National Transportation Safety Board
Office of Aviation Safety
Washington, DC 20594

DCA22MA193

MAINTENANCE RECORDS

Group Chair's Factual Report

May 31, 2023

A. ACCIDENT

Location: Mutiny Bay Freeland, Washington
Date: September 4, 2022
Time: 15:09 Pacific Daylight Time
Aircraft: de Havilland DHC-3, N725TH

B. MAINTENANCE RECORDS

Group Chairman — Gregory Borsari
NTSB
Washington, DC

Group Member — Rod Ziegler
FAA
Seattle, WA

Group Member — James Lambert
Northwest Seaplanes, Inc[1].
Renton, WA

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[1] Registration lists Northwest Seaplanes, Inc. as the owner and the Operations Specifications list West Isle Air, Inc. as the certificate holder.

C. Details of the Investigation

1.0 Air Operator Certificate

On January 9, 1989, the Federal Aviation Administration (FAA) issued an Air Operator Certificate Number HUFA842E to West Isle Air, Inc.

2.0 Operations Specifications (OpSpecs)[2]

West Isle Air, Inc. has a part 135 Certificate, which includes the standards, terms, conditions, and limitations contained in the FAA approved Operations Specifications (Parts A and D):

(a) Section A004 Air carrier was authorized as a 14 CFR Part 135 operation, nine or less.

(b) Section D085 of the OpSpecs, West Isle Air, Inc. has six aircraft in the fleet: five de Havilland DHC2-MK1 and one de Havilland DHC-3-3T aircraft.

(c) Section D101 of the OpSpecs authorized West Isle Air, Inc. to use the following additional Maintenance Requirements for the DHC-3-3T aircraft:

Engine: The installed General Electric model H80-200 engine, to include turbosuperchargers, appurtenances and accessories necessary for its functioning was to be maintained in accordance with General Electric Turboprop Engines Maintenance Manual No. 0983402. The engine was to be overhauled on or before 3,600 hours or 6,600 cycles time in-service.

Propeller: The installed Avia model V508E propeller was to be maintained in accordance with Avia Operation and Installation manual No. E-1500. The propeller was to be overhauled on or before 2,500 hours or 72 months, whichever came first.

3.0 Type Certificate Data Sheet

The Type Certificate Data Sheet (A-815) prescribes conditions and limitations under which the product for which the Type Certificate (TC) was issued meets the airworthiness requirements of the Federal Aviation Regulations. According to the document, Viking Air Limited is the current holder of the TC.

[2] Operations Specifications contains the authorizations, limitations, and certain procedures under which each kind of operation, if applicable, is to be conducted by the certificate holder.

4.0 Aircraft Information

de Havilland, Inc. manufactured airplane serial number 466 in 1967. Northwest Seaplanes, Inc. purchased the aircraft on October 26, 2018, and was listed on the registration as the owner. Northwest Seaplanes leased the aircraft to West Aisle Air. Northwest Seaplanes provided maintenance to the operator. The aircraft had 24,430.2 total flight hours as of September 1, 2022 (Airplane logbook page dated September 1, 2022).

The aircraft was equipped with a General Electric model H80-200 engine and an Avia Propeller. The engine and propeller had accumulated the following operating times as of September 1, 2022:

Engine Manufacturer	General Electric
Model Number	H80-200
Serial Number	CAE-847553
Engine Total Time	2,162.2
Engine Time Since Overhaul	2,162.2
Date Installed	October 12, 2021
Propeller Manufacturer	Avia Propeller
Model Number	V508E/106/A
Serial Number	92065502
Propeller Total Time	6,853.7
Propeller Time Since Overhaul	563.1
Date Installed	June 18, 2021

5.0 Maintenance

The aircraft, engine, propeller, and components were maintained in accordance with the manufacturer's requirements and 14 CFR 91.409 which included both a 100 hour and annual inspections. Maintenance utilized a 100 hour/annual inspection checklist for each inspection. The checklist included a table to record the date, aircraft number, hobbs time, total time, engine total time, engine time since overhaul, engine cycles, propeller total time and propeller time since overhaul. The checklist had individual sections for the engine, propeller, fuselage exterior, fuel tank access, forward service hatch, wings, tail, fuselage interior, cockpit, floats, and special inspections, such as airworthiness directives, emergency locator transmitter, transponder, and fire extinguisher.

The tail inspection included the following items: inspection of the vertical fin for security, loose rivets, cracks, dents, and corrosion; inspection of the rudder for travel, bearings, loose rivets, cracks, dents, and corrosion. Inspection of the rudder trim tab for security, travel, hinge pin wear, cracks, and corrosion; inspection of the

horizontal stabilizer for security, loose rivets, cracks, dents, and corrosion; inspection of the elevators for travel, security, loose rivets, cracks, dents, and corrosion; inspection of the elevator trim tab (LH only) and elevator servo tab (RH only) and rods, rod ends, and attachment brackets for security, loose rivets, cracks, dents, and corrosion; inspect the ventral fin for security, loose rivets, cracks, dents, and corrosion; inspection of the cargo net for security and operation; inspection of the rudder, elevator, and trim cables for security, broken strands, tension, and corrosion; inspection of the cargo area for condition and cleanliness; and inspection of the emergency locator transmitter for security and battery due date (annual inspection) and by 14CFR91.207d.

Note: At each 100 hour and annual inspections the tailplane trim jack upper end with the zerk fitting gets greased as part of the lubrication servicing per the DHC-3 Otter Maintenance manual.

The most recent 100-hour inspection was completed on September 1, 2022; time in service was 24,430.2 hours. During the inspection the left-hand water rudder retract cable was found frayed and replaced. At the previous 100-hour inspection completed on August 16, 2022, the horizontal stabilizer hinge bolt was written up for excessive play. Maintenance replaced both sides of the horizontal stabilizer hinge bolts.

The most recent annual inspection was completed April 12, 2022; time in service was 24,077.7 hours.

The annual inspection discrepancy sheet was reviewed. The following items were noted.

- Aileron (mid) rod end bearings had play. Replaced rod end and hardware.
- Elevator trim had play. Blocked cables and removed all rods from bulkhead to trim. Removed bellcrank. Reinstalled connecting parts for trim.
- Trim interconnect lever had side to side play. Removed interconnect lever assembly and replaced bearing.
- Rudder lower bearing needed to be replaced. Removed and replaced bearing.
- Fabricate new reinforcing plate. Fabricated new reinforcing plate. Drilled, cut, etched, alodined, primed and installed.
- Rubber seal for horizontal fairings needed replacement. Removed and replaced seals.
- Replaced upper and lower stabilizer trim actuator bearings[3].

[3] According to both the DOM and mechanic interviews along with the labor accounting sheets.

6.0 Logbook Review

Logbook items were reviewed starting from January 1, 2021. The following logbook items were noted. See next page.

Date	Flight Hours	Defect	Corrective Action
7/30/2021	23,910.3	Elevator Trim Stiff.	Removed and replaced elevator trim bearings with new P/N B541DD.
8/25/2021	23,989.9	Fuel Transmitter.	Installed overhauled rear tank fuel transmitter, GE TJ-17, serial number BM17972.
10/5/2021	24,066.0	Trim Stiff.	Removed and disassembled trim actuator. Cleaned, replaced upper and lower bearings. Reassembled, lubricated, and reinstalled trim actuator.
4/12/2022	24,077.7	Edo model 55-7170A sea floats, serial number 1004 (RH) and 2035 (LH) had the following repairs performed.	Multiple chine and deck rail sections spliced or replaced. 3 of 4 separator bar fittings replaced. Replaced frozen pulleys, rusted hardware as needed. Inspected floats inside and out.
6/30/2022	24,135.1	Boost pumps.	Removed electric motor from boost pump No.1 and installed SN 193772 overhauled by Weldon. Removed brushes from No.2 and blew out with compressed air.
8/16/2022	24,357.6	Completed a 100-hour inspection. Horizontal stabilizer hinge bolts worn on both sides.	Replaced horizontal stabilizer hinge bolts on both sides. Right hand engine ignitor replaced with new ignitor.
9/1/2022	24,430.2	Left hand water rudder retract cable.	Replaced left water rudder retract cable from rudder to turnbuckle.

7.0 Airworthiness Directives (AD)[4] and Service Bulletins

Airworthiness directives and service bulletins were reviewed, and no discrepancies were noted. The following airworthiness directives on the stabilizer and stabilizer control system are listed below.

AD 83-04-05 Control column lower assembly – Inspect the control column lower weld assembly for cracks. Last accomplished September 1, 2022. No defects noted.

[4] Airworthiness Directive (AD) is a regulatory notice sent out by the FAA informing the operator of an action that must be taken for the aircraft to maintain its airworthiness status.

AD 2011-18-11 Inspect elevator control tabs for discrepancies following Viking DHC-3 Otter Maintenance manual initially within 50-hours and thereafter at intervals not to exceed 100-hours. September 1, 2022 was the most recent compliance date.

AD 2014-17-01 Horizontal Stabilizer actuator mounting block. Within the next 100 hours' time in service after September 16, 2014, or within 90 days after September 16, 2014, whichever comes first, inspect the horizontal stabilizer actuator (trim jack) for movement or defects in accordance with Viking Service Bulletin No. V3/0005, revision 'A'. If any movement or defects were found before further flight, contact Viking Air Limited to obtain FAA approved repair instructions. Compliance date October 29, 2016.

AD 2021-24-18 For all airplanes within 3 months after the effective date (January 24, 2022) of the AD, determine and record the number of equivalent airtime hours on each wing and tie-bar by doubling the total hours' TIS (time-in service) accumulated on each part. If the total hours TIS of a tie bar is unknown or cannot be determined, use total hour TIS of the wing strut lug fitting on the main spar.

For airplanes with a maximum certificated gross weight that has never exceeded 8,000 pounds: Remove from service each left hand and right hand wing strut fitting and tie-bar by following the instructions in Viking DHC-3 Otter SB V3/0008, Revision NC, dated February 9, 2017, and replacement section of the accomplishment instructions in de Havilland aircraft of Canada, Limited DHC-3 Otter Service Bulletin Number 3/37, Revision B, Dated October 8, 1982, at whichever of the following compliance times that occurs later:

Before the part accumulates 40,000 equivalent airtime hours, or within 12 months after the effective date of the AD.

Compliance to the AD which included the replacement of the wing strut lugs and tie bar was planned for October 2022. The work was being scheduled at a facility with the capabilities to perform the task.

AD 2022-05-11 For airplanes that have not been modified with Supplemental Type Certificate (STC) SA00438NY: Before each wing strut assembly P/N C3W100 accumulates 20,000 hours total time-in-service or within 30 days after the effective date of this AD, whichever occurs later, remove the wing strut assembly P/N C3W100 from service and replace with a new (zero hours TIS) part before accumulating 20,000 hours total TIS.

For airplanes with a wing strut assembly P/N C3W100 with more than 2,500 hours total TIS on the effective date of this AD, regardless of whether the airplane has been modified with STC SA00438NY: Within 30 days after the effective date of this AD, inspect the wing strut assembly and attachment hardware for cracks, corrosion,

and damage, in accordance with Viking DHC-3 Otter Alert Service Bulletin No. V3/0011, Revision NC, dated November 26, 2019.

On May 21, 2020, a high frequency eddy current inspection (SB V3-0011) was performed on the wing attach lugs and attaching hardware/fittings by Mistra Services. One lug failed the inspection and was replaced.

8.0 Weight and Balance Summary

The most recent supplemental weight and balance dated May 22, 2019, was reviewed. The weight and balance numbers were recalculated when a GTX330 was removed and a GTX345 (Garmin ADS-B Transponder) and GA35 (GPS Antenna) were installed.

Weight: 4,757.15 lbs.
Arm: 137.82 inches
Moment: 655,633.25 lb-inches

9.0 Major Repairs

A review of the FAA airworthiness file for N725TH contained no major repairs. Prior to March 2014 the aircraft was registered in Canada.

10.0 Supplemental Type Certificates (STC)[5] and Major Alterations

The major alterations and STCs on file with the FAA were reviewed. There were 18 major alterations incorporated since the date the aircraft was imported from Canada and registered in the United States. The following major alterations were noted.

May 22, 2019 – Removed GTX330 from aircraft. Installed GTX345 in accordance with Garmin installation manual 190-00734-10 Rev 12 dated April 4, 2019, and STC SA01714WI.

January 3, 2017 - Installed Seaton Engineering Corp MaxPulse SE 9200-000-A/B controller (landing light) in accordance with STC SAO1861SE, dated December 1, 2011, and installation and operation instructions document 9150-001 revision G dated June 22, 2009.

July 25, 2016 – Installed Aerotech DHC-3 Otter float hatch S/N 218 in accordance with Transport Canada STC SA 15-27.

[5] The FAA issues Supplement Type Certificates, which authorize a major change or alteration to an aircraft, engine or component that has been built under an approved Type Certificate.

June 16, 2016 – Inspected and installed modified EDO 7170 Floats in accordance with de Havilland DHC-3 maintenance manual PSM 1-2-3 and de Havilland DHC-3 parts manual PSM 1-3-4. The floats were modified in accordance with STC SQ00399NY. Installation of waterline floatation elements to increase buoyancy requirements to 80% of gross weight limit to 8367 pounds.

June 6, 2014 – Installation of modified Atlee Dodge Cessna 180/185 seats to replace the 8th and 9th seats.

August 7, 2014 – Installation of stand-alone Class B Terrain Awareness and Warning System (TAWS) consisting of Honeywell KGP-560 Enhanced Ground Proximity Warning System (TAWS TSO-C151b Class B). Honeywell KA92 GPS antenna and West Coast Specialties P/N 90-44802-1 FAA/PMA Terrain Awareness Annunciator, with interface to existing Trans-Cal industries SSD120-XXA blind encoder.

May 14, 2014 – Removed Walter M601E-11 engine installed per STC SA09857SC. Installed a GE Aviation Czech Republic H80-200 (formally Walter) in lieu of M601E-11engine. Although a deviation from the STC, a justification letter was provided by GE Aviation Czech dated April 5, 2013.

11.0 Method of Record Keeping

Per CFR Parts 43, 91 and 135, records were maintained for the aircraft, engine, propeller, and components with the use of logbooks.

12.0 Manuals

Maintenance personnel utilize the airframe, engine and propeller manufacturers' maintenance manuals, illustrated parts catalogs and wiring diagrams to maintain and ensure the airworthiness of its aircraft.

13.0 Maintenance Operations

Northwest Seaplanes is located at 860 W. Perimeter Road, Renton, Washington.

The facility had all the manuals, components, tooling and equipment to maintain the aircraft.

Northwest Seaplanes employs three Airframe and Powerplant (A&P) Certificated Mechanics with two having an Inspection Authorization (IA) Certificate, one of which is the Director of Maintenance.

According to the Director of Maintenance, all routine and non-routine inspections were accomplished at the facility.

14.0 Interview Summaries

The Interview summaries that follow are not a verbatim transcript.

14.1 FAA Principal Maintenance Inspector

October 25, 2022, at about 13:30 EDT
Mr. William Shinn
Location: Telephone
Participants: NTSB, Gregory Borsari; NTSB, Shawn Etcher; NTSB, James VanDerKamp; FAA, Matthew Rigsby
Representation: Mark Tomicich

On October 25, 2022, beginning at about 13:30 EDT, Mr. William Shinn, FAA Principal Maintenance Inspector agreed to speak with the NTSB and to have interview notes taken, which follow. The interview notes are not a verbatim transcript. In attendance was Mr. Mark Tomicich, Mr. Shinn's representative.

After introductions were completed and a brief explanation about the NTSB investigative role, Mr. Shinn was asked what license or certificates he held. He has an A&P license, which he's had since 1980. He also has a private pilot license with instrument rating. He had a maintenance inspection authorization (IA) obtained around 1989 and held that until he joined the FAA in 1995.

Ask what his position with the FAA is. He stated he was an aviation safety inspector with the Seattle Flight Standards District Office (FSDO). He is currently assigned as a principal maintenance inspector (PMI). How long in the position? December of 1997 when he started with the office. He transferred from the Van Nuys FSDO as a PMI to the Seattle FSDO. He was in the Van Nuys FSDO for two years. He has been with the FAA for just over 28 years.

Asked to describe his professional background. He obtained his A&P from a community college in California and graduated in 1980. He was in general aviation in the local area in southern California for approximately two years. He then had an opportunity to get into corporate aviation as an aviation mechanic and started off as a flight attendant / mechanic. He did that for a number of years with a company flying on and maintaining a Gulfstream II and he also maintained a French AS-342 Gazelle helicopter. After that job he progressed into a Director of Maintenance / Chief Inspector position with another business jet owner/operator also in southern California. The company soon decided to open a 135-air taxi operation, 145 repair

station and Fixed Base Operator (FBO). He was instrumental in helping with the certification and implementation of these. At the pinnacle of this operation, the company operated ten airplanes, four Gulfstream II's and III's (operated and maintained under 10 or more passenger seat rules), four Hawkers (nine or less passenger seat type aircraft), a Mitsubishi Diamond, and a Beech jet. The company also had a Beechcraft Bonanza F33 which company personnel could fly for personal use or for crew transfer, etc., which was a nice benefit. After that he went to the FAA. Which was basically moving across the runway at Van Nuys to their office. He has been with the FAA since September of 1995.

Asked what his duties and responsibilities are in his current position? Duties are ensuring safety with numerous companies and individuals. We are assigned surveillance oversight of 14CFR 145 repair stations, 135 operators, and 141 flight schools. We also have IA's that we visit and do surveillance on. They tend to be more work. We have a group of 14 CFR part 91 operators which are usually corporate jets or operators of experimental aircraft that we answer questions for maintenance/operations and maintain office files on.

Currently he has 12, 135 operators, all nine or less passenger seat type. Most are small operators with West Isle being one of the bigger ones. He has a total of 17 145 repair stations and 141 flight schools. He is assigned to three 141's and the rest are 145 repair stations.

The IA's which sometimes most of the work these days of which he is assigned to 90 of them. He is assigned to them to assist with their biannual renewals, field approvals, etc. Of the part 91 operators, he currently has 34 that are assigned to him. At times, they can be a lot of work. It is a combination of a lot of things that keeps him busy.

Asked if he considered his workload was on the high side, he acknowledged that it depended on the particular week or month that it could be high or coasting and that it really depends.

How long has he had Northwest Seaplanes certificate responsibility? He stated about four to five years. As far as assignments, certificates come and go. About five years.

When he took over the certificate were there any areas of concerns that were passed on to him? He stated, no concerns, just a hand off.

Asked who the primary contact was at Northwest Seaplanes. He stated when it was handed over it was mainly Shane Carlson and the Director of Maintenance at that time. The previous Director of Maintenance retired, and it has been Jim Lambert, pretty much the whole time he had been assigned to West Isle.

How often does he meet with the outfit? He goes there with his assigned data collection tool (DCT) and other safety assurance system (SAS) information. Usually once a year, sometimes more depending on their needs. He said, if they called us up and needed something. He can't speak for the operational guys, they are crazy busy these days, but my avionics counterpart, when they call us up with a question, they tend to go over there to talk about it. Which gives them an opportunity to see what's going on. Schedule wise they at least have one scheduled visit per year.

Do you recall the last time he was over there at their facility? He checked the records and the last time they were there was June 29th of 2022. Any real issues with them? Or their airplanes? No, nothing significant. Is facility, okay? Yes.

Is he familiar with how they track maintenance requirements? The aircraft were maintained under a 100 hour and annual inspections under part 91 which correlates to 135. They record the AD's on a list which makes it easy to check. They have logbooks and a binder system so when they go there to look at records. This last time they went there they looked at the records the binders are on a shelf, and they pick whatever is there and that is what they did this last time. There were a few airplanes in the hangar, and they were customer airplanes.

Asked how they tracked maintenance? He recalled seeing in the maintenance office a whiteboard, they have notes on there. Right next to the whiteboard were the shelves with the maintenance records. As far as a computer tracking system, he was not sure.

Asked if he was familiar with the Otter, or if he had any experience with it. He stated he had no experience working on those airplanes, nor the Beaver. He failed to mention that his background was not with seaplanes but being assigned to Kenmore as their PMI for 12 years they taught me a lot about seaplanes; including Beavers and Otters. He had the benefit of doing enroutes with Kenmore, so he was familiar with how they operate the airplane. That gave him a good background. He is familiar with the configuration and the engines. But as far as the details of digging into the airplane, no he had not worked on them.

Do you know how many mechanics they have? He was not going to guess. He would have to look that up.

Considering strengths and weaknesses could he tell what one of their strengths are? He stated they seem to be very professional with what they do. They know the airplane very well. They ask a lot of questions. Mainly about things they (FAA) are supposed to know. They seem very professional and have a good safety record. They have no enforcements, nothing in the past. We put a lot of creedence in that. Not so with some of the other operators. He didn't recall any weaknesses with

West Isle or Northwest Seaplanes with maintenance. They do like to keep it simple. Most seaplane operators do. He thought the whole "Alaska seaplane operational world thing" bleeds down to this area where we get a lot of comments where they are allowed to do this in Alaska, why not here. No, sorry not doing that here. He felt they are a good operator regardless of that.

Asked to clarify the company name. He stated it is Friday Harbor Seaplanes. Northwest Seaplanes is now one of the leasing companies. He added that the maintenance shop was also under Northwest Seaplanes. The mechanics were employed by Northwest Seaplanes. Northwest Seaplanes used to have a 135 certificate, but they surrendered it when a recent consolidation was carried out by Shane Carlson. West Isle remained a 135 commuter and all the aircraft which were distributed between the two 135 certificates were consolidated under West Isle. The two doing business as (dba) under West Isle are Friday Harbor Seaplanes and Chelan Seaplanes. They made it more efficient for everybody.

Asked in addition to his inspections what other duties did he have? He works with the NTSB and have a great relationship with the office here. He stated we also do accident investigations. That takes a priority. If somebody has an accident, we drop everything and work on that. I've done that numerous times. Also, we do enforcements, which he has one right now.

We also do a lot of work with the IA's. Also, field approvals. Sort of like a mini STC. With his background and experience he ends up doing a lot of the field approvals with the IA's and repair stations. They can take months. Some of the IA's do not understand the amount of work involved and sometimes he has to say no. We consider this to be on demand work.

He stated they were fortunate being able to work with the Aircraft Certification Office here in that engineering coordination was easier with regard to field approvals and such.

And they get a lot of calls with people asking questions such as authorizations for their A&P to do the testing. They do repairman certificates for people who build experimental airplanes. A lot of administrative work.

How many PMI's are in this office. He wanted to say six to eight.

Does West Isle have an MEL program? He stated they do not. How do they deal with discrepancies when they have to write something up? He said they have to follow their accepted general operations manual. They have procedures for recording discrepancies. Has he ever been called on a request for a ferry flight due to a discrepancy? He stated not for West Isle. When he dealt with Kenmore as their PMI that was a thorny subject. They would fly in remote areas around here and things

would happen such as running a float into a dock or something happens. The pilot would write it up and it grounds the airplane. They would have to find somebody that was authorized and qualified to fix it. In some cases, they would call us to obtain a ferry permit. The FAA has changed the guidance and now allows nine or less passenger seat operators to have a continuous authorization to issue ferry permits where they can write their own. It takes the load off us, but Kenmore was the first operator in this area to get that authorization which he helped them with. They have those procedures.

He recalled having a conversation with Shane about the continuing authorization and obtaining a single engine MEL approval and it became obvious that he did not want any additional procedural stuff, which he understood. But it was kind of frustrating because if he had a program like that it would probably save him time and effort. We tried to encourage them to go with either a new policy or procedure that we have that could save them time. It was not always successful.

Do you know what their GMM had if Viking came out with a service letter would they have to comply with it? He stated no.

How many planes does West Isle have? He stated they have the one Otter; all the rest are Beavers while he didn't know the exact number, he wanted to say about ten. Maybe eight to ten.

When was the last time he was there? He stated, June 29, 2022, was his last time visiting them as far as their maintenance operation. Did he observe any maintenance operation going on there? If I recall, they were working on a customer's airplane. They had a Beaver in there. They did not have any company airplanes in there, they came at their busy time. They were all flying.

What did he mean by customer? The mechanics, A&P's and IA's at Northwest Seaplanes were allowed to do work for outside customers. If a customer had a part 91 owner/operator that owns a Beaver or other aircraft, Northwest can do it. Kenmore did the same thing. It kept the shops active when the flying season was in full swing. They take in outside maintenance.

The mechanics work for Northwest Seaplanes? Correct.

Do they have a repair facility. He stated they do not have a repair station authorization. All the work was done under the mechanics certificate, A&P's and IA's, he believed. How many mechanics work there? He didn't want to guess, but he estimated three to four mechanics.

The NTSB understands the float planes are seasonal, operating from May to October and then they do the maintenance? He said that was correct. He believed

they tried to conduct the "heavy" maintenance and inspections during the winter months. Unscheduled inspections, correction of squawks, etc. happened year-round of course.

