircraft is loaded within, and will remain within, approved weight and balance limits for this flight.

X

FLT-25-0911

White - Crew

Yellow - Departure Station

Captain's Signature



**LUBRICATION ENGINEERS, Inc.**

**LEADERS IN LUBRICANTS**

Oct 4<sup>th</sup>, 2021

Mr. Mike J. Hodges, MS, CHP  
National Transportation Safety Board  
4760 Oakland Street, Suite 500  
Denver, Colorado 80239-2793

Dear Mr. Hodges,

Laboratory analysis has been completed on the samples of Royco 756 Red MIL-PRF-5606H hydraulic fluid. The two samples consisted of a new sample of the Royco 756 Red hydraulic fluid, provided by Mr. Pat Kremer of Ameriflight, LLC, and a used sample of Royco 756 Red hydraulic fluid taken from the landing gear of the Beech 1900C – N31704 aircraft. The purpose of our analysis was to identify the condition of the used sample from the aircraft, and to determine if the condition of the used sample contributed to the failure of the landing gear. The new sample of hydraulic fluid was analyzed to use for comparison data to determine the condition of the used sample. Our results are attached for your review.

### **Results**

The used sample of Royco 756 Red hydraulic used fluid taken from the aircraft indicated normal viscosity parameters, matching closely to the viscosity results of the new sample and published viscosity specifications of new Royco 756 Red hydraulic fluid.

The particle count test results indicated that the new hydraulic fluid had an elevated amount of particulate in the 5–15-micron size region. The exact cause of this is unknown without further investigation but could include improper new lubricant storage or particle contamination during transfer of the fluid from the storage container to the sample bottle. The particle content of the used sample taken from the aircraft is slightly elevated when compared with Royco 756 Red new lubricant specifications. Slight elevation of particle content is expected with any in-service hydraulic fluid.

Elemental analysis indicates that the new Royco 756 Red hydraulic fluid contains a phosphorus-based additive, most likely used as an antiwear agent. The amount of phosphorus additive in the new fluid is consistent with other antiwear hydraulic fluids on the market. The used sample of hydraulic fluid taken from the aircraft indicates relatively the same amount of phosphorus-based antiwear additive, low levels of wear metals (aluminum, copper, iron, nickel and zinc), and low levels of silicon. The wear metal

content in the used hydraulic sample appears to be at normal levels for an in-service hydraulic fluid. Silicon levels in used hydraulic lubricants that do not contain a silicone antifoaming agent, are usually an indication of dirt/dust ingress. Most in-service hydraulic lubricants will contain 0-10ppm of silicon contamination, if regular filtration of the hydraulic fluid is not performed. The used hydraulic fluid from the aircraft contains 8ppm of silicon, most likely from dirt ingress while in operation, and is likely the cause for the slightly elevated particle content of the sample.

FTIR Analysis (Fourier Transform Infrared Spectroscopy) analysis does not indicate any organic contamination in the used hydraulic fluid taken from the aircraft. The used hydraulic sample's spectrum matches that of the new sample, indicating that the used sample is indeed Royco 756 Red brand hydraulic fluid. Furthermore, there is no indication of oxidation of the fluid in the 1500-2000  $\text{cm}^{-1}$  region of the spectrum, no evidence of elevated water contamination in the 3400-3500  $\text{cm}^{-1}$  region of the spectrum, and no evidence of lubricant mixing in the fingerprint region of the used oil sample's spectrum (550-1500  $\text{cm}^{-1}$ ).

### **Conclusions and Recommendations**

Due to the limited amount of used hydraulic oil sample from the aircraft, a complete analysis of the sample could not be conducted to compare to all published specifications for Royco 756 Red hydraulic fluid. However, the limited analysis completed on the in-service sample of Royco 756 Red MIL-PRF-5606H hydraulic fluid taken from the failed landing gear of the Beech 1900C – N31704 aircraft, does not indicate that the fluid contributed to the failure of the landing gear.

We appreciate the opportunity to provide this information to you and hope it is helpful in your investigation. If you have any questions regarding these results, please do not hesitate to contact by phone or email.

