

Attachment 24. Inspector Follow-up Transcript

DCA12MA020 Maintenance Factual Report

UNITED STATES OF AMERICA

NATIONAL TRANSPORTATION SAFETY BOARD

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Investigation of:

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SUNDANCE HELICOPTER ACCIDENT
NEAR LAS VEGAS, NEVADA

* Docket No.: DCA-12-MA-020
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Interview of: GAYLAN WATERFALLEN

Sundance Helicopters
5596 Haven Street
Las Vegas, Nevada

Wednesday,
January 11, 2012

The above-captioned matter convened, pursuant to notice.

BEFORE: KRISTI DUNKS
Senior Air Safety Investigator

APPEARANCES:

KRISTI DUNKS, Senior Air Safety Investigator
Maintenance Group Chair
National Transportation Safety Board
NTSB Western Pacific Region
PO Box 3493
Butte, MT 59702
406-494-2640

MARYAM ALLAHYAR, Investigator
Human Performance Group
National Transportation Safety Board

GARY CAMPBELL
Federal Aviation Administration

KYLE REYNOLDS
Sundance Helicopters

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1 I N T E R V I E W

2 MS. DUNKS: Okay. So first off, same as last time. Did
3 you want to have a representative here or --

4 MR. WATERFALLEN: No.

5 MS. DUNKS: Okay. All right. And if you could -- we're
6 going to record this, and we'll have a transcript and will be
7 available to Kyle and Jack.

8 MR. WATERFALLEN: Okay.

9 MS. DUNKS: And did you have any questions before we get
10 started?

11 MR. WATERFALLEN: No, ma'am.

12 MS. DUNKS: Okay. And really the purpose of this
13 interview is just to clarify a few items and get some more
14 information on questions we asked before, and some other stuff
15 that we had learned that we didn't know at the time we spoke to
16 you before.

17 MR. WATERFALLEN: Okay.

18 MS. DUNKS: So, mostly clarification type stuff --

19 MR. WATERFALLEN: Understood.

20 MS. DUNKS: -- just digging a little bit deeper into
21 what you do and how you do it.

22 MR. WATERFALLEN: Understood.

23 INTERVIEW OF GAYLAN WATERFALLEN

24 BY MS. DUNKS:

25 Q. So first off, if you could just say your full name?

1 A. Gaylan Waterfallen.

2 Q. Okay. All right. And you work as a mechanic and
3 inspector here?

4 A. Yes, ma'am.

5 Q. Okay. All right. Very good. So, focused on the 100-
6 hour inspection you did that day obviously, and can you talk about
7 how you inspected the helicopter? That was your job function that
8 day to work as an inspector?

9 A. Yes.

10 Q. And did you -- are your normal procedures to, as -- I
11 know we had one guy working on the tail area, one guy --

12 A. Um-hum.

13 Q. -- in the main rotor area, one guy in the engine area.
14 Are your procedures to inspect as they complete the work, or all
15 at one time, or how do you do that?

16 A. It just depends on my workload for the day.

17 Q. Um-hum.

18 A. Usually I'll inspect as we go. If they finish a task
19 and say, hey, I'm done with this, come and look at it, I'll go and
20 look at it then if I'm not busy doing paperwork. If I'm busy
21 doing paperwork, I'll finish my paperwork and then I'll go and
22 look at it.

23 Q. Okay. And do you recall that day what you did?

24 A. Let's see. After CJ had taken off the fore and aft
25 servo, he did the build-up on it. I inspected the build-up on it,

1 and then once he had put it back on, he told me that it was ready
2 to be inspected after it had been installed, and then I went and
3 inspected it then.

4 Q. Okay. And how about the other items? The engine and
5 tail area?

6 A. Same thing.

7 Q. Okay. So, kind as they were completed they --

8 A. Yes.

9 Q. Okay. And when you inspected his build-up, was the ice
10 shield on the servo?

11 A. Actually -- yes, ice shield was already on the servo.

12 Q. Okay.

13 A. Because it came that way.

14 Q. Okay. And do you know if he removed it before he
15 reinstalled it?

16 A. No, he did not. It still had the -- what is it -- the
17 pink striping from the overhaul facility on it.

18 Q. Okay.

19 A. Their purple paint marking.

20 Q. Okay. All right. And that was on it installed in the
21 helicopter?

22 A. Yes.

23 Q. Okay. They have -- I'll have to look. They have some
24 sort of purple striping they use or --

25 A. Yeah, torque striping.

1 Q. Okay. All right. And can you explain in detail how you
2 go about inspecting things? Do you look at stuff? Do you touch
3 stuff? Do you -- how do you do that?

4 A. I do both.

5 Q. Okay.

6 A. And physically touch nuts and bolts and cotter pins and
7 visually look at everything over. Depending on what it is,
8 hydraulic lines, pipes, anything like that, I'll actually
9 physically put a wrench on it and check them --

10 Q. Okay.

11 A. -- to make sure they're tight.

12 Q. Okay. So in this case, in the fore/aft servo area, can
13 you kind of go through the safeties that you would need to check
14 and based on the maintenance that was done, any, you know, lines
15 that were disconnected, what you would have to do?

16 A. During the build-up, there's three safeties, one on each
17 rod end, locking mechanism, the jam nuts, and then there's the
18 safety on the back that holds the manifold to the -- or the
19 hydraulic manifold to the servo. I inspected those safeties and
20 then CJ put it on. Once it was installed, I inspected the upper
21 and lower attachment bolts, cotter pins, torque striped them, and
22 then the input rod, the hardware, the cotter pin, and torque
23 striped it, too.

24 Q. Okay. Anything else?

25 A. And then the two hydraulic lines that connect to the

1 manifold --

2 Q. Okay.

3 A. -- put a wrench on them and then I striped them, too.

4 Q. Okay. And what color stripe do you use?

5 A. White, I did.

6 Q. Yeah, what's your color now?

7 A. Yellow.

8 Q. Yellow. Okay. Any reason for that change or --

9 A. There was actually things that we had found here that I
10 had already inspected. Someone would go back to look at it after
11 it had flown or whatever, or they had to change something, and my
12 paint striping was actually so faded that you couldn't tell that
13 it had already been inspected.

14 Q. Okay.

15 A. So, they decided, or Jack decided, that they were going
16 to change the color --

17 Q. Okay.

18 A. -- and no one's going to use white. So --

19 Q. Okay. Something a little more apparent.

20 A. Yes.

21 Q. Okay. All right. The input rod to the servo --

22 A. Um-hum.

23 Q. -- is that -- basically you have the shield --

24 A. Um-hum.

25 Q. -- and the input rod.

1 A. Um-hum.

2 Q. And the bolt comes through. Is the nut always facing
3 out or is it ever installed the other way and how was it installed
4 in this case?

5 A. It was installed facing outwards.

6 Q. With the nut facing out.

7 A. The nut was on the outside, yeah, because I can -- I
8 remember you can climb up -- you know, as far as I can remember,
9 it's always facing out.

10 Q. Okay.

11 A. The nut never goes to the inside. I don't think I've
12 ever seen anybody put it in that way.

13 Q. Okay.

14 A. So -- but it was -- this one, this particular one that
15 was installed facing out.

16 Q. And how common is it -- I assume -- I have a couple of
17 questions but, you know, they're not really related to your work
18 as an inspector. It's more as a mechanic.

19 A. Um-hum.

20 Q. But the first one is how do you go about determining
21 which cotter pins are required?

22 A. Well, you can look in the IPC and it'll tell you
23 specifically what cotter pin to use.

24 Q. Okay.

25 A. And then pull it from stock and if they don't have it in

1 stock, most of the time we pull everything from free stock --

2 Q. Um-hum.

3 A. -- and that has been -- someone gave our parts
4 department the part number that's in the book, they've done the
5 research or someone else in the maintenance department has done
6 the research for an equivalent, and then that's what they order,
7 either through ABIR (ph.), whoever they're getting their hardware
8 through.

9 Q. Okay. And then how would you determine -- we saw your
10 kind of stock of pins over there.

11 A. Um-hum. Um-hum.

12 Q. It's quite a few. I think nine different pins. How do
13 you determine which one to use if, let's say, your parts
14 department doesn't have it?

15 A. If -- well, I know the parts department doesn't have it
16 because it's in the free stock. There's in the -- in IPC, you
17 know, you get the part number and you can cross-reference the part
18 number in the front of IPC. There's a chart that gives you the
19 breakdown of, this is the equivalent for this. This is what this
20 part of the part number means as far as length and diameter and
21 all that, and then you'd have to break it down.

22 Q. Okay. And as far as hardware reuse, Eurocopter states,
23 you know, that hardware can be reused.

24 A. Um-hum.

25 Q. And how do you determine when hardware can be reused?

1 Like let's take the case of fore/aft servo, you know, all the
2 connections you're working with there. There are kind of three
3 main bolts, I guess, here.

4 A. Um-hum.

5 Q. How do you determine whether or not those can be reused?

6 A. Visual inspection and in the Chapter 20, the standard
7 practices, it gives you a breakdown on bolts and nuts and wear
8 limits and all that and whether or not they can be reused. Or if
9 they can't, it will specifically say you can't reuse this
10 hardware.

11 Q. Okay. And how can you tell if -- can a mechanic tell
12 just whether or not nuts can be reused or --

13 A. I believe in Chapter 20, it specifically states on what
14 type of nut it is and how many reuses, how many times it can be
15 reused, if it can be reused. It's all in Chapter 20.

16 Q. Okay. And how would you tell how many times it's been
17 reused?

18 A. That's a good question.

19 Q. Okay.

20 A. You'd have to go back -- you'd have to take the time and
21 go back through the maintenance records --

22 Q. Um-hum.

23 A. -- to see if it's been reused or replaced or when the
24 last time it was replaced.

25 Q. Okay.

1 A. So --

2 Q. All right. And is there any sort of locking that you're
3 looking at or -- on the nut?

4 A. As far as the fore and aft servo, you have the input rod
5 nut is self-locking, or what they call self-locking. It has the
6 little plastic lock assembly in it.

7 Q. Okay.

8 A. So --

9 Q. And do you know what the requirements for reuse on those
10 is or are they different? Is it still a number of times or --

11 A. Off of the top of my head, I believe you can reuse it
12 twice.

13 Q. Um-hum.

14 A. But I'd have to check in Chapter 20. I do know from
15 personal experience, you can -- if you can thread one of those
16 nuts all the way on by hand, you can't reuse it.

17 Q. Okay.

18 A. It's completely lost all of its locking feature.

19 Q. All right. And what about if you can rotate it halfway
20 on?

21 A. If you can screw it on up to the locking assembly or the
22 plastic in it, and you can't screw it any further on by hand you
23 could reuse it.

24 Q. Okay. So, if it's -- like looking at the threads on a
25 bolt, if you can screw it halfway down those threads --

1 A. Um-hum.

2 Q. -- then that would be okay?

3 A. As long as it still has a locking feature.

4 Q. Okay. And have you ever installed the -- I guess have
5 you replaced a fore/aft servo before?

6 A. Um-hum.

7 Q. Okay. So, what was your normal procedure? Would you
8 remove the ice shield or --

9 A. No.

10 Q. No.

11 A. Because the book doesn't tell you to. I know there's a
12 lot of people out there that do just because it's easier to pull
13 the bolt for the input rod and to cotter pin it.

14 Q. Okay.

15 A. But I never have.

16 Q. Okay. And so the main reason to remove it is because it
17 is easier to reinstall --

18 A. Yes.

19 Q. -- and put the pin in?

20 A. Yes. Well, it's actually easier just to put the cotter
21 pin in without the ice shield on.

22 Q. Okay.

23 A. Putting the bolt in and the nut and torquing it is --

24 Q. It doesn't make a difference?

25 A. It doesn't make a difference.

1 Q. Okay.

2 A. It's just all about the cotter pin.

3 Q. And with the cotter pin, are there any special tools you
4 need to use to reinstall that pin that you wouldn't otherwise?

5 A. No.

6 Q. Okay. It's just -- what's more -- how do you -- what's
7 more difficult about it?

8 A. When putting the cotter pin in?

9 Q. Um-hum.

10 A. If you put the hole straight up and down --

11 Q. Um-hum.

12 A. -- it's difficult because of the length of the cotter
13 pin.

14 Q. Okay.

15 A. And to get a pair of pliers in there or even just your
16 fingers. Even someone with small hands, they still have
17 difficulty getting a cotter pin in there and getting it to go in
18 the hole.

19 Q. Okay.

20 A. So --

21 Q. Just because of the space requirement?

22 A. Just because of the spacing between the ice shield and
23 the bolt and the nut.

24 Q. Okay. Now, when you looked at the work completed on the
25 fore/aft servo, was CJ with you or --

1 A. I think he was standing at his toolbox --

2 Q. Okay.

3 A. -- which was right over here --

4 Q. Um-hum.

5 A. -- by the ladder, but I don't -- he wasn't up actually
6 on the aircraft.

7 Q. Okay. And do you recall if you found any problems or --

8 A. No, perfect install.

9 Q. Okay. And how does this inspection, the fore/aft servo
10 inspection compare with others on the helicopter? Is it more
11 difficult to see, easier, how would you say?

12 A. It's fairly easy to see everything.

13 Q. Okay. Are there any areas that are blocked by other
14 components or that you have to use a flashlight on or --

15 A. Not really.

16 Q. Okay. I just have a general question about the cotter
17 pins and diaper pins. When do you use diaper pins and when do you
18 use cotter pins?

19 A. Actually, we're not to use diaper pins at all.

20 Q. Okay.

21 A. I prefer a cotter pin just because that's the way I was
22 taught in aviation. So, diaper pins is something new to me
23 because it's in the civilian world.

24 Q. Um-hum.

25 A. You don't use that in the military. As far as using

1 them, like I said, I prefer not to.

2 Q. Um-hum.

3 A. But if they're installed by the manufacturer, then
4 that's what the manufacturer put there.

5 Q. Um-hum.

6 A. That's usually what we put back.

7 Q. Okay.

8 A. But I prefer not to.

9 Q. Okay. Any of the servos use any sort of diaper pins?

10 A. The only servo that uses a diaper pin is the tail rotor
11 forward attachment, and that also -- that's all depending on the
12 manufacturer. Sometimes we get brand new aircraft that have a
13 diaper pin in there. Sometimes we get ones that have cotter pins.

14 Q. Okay.

15 A. So --

16 Q. It just depends?

17 A. It just depends.

18 Q. How common would you say is it that hardware is replaced
19 on these servos?

20 A. I'd say probably 60, 70 percent of the time --

21 Q. Okay.

22 A. -- we're replacing rod ends or we're replacing the
23 actual mounting hardware.

24 Q. Okay. And is it a very difficult process? I guess does
25 the mechanic identify that it likely needs to be replaced --

1 A. Um-hum.

2 Q. -- and then when they come to you as the inspector just
3 to verify --

4 A. Um-hum.

5 Q. -- that that's correct? And then what's the procedure
6 for them to get the new hardware, or would you request it or --

7 A. It just depends on whether -- how busy they are, if I'll
8 request it or they'll request it. We fill out a parts request,
9 out of IPC, and give it to parts.

10 Q. Okay.

11 A. And wait on them to get us the parts.

12 Q. Okay. All right. And has that process changed at all
13 since moving from the old hangar to the new hangar?

14 A. No.

15 Q. Okay. It's still --

16 A. Still the same.

17 Q. Okay. All right. Another item that was done that day
18 was the hydraulic pump --

19 A. Um-hum.

20 Q. -- was removed and reinstalled --

21 A. Um-hum.

22 Q. -- and we had talked about that before. What did you
23 inspect on that particular area?

24 A. The actual pump being mounted back to the bracket that
25 holds it onto the coupling.

1 Q. Um-hum.

2 A. The four bolts that hold it on there. Then the two
3 bolts that hold the whole pump assembly and bearing assembly to
4 the transmission coupling and the tension on the belt.

5 Q. Okay. And is that something you would paint-stripe as
6 well or --

7 A. Yes.

8 Q. Okay. And would there be any nuts on there or items on
9 there that would not be removed that would have residual paint
10 striping on there?

11 A. There could be residual paint striping on the line that
12 connects to the bottom of the pump and the feed line that connects
13 to it. It just all depends on whether the guys remove it or not.

14 Q. Um-hum.

15 A. Most of the time, they'll tell me whether or not they
16 took it off because it's not required. Sometimes it's easier just
17 to take it off and move it out of the way. But as far as residual
18 paint markings on the hardware, no.

19 Q. Okay. And do you recall if those lines were removed in
20 this case or --

21 A. No, they were not.

22 Q. Okay. So in that case, they may have had old, not old,
23 but the previous --

24 A. Yeah.

25 Q. -- from when they were previously torqued and striped?

1 A. Yeah.

2 Q. Okay. All right.

3 MS. DUNKS: Did you have any questions, Maryam? And
4 Gary?

5 MR. CAMPBELL: No.

6 MS. DUNKS: Okay. And I know Kyle, do you?

7 MR. REYNOLDS: No.

8 MS. DUNKS: Let me just look through here and see if I
9 have any more.

10 MR. WATERFALLEN: Okay.

11 BY MS. DUNKS:

12 Q. Oh, I did have a question. Since the accident, they've
13 -- you all have -- you have a new QAN.

14 A. Um-hum.

15 Q. And can you talk about that and how you were notified of
16 that and what the new procedures are?

17 A. Once the QAN came out, Jack Weeks (ph.) who is our QA
18 manager --

19 Q. Um-hum.

20 A. -- let all the leads know that there's a new QAN, this
21 is what it entails. He gave us a copy. I sat down with him
22 actually and he explained everything to me on what we needed to
23 do. And as far as the procedure, it's just every 5,000 hours, the
24 input rods of all the tail rotor or all of the input rod for the
25 main rotor servos, all the part will be replaced every 5,000

1 hours, and we're currently working through changing out the ones
2 that are over 5,000 hours.

3 Q. Okay. And so you have a baseline --

4 A. Yes.

5 Q. -- of all the helicopters, and now that's a tracked
6 item?

7 A. I believe that they're putting it on the scheduled
8 maintenance tracking sheet.

9 Q. Okay. So kind of the time components list so you know.

10 A. Yes, yes.

11 Q. Okay.

12 MS. ALLAHYAR: I actually have a question.

13 MS. DUNKS: Um-hum.

14 BY MS. ALLAHYAR:

15 Q. When doing, say, something similar to what was done
16 here, in say a 100-hour inspection --

17 A. Um-hum.

18 Q. -- and you have multiple parts that need to be changed
19 and you have different mechanics working on it --

20 A. Um-hum.

21 Q. -- is it done sequentially usually or, you know, each
22 mechanic will go to their own section and they start working on it
23 at the same time?

24 A. They do. Everybody does their own section at their own
25 pace and it's not -- there's really no set schedule on how they do

1 their inspection. They'll -- if there's a component to change,
2 they might change the component first and then do their
3 inspections or do their inspection first and then change the
4 components that need to be changed.

5 Q. So, you could have like two different mechanics working
6 on two different parts at the same time?

7 A. Always.

8 Q. Okay.

9 BY MS. DUNKS:

10 Q. Okay. And just going back to this ice shield. So, it
11 was -- the build-up was completed on the bench.

12 A. Um-hum.

13 Q. And you go and verify that.

14 A. Um-hum.

15 Q. And check all the safeties and everything is good.

16 A. Um-hum.

17 Q. Shield is installed.

18 A. Um-hum.

19 Q. And you know it hasn't been removed because it has the
20 purple striping. And then it was reinstalled and go through
21 everything --

22 A. Um-hum.

23 Q. -- and it basically hadn't been removed, this ice
24 shield?

25 A. Yes.

1 Q. Okay. Okay, I think that is it.

2 MS. DUNKS: Did you have any additional questions,
3 Maryam, or --

4 MS. ALLAHYAR: No, I'm good.

5 MS. DUNKS: Okay.

6 BY MS. DUNKS:

7 Q. Oh, I did have one other question. Of course, I did.
8 Have you ever been involved in any other accident investigations
9 or --

10 A. Yes.

11 Q. Okay. And what --

12 A. Quite a few.

13 Q. Okay. Quite a few.

14 A. Six total.

15 Q. Okay.

16 A. Two in the civilian world. This is my second in the
17 civilian world.

18 Q. Okay.

19 A. And four in the military.

20 Q. Okay. And what was the other in the civilian?

21 A. Papillon.

22 Q. Okay.

23 A. In 2001.

24 Q. Okay.

25 A. So --

1 Q. That was the --

2 A. Yeah.

3 Q. Okay.

4 A. Yeah.

5 Q. All right. Very good. And just going back to the
6 hangar, switching --

7 A. Um-hum.

8 Q. -- to the new hangar, have any of your processes changed
9 since going to this new hangar? Are some things better? Are some
10 things worse?

11 A. As far as the stuff that goes on in the hangar, really
12 nothing really changed.

13 Q. Okay.

14 A. As far as moving aircraft, yeah, we do have to tow the
15 aircraft from the flight line down here to the hangar, down there,
16 but as far as processes in the hangar, nothing really changed from
17 here to there.

18 Q. Okay. All right. Okay. That is officially the end of
19 my questions, so --

20 A. Okay.

21 Q. So did you have any questions for us or --

22 A. No, ma'am.

23 Q. -- anything else that you wanted to say?

24 Okay. Well, thank you again for letting us follow-up on
25 these. It helps us out a lot.

1 A. I know.

2 Q. So, we appreciate that and again if anything does come
3 up that you'd like to share with us, please --

4 A. Okay.

5 Q. -- get in touch with us, okay?

6 A. Yes, ma'am.

7 Q. All right. Thank you.

8 A. Thank you.

9 (Whereupon, the interview was concluded.)

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CERTIFICATE

This is to certify that the attached proceeding before the

NATIONAL TRANSPORTATION SAFETY BOARD