Did he observe how they do maintenance? He said, this year they went out at the end of June. They normally try to go out before the birds leave. They try to go out early spring as the weather here is still like this. They will go out before they get really busy with flying. Obviously, they want to see the airplanes that are there. If they are there and broken, they can then observe the maintenance. But usually, they are not because they get them all up to snuff during the wintertime and then off they go. They try to plan their surveillance where the airplanes are close to being ready to go. This particular time they were not able to because of scheduling. Workload wise they were busy this year. With COVID and all that going away, the workload went up a lot. He said he should have made that clarification earlier. Things were pretty dead during COVID and all of sudden everybody started flying.

What type of quality assurance did they have? He said with that type of operation with a 100 hour and annual inspection option for part 91. They do 100-hour inspections as they are for hire and annual inspections. Not sure if all of the mechanics are IA's. He stated the director of maintenance was an IA. If an annual was done, the IA on staff would sign off the annual inspection. 100 hours could be signed off by an A&P mechanic. When we're looking at the records we will see a 100 hour being signed off by one of the A&P mechanics and the annual being signed off by Jim or one of the other IA's. Quality assurance wise, it was not what you would see at a 121. To put it plainly, the quality assurance was under the A&P or IA. He stated it's not that the mechanic does this and he goes and gets an inspector come and look it over. It is not like that. If they choose to have that policy, which we encourage they can. He did not know of them doing it that way. They probably do for certain things.

With this actuator could they have an RII inspection for this? He said they encourage it and he thought in hindsight with all that had happened they probably would start doing that. They can only encourage, because the operational rules that they are under they are not required to have a second set of eyes look at it. Such as a flight control, hydraulic system, a brake, tires, engines, fuel systems, we always have a double set of eyes look at those items after a mechanic works on them. Under the rules for this operation that was not a requirement.

Did he know what AD's are applicable to the Otter. He knew there are a few and there were some new ones. A few with the struts, he was familiar with the wings where the struts attach underneath. He had the opportunity to be able to go up to Alaska where they discussed the Otters and the Beavers in a maintenance/operation symposium format and that was where it gives them a better awareness of those airplanes and what was going on with them. When they go out on an inspection, they review what is current at that time.

Did he look at the 10 or more? He said, we look at both, depending on the situation. If we go out at a certain time of the year most of the airplanes will be there and being worked on. We observe whatever maintenance we can. The actual work. Look at the paperwork, make sure they have the manuals out to follow what was supposed to be done. This last time we were strictly looking at the maintenance records. As he explained earlier, they have a shelf with all the books, and everything was there in the binders. This last time we did not find any irregularities with the records.

There were customer airplanes in the hangar, and we did a cursory look at that. But we are not there for that purpose. He recalled, having a discussion with Jim regarding some upcoming AD's on the Beavers. Older airplanes were always coming up with new AD's.

Asked about looking at customer airplanes he stated that was not the focus of the visit. We were there to look at the 135. We can look at them, but not the reason we were there. If they asked us what we thought about something that they are finding wrong and ask about it or have a question about something we would answer those questions.

If they see something or an irregularity or a violation of the rules, they were bound to do something about it. Regardless of who owns the airplane or the operation.

What did they look at during the 100-hour inspection? He stated, the requirements for a 100 hour and the annual, were almost identical in FAR part 43, appendix D. There was a list of things you look at in the rule and that was what you look at. Also look at any additional inspection items that the manufacturer had, in this case Viking. If they have any additional inspections that were mandated, they would have accomplished those too.

Regarding the actuator did you look at what they were doing? He said no, unless the thing was disassembled, they have no reason to look at them. Maintenance of those components were covered under the 100 hour or annual inspections.

Did you know anything about the lock ring? He stated, he was familiar with it after seeing the pictures and discussions with the other person in the office looking this stuff.

Did you know if the locking ring can be reused? He said, he did not.

Did he know that when installing after tightening they drill a hole for the lock ring? He said it was interesting you bring that up as he was looking at some pictures

this morning of something released yesterday and he saw three holes in the threads and so he thought, and it is one of those things he heard about in A&P school that there were certain procedures and industry practices through the years where you actually do that. After tightening it down and seeing where the ring was going to fit you drill the hole here. He was thinking they could reuse the part and they continue to drill a hole where needed.

Any idea how any times they can reuse that part? He stated he didn't know. He was seeing that the lock ring is either a standard MS or AN part. Something that is considered standard hardware, like a bolt or nut. Which he was not aware of. Again, his knowledge of that component is minimal.

The company didn't have an AAIP or a CAMP, but if they wanted to have RII items they would have to write them in their general procedure's manual, correct? He stated, if they chose to, I would encourage that. If they chose to operate under 135.411 ten or more versus the nine or less, they would have to incorporate a RII. In hindsight he would say an operation like this would benefit from having a AAIP. But the rules are not written that way, so it was really up to them. If they decide the current 100 hour and annual was not adequate enough and we are finding all this stuff wrong that's not being looked at and they wanted to do a AAIP we would be supportive. Get it to him and we will work to approve it. He would do that in a heartbeat. He had approved many AAIP, including for war birds.

There is a Beaver, Otter industry forum and did he know if West Isle was a part of that? He replied yes, there is a symposium that usually has that, but he didn't know if they were there. He did not remember seeing them at the meetings he had been to. He knew Kenmore was usually there as they had a greater shadow on the whole thing. He did not know about West Isle.

In closing, could he think of anything that we did not ask and should have? He stated, if the rules had required additional inspections or requirements, he believed it would have been beneficial. Again, the rules were not written that way.
Interview concluded at about 2:12 PM EDT.

14.2 Director of Maintenance

November 15, 2022, at about 09:40 PDT
Mr. James Lambert III
Location: West Isle Air, Inc.
Participants: NTSB, Gregory Borsari; FAA, Rod Ziegler: Northwest Seaplanes, Shane Carlson
Representation: Aaron Bigby

On November 15, 2022, beginning at about 09:40 PDT, Mr. Lambert agreed to speak to the NTSB and to have notes taken, which follow. These notes are not a verbatim transcript. In attendance was Mr. Aaron Bigby.

After introductions were completed and a brief explanation about the NTSB investigative role, Mr. Lambert was asked what aviation certificates he has. He stated he has an A&P with IA authorization. He also has a commercial airplane rating, single engine sea and land with instrument. Asked if with the IA he attended the seminars or submitted his work, He stated yes, every odd year he submitted his work.

Asked if his title is the director of maintenance, he said yes. How long in position? Roughly October of 2017. When asked how long with the company he said he started flying as a line pilot in June of 2017.

Prior to joining the company, investigators asked about his mechanics experience. He said he got his A&P around 2006 and prior he had worked at various company's part time and done his own restorations. He worked at Ace Aviation as a full-time mechanic and then 2017 he took the IA test and passed. And then hired on with Northwest Seaplanes.

He told investigators, his duties and responsibilities the first few years when he hired on. He stated he was the only IA for the shop. In addition to doing all the annual inspections for the company's airplanes he performed the annual inspections for customer aircraft that the company maintained. In addition, he said the director of maintenance directs what the maintenance schedules are and how the company's planes fit in along with how the other planes fit in. Having a continuous work line up. He added the duties also include making sure all the airworthiness directives are complied with. Any projected AD's are addressed, always maintaining and overseeing the fleet as far as safety goes. It's the lead mechanic, the top mechanic, the inspector watching over everybody else's work.

Any changes to the personnel or staffing? In 2017 he brought on another mechanic who was mostly the powerplant mechanic. In 2018 or 19 he recruited Denmark. Both are with the company now. In 2020 he brought on shop help. The parts person and office manager has been with the company for thirty plus years. He added that is the current team now.

Asked if this was the facility where the maintenance work was done on the aircraft, he replied no. He told investigators the maintenance hangar is closer to the tower and not this building. This building is the terminal where the passengers come to and where they park the airplanes. The hangar is further down the road about mid field.

When asked if he does some of the hands-on work, he said yes. Asked what percentage of work he performed on the accident airplane? Annual inspections about 70%. The 100-hour inspections about 25% as he is also flying during the summer.

Do you use any contract maintenance or vendors? As far as maintenance he said no. The company does utilize a crane operator if we need to lift a plane, but no one else touches the airplane as far as wrenches go. Asked about sending components out, he replied yes.

What type of training or training sources used for your staff? On the job training for sure following our maintenance manuals and practices and AC43.13 which is our standard. Through experience when new people are brought in. Power plant mechanic would show us things and we would show him things on the airframe side.

If a mechanic has a problem, is he going to come to you? Correct, and if I have a problem, I go to who I think has done the work before or something similar in the shop. He added, not the foremost expert on every plane. I wear the hat, but I am practical when it comes to what I know and what I do not know. Or I ask what do you think about this?

Who maintains the manuals as far as making sure they are up to date? It is sent to the shop. Anything that comes to the shop he is given and any of the updates were placed accordingly. He added while he assumed it was his responsibility that Ted (parts manager) does help him out sometimes. Any engine updates Brian (power plant mechanic) had a look at it and placed it in the book. Asked if it was paper and not electronic, right, we do have our airworthiness database that is all online so any airplane we are working on we will check for updates. Any new AD's out? That kind of thing.

Asked if they had an SMS, he said no.

How do you track the maintenance for when work is coming due? We know when the annuals are due. Any other maintenance that needs to be addressed we get pilot reports or known squawks or something we see ourselves. And we would write it down to be addressed regardless of if it is an airworthiness issue or not.

Everything done by a 100 hour or annual inspection? Right. That includes the engine and the propeller? Yes. To expand on that, we have a checklist for when it comes to annual inspections and the100-hour inspections. To supplement the checklist if we notice something we have a squawk sheet that we will write it down on. I can do an inspection, write down whatever squawks I documented and let the

mechanics know everything had been inspected and we are down to these items. Items to be replaced or fixed. Which clears the squawk, and we can move on.

When asked about the horizontal stabilizer actuator that it looked like the maintenance manual had the instructions you needed to work it plane side. With everything in the AMM, it looks like you take it off the airplane and place it on a bench and worked on it. Put it on a work bench, replace bearings, clean it up? He replied, correct, it is something you can do. Take it out of the plane is a lot more work than doing it kind of off. It would involve uncoiling the whole cable system. You can change the bearings. On the top lug there is a bolt that connects the lug to the horizontal and a mounting bolt on the very bottom. By taking those two bolts out and clamping the cables from unraveling from the barrel you move it outside of the inspection hole and replace the bearings that way.

Is that the top eye piece that has the lock-ring? Yes. He added there are two sets of bearings. There is another set of bearings in the actuator itself. Which bearings typically give you trouble? The two on top.

Is that due to the environment or typical of the Otter? He said, the environment and the design.

Asked if there was a customized repair document created? He stated no. This was all new to him when he came onboard. It's the first Otter he has worked on and the only one the company owned.

Asked if the Beaver has a similar setup, he said no, completely different.

Asked if the top clamp or barrel nut had a torque limit? He replied, there's no way to torque it, so what is the torque limit?

What about aligning the holes for the lock pin? It looks to me like you must drill new holes when you reinstall it? In hindsight, that would be a good idea, cause how do you know. I guess, tighten the nut until it seats, take a flashlight and see if the holes lined up. If not, back it off and try again. So, is that what you were doing? Tightening it up and seeing if any of the holes lined up? He stated, that is another issue. If there are multiple holes in the clamp nut, how do you know what is lining up? He stated you do look to see if there is a hole that lines up. And if not? Try again. Take it off and put it back on? Yes. He added that he never drilled that nut. Added that he never put a different hole in it. Kind of wish he had. He added that there is nothing in the manual about what to do if the hole doesn't line up.

He was further questioned about trying to tighten it more or loosening it a little to get a hole to line up. Is there an organization in Viking you could have turned to ask what are we supposed to do? He stated I wish I would have. Asked if Viking had a

customer service? He stated they do and they have technical support that he used since the accident. Get direction on an airworthiness issue that hasn't made any sense.

So, there is no torque limit on the nut, just tighten it up, try to align the holes. Is there a technique for installing the locknut and pin? He stated to him it seemed so simple. If the holes lined up the pin should fall into place and goes around the neck of the actuator.

After installing the barrel nut and lock pin have you ever tried to see if it is performing its intended function? He stated only after installed in the airplane and watching while the trim was moved. Yes, it did what it is supposed to do. How's it feel? It is smooth. Called an Ops check.

How about seasonally? Looked like in the records that the actuator bearings were replaced in October and then again in the spring. During the winter does the flying slow down? He stated pretty much comes to an end. So, before spring are you trying to get everything ready for the upcoming season? He stated right, that is the goal. Try to get everything working perfect so they don't have to during the season.

Do you know how many holes you drill in the barrel? He stated no. He added that if there was corrosion on the neck and it looked like it was breaking off or the lockring groove was gone or part of it gone it would be time to get a new actuator. If he saw the clamp nut and two holes were so close together that he would think the integrity would be gone, we would need a new clamp nut. Same with the lock-ring if it was cracked or worn. Just based on experience from past practices. If it was not up to par, he would replace it. Have you ever had to replace the lockring? He stated he did not recall. He only rebuilt that twice. Denmark might have done it two or three times. He didn't know if he ever replaced a lock ring. He didn't recall replacing the lock ring in the past. He knew he didn't replace it this time. He didn't remember replacing it this time. Do you keep any on hand? He stated he believed so, yes.

Is there a method to insure the lockring is fully seated other than looking at it to ensure there is not a gap under there? Correct.

Do you recall when the last time the actuator was worked on? April (2022).

How is the FAA? Does the PMI or PAI ever come around? Yes, he does. About twice a year. And we talk about three or four times a year.

I know you do the 100 hour and annual inspections, but have you considered creating an AAIP? He stated, not sure what a AAIP is. Clarified that it is an approved aircraft inspection program. Again, he stated not familiar with it.

You said the last time the actuator was worked on was April 2021, right? He clarified that it was April 21, 2022. Did somebody do the work and was inspected by you? He stated he had another mechanic remove it. He and I took it apart. He put the bearings on. It was a two-man deal. He stated we wanted it to go together perfect so we could finish out our annual inspection. He did sign off the annual the week prior, but this is something he wanted done last.

You tag teaming to get it out, get it fixed, whatever needed to be done and reinstalled? Right.

Did you install the O-ring in the top of the barrel. He asked are you talking about a seal or an O-ring? Two different things. There was an O-ring between the bearings and there was a seal in the clamp nut? Can you describe the seal to me? He stated it is a mechanical oil seal that would keep water out. What color? Red. Is that listed in the parts diagram? No. You saw it was there? He stated yes, he installed it as a means to keep water out to prevent bearings from seizing. Asked if the water a constant problem? Yes, it is.

Do you keep the airplanes parked outside on wheels? He stated only when we are getting ready to take it in for an annual. Doesn't fit fully inside our hangar when on floats. Have you ever noticed a difference with the actuator when the airplane is on wheels or on floats? No difference.

Have you ever had a pilot come back with a squawk of stiff trim? Yes. Is that a common problem? Yes. What's the course of action when that happens? He stated we immediately suspect it is the top bearings in the actuator. The course of action is to get it fixed before the next flight. And that is doable? You can do it in the evening between flights? Yes.

The usual suspect is the top two bearings? Yes.

You described earlier that you can clamp the cables, pull it out and do the work without untwisting all the cables? And that is the normal way of getting it done between flights? Yes.

Do you replace the bearings? Clean them up and re-lube them? What do you do? We replace the bearings. Can you recall the last time that was done? April, same time as the annual. He added they have had no squawks from either of the two pilots that fly the plane up until the accident.

You had a chance to work with the lockring when you did that? He stated yes. The lock ring comes out, the top comes off, bearings get replaced, put it back together and put the lockring in place? Yes. Can you remember putting the lockring in? Yes. Can you describe the process? How do you wrap it into the groove and find

the hole where the pin would go into the hole? After you have determined that the clamp nut is seated, and the hole lines up, you put the pin in first and then wrap it around like you would with a circlip. Set the pin first? Yes.

Do you keep new lockrings in stock? He stated he believed so. The reason I am asking is if you have seen a difference between one lockring and another? He stated he has not had two lockrings side by side, nor has he noticed any difference between lockrings.

You described the process of tightening the clamp nut. Would you describe it as hand tight? Good and tight? Really tight? He stated he would just say seated, it's probably a better word. If you're talking about a mechanical nut going on a bolt you are looking for how many threads pass the nut. This is only supposed to screw down until the top meets and then some, I believe. Correct me if I am wrong, but the instructions are pretty vague. Doesn't say how to seat it or anything. These are my own words. Seated with the hole lining up. Is what I believe or interpret because it is vague.

The clamp nut has a notch on the top for a spanner. Do you use a spanner? He stated he has used spanner wrenches before. This would not use a spanner wrench. This looks to me like a screwdriver and a hammer to tighten. And you do that? Yes. Or it could be a punch. Any steel device that you can use. He added that the spanner wrench has a round nipple on the end of the curved hook that fits into a hole. The clamp nut has a U shape notch, not a hole for tightening with a spanner.

When tightening the nut on top have you ever had the circlip pop off? Do you know what I am talking about? The bearings go into the barrel, and they sit on a snap ring inside the barrel. Have you ever had that pop off? No. He asked if that was something that could happen? I suppose if you really torqued it.

The DOM was shown a diagram that included the circlip. Was it possible that it popped out? No.

Further shown a diagram of the clip inside the barrel which is actually below this assembly and when the bearings are installed, they rest on the top of the snap ring. Just asking if you ever had the snap ring pop out of place? When tightening the clamp nut on the top of the barrel? He stated he has not in the couple of times he has replaced those bearings.

You don't use a spanner, you tap it around with a screwdriver and a hammer? Correct.

You said you've done one of these assemblies twice could you reuse the lockring? Yes.

To follow up, it sounded like this last time the actuator was removed for the last rework in the spring or just the top was disconnected. He stated no, in April, we took it completely out.

The water seal that you installed; how long have you been doing that? He stated this was the first time he's done it. Because of the problems with the bearings? Yes, problematic.

Did that have an effect on how far the barrel nut seated? It still seated.

Did it have an effect on far the barrel nut traveled and how the lock pin holes aligned? He stated no effect.

Interview concluded at about 10:22 AM PDT.

14.3 Aircraft Maintenance Technician

November 15, 2022, at about 10:30 AM PDT
Mr. Denmark Lagua
Location: West Isle Air, Inc.
Participants: NTSB, Gregory Borsari; FAA, Rod Ziegler: Northwest Seaplanes, Shane Carlson
Representation: Aaron Bigby

On November 15, 2022, beginning at about 10:30 PDT, Mr. Lagua agreed to speak to the NTSB and to have notes taken, which follow. These notes are not a verbatim transcript. In attendance was Mr. Aaron Bigby.

After introductions were completed and a brief explanation about the NTSB investigative role, Mr. Lagua was asked to provide his full name. Denmark Dela Cruz Lagua. He told us he has an A&P (Airframe & Powerplant) certificate. Asked if his position is a mechanic, he said correct. He added he has been a mechanic for six years, going on seven. Added that is when he became a mechanic when he obtained his A&P. He has been with the company going on five years.

Asked to describe his background, he told investigators he graduated from South Seattle Community College. Worked at Ace Aviation after graduating and obtaining his A&P. About a year and a half later he came to Northwest Seaplanes.

When asked about his duties and responsibilities here, he told investigators we perform 100 hour and annual inspections here. We do a lot of wheels to floats and wheels to floats exchange. We do a lot of projects, like wing extensions, or anything

else with smaller planes, like 172's, 182's. We mostly work on the Beavers, and we had the Otter.

Who do you report to? He stated he reported to Jim, the director of maintenance. How is he to work for? He's good. Somebody you go to and ask questions? Of course. He added, we all pick each other's brains. How are the other mechanics to work with? Good. How many mechanics are here? Three licensed mechanics, myself, Jim, and Brian. And we have Ben, a mechanic assistant. Is he an apprentice? Yes.

What are your strengths in maintenance? He stated I would say fabrication, sheet metal. Do you enjoy sheet metal work? Yes sir.

What maintenance training have you had? A&P school at South Seattle. Any other courses since coming to work here? No.

I am assuming if you have a problem you go to Jim, the DOM? Correct.

On average, how much of the work did you typically perform on the Otter? Quite a lot. Did you have any Otter experience before coming here? No. It's all been here and on the one airplane? Correct.

Did you know that airplane pretty well? After a while, yes. Did you have any areas of concern with the Otter? He stated the only concern I had with the Otter was corrosion. Just because it flies in salt water. We do treat a lot of corrosion.

A lot of clean up, Alodine and resurfacing? He stated yes.

If you need to replace a part or some hardware, do you have a stock room here? Yes, our parts manager would be the one we go to when we need parts. If we don't have it in stock.

Asked about the stabilizer trim actuator if you could work it plane side? Take it off and put it on the bench to rework it? He stated yes. Replace what needs to be replaced and reinstalling in the airplane? Yes.

Talking to the DOM it seems the upper bearings are the problem area? He stated that is correct. Which are these bearings (bearings from stock were shown).

Asked to tell us if he tilted the actuator or removed it? He stated no, we took it out the inspection hole on the side. There are other bolts connected to it and we take those apart. Take it to the shop and disassemble it there.

You do this work per the AMM as there is no component manual? He stated right, although there is the parts manual. Between the AMM and the parts manual, you can replace the bearings? Correct.

How often did you have to work on the trim actuator to replace the bearings? He stated since I started in 2018, I would say more than five times. What's the typical write-up? Pilots would tell us that it has been stiff. And that is what we would look after as to what is causing the stiffness.

Typically, it's the bearings? He stated typically, it is the bearings and every time we pull the actuator out, there would be water inside the barrel. Anything else ever cause the stiffness? He stated no, just the bearings. Bearings freezing up. And once you replace the bearings everything is back to normal? Correct.

Switching to the barrel nut for the actuator, is there a torque limit on that? He stated no. Tighten it by hand, by a strap wrench or other means? He said he didn't see anything in the manual. He added I just go with what the manual says. So, pretty much by hand? I might have to use a wrench (slip pliers) just to line up the holes for the lockring. It's usually within a millimeter or so. You actually see the hole is there. Flashlight and mirror? He stated flashlight or headlamp and you can see it. There is enough access you do not need a mirror? Correct.

With the locknut on and the holes aligned how do you install the lockring? He stated it goes into the hole of the outside barrel; it goes through the hole and is sitting correctly in the groove with nothing protruding out. Do you make sure the tab is seated and there is no gap under the lockring? Yes, correct.

When I was looking through the logs, I saw the upper and the lower bearings was done in October 2021 and when I go through the paperwork it looks like you assisted as multiple people were on the paperwork. I also saw the bearings were replaced in July of 2021. Is this typical? The environment that harsh? Yes, it is the environment. And the typical write up is stiffness? Yes, usually stiffness.

How hard is it to replace the bearings? He stated not hard. Only if it is frozen inside where it rides. Sometimes we would have to use a little force to take the bearings out. They seize up? He stated takes either some heat and some lube to loosen them up. Lubing the surface area will assist in removing.

Do you have a spare actuator? No. The way I read the manual you fix the actuator? Yes.

Have you ever had to drill a new hole when installing the lock ring? He stated no. You reuse an existing hole? Correct.

When examined in the lab there are multiple holes in the barrel which I assume you have seen when you have taken it apart? He stated yes. Again, you never had to drill a new hole, you always got it to line up? Yes.

Have you ever had to use a hammer or something to knock the tab into place? He stated we have used a wrench (slip pliers, channel locks) to squeeze it into place. But never a hammer.

You never had to drill a hole? He stated never. Do you reuse the lock rings? Yes. We look at them first. What are you looking for? We're looking if there is any locking resistance on it. I look for any cracks or anything in the ring. Also look for any corrosion.

Did you ever have to install a new lock nut? He stated no. Always reuse the existing one? Yes.

Again, there is no torque limit, just get it tight and get the holes aligned? Correct.

How do you ensure the lockring is seated? He stated visually.

Has the FAA ever come around while you have been working on the aircraft? I have seen some FAA walk around. Have they ever asked you anything? No.

Do you remember the last time you worked on the actuator? I think it was the year prior. So, over a year before this happened? Correct.

The last time you worked on it, did you notice an O-ring underneath the clamp nut? Between the top two bearings and the clamp nut, an O-ring or seal? Was it blue? No, red. No, did not see anything like that.

Have you ever talked to Viking or Kenmore or anybody to get some advice or parts or anything? He stated no, anything like that if there are parts needed, I would go to Jim and he would be the one.

Do you know what a spanner is? Yes. A "C" shaped wrench. What do you use it for? Anything that has a groove. Would this be something you could use when installing the top nut on the actuator? Have you ever used one to install the top nut? I have used one, but not on the top nut. We have one, but it doesn't fit that nut. Too big or too small? Too big.

How do you put the top nut on? We put it on by hand as tight as we can and use the pliers to tighten it a little more until we see hole alignment.

It looks like the actuator was worked on in July of 2021 and again in October of 2021 and that is where I saw your initials on the paperwork. Is that the time frame you recall working on it? He stated yes.

And there was no red or blue seal under the barrel nut? He stated no.

Interview concluded at about 10:52 AM PDT.

Submitted by:

Gregory Borsari
Maintenance Records