Sincerely,

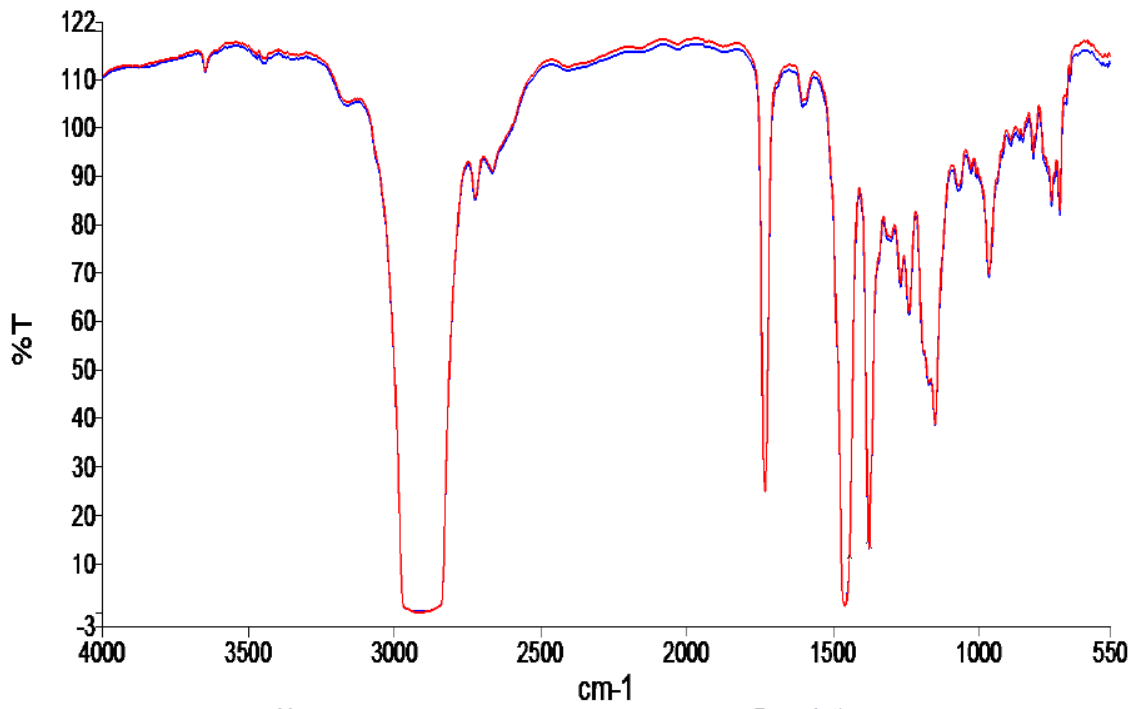
[REDACTED]  
Wade Flemming, CLS, CLGS  
Laboratory Manager  
Lubrication Engineers, Inc.  
[REDACTED]  
[REDACTED]

## LABORATORY ANALYSIS RESULTS

| Sample ID                            | ROYCO 756 Red MIL-PRF-5606H Hydraulic Fluid - New Unused Sample | ROYCO 756 Red MIL-PRF-5606H Hydraulic Fluid - In-Service Fluid from the Landing Gear of N31704 (Beech 1900C) |
|--------------------------------------|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| 100°C Viscosity, ASTM D445, cSt      | 5.160                                                           | 5.252                                                                                                        |
| 40°C Viscosity, ASTM D445, cSt       | 14.11                                                           | 14.39                                                                                                        |
| Viscosity Index, ASTM D2270          | 364                                                             | 364                                                                                                          |
| Particle Count, ASTM D7647, #/100 mL |                                                                 |                                                                                                              |
| 5-15 micron                          | 31197                                                           | 3572                                                                                                         |
| 15-25 micron                         | 2473                                                            | 1301                                                                                                         |
| 25-50 micron                         | 2329                                                            | 2501                                                                                                         |
| 50-100 micron                        | 0                                                               | 1500                                                                                                         |
| >100 micron                          | 0                                                               | 0                                                                                                            |
| Elemental Analysis, ASTM D5185       |                                                                 |                                                                                                              |
| Aluminum, ppm                        | 0                                                               | 5                                                                                                            |
| Antimony, ppm                        | 0                                                               | 0                                                                                                            |
| Cadmium, ppm                         | 0                                                               | 0                                                                                                            |
| Chromium, ppm                        | 0                                                               | 0                                                                                                            |
| Copper, ppm                          | 0                                                               | 1                                                                                                            |
| Iron, ppm                            | 0                                                               | 1                                                                                                            |
| Lead, ppm                            | 0                                                               | 0                                                                                                            |
| Manganese, ppm                       | 0                                                               | 0                                                                                                            |
| Nickel, ppm                          | 0                                                               | 1                                                                                                            |
| Silver, ppm                          | 0                                                               | 0                                                                                                            |
| Tin, ppm                             | 0                                                               | 0                                                                                                            |
| Titanium, ppm                        | 0                                                               | 0                                                                                                            |
| Vanadium, ppm                        | 0                                                               | 0                                                                                                            |
| Barium, ppm                          | 0                                                               | 0                                                                                                            |
| Calcium, ppm                         | 0                                                               | 0                                                                                                            |
| Magnesium, ppm                       | 0                                                               | 0                                                                                                            |
| Molybdenum, ppm                      | 0                                                               | 0                                                                                                            |
| Phosphorus, ppm                      | 385                                                             | 424                                                                                                          |
| Zinc, ppm                            | 0                                                               | 4                                                                                                            |
| Boron, ppm                           | 0                                                               | 0                                                                                                            |
| Potassium, ppm                       | 0                                                               | 0                                                                                                            |
| Silicon, ppm                         | 0                                                               | 8                                                                                                            |
| Sodium, ppm                          | 0                                                               | 0                                                                                                            |

# LABORATORY ANALYSIS RESULTS

FTIR Spectra of New and In-Service Royco 756 Hydraulic Fluid



| Name                              | Description                                          |
|-----------------------------------|------------------------------------------------------|
| Royco 756 New-Unused Fluid        | Sample 018 By LElab Date Thursday, September 23 2021 |
| Ryoco 756 In-Service Fluid N31704 | Sample 015 By LElab Date Thursday, September 23 2021 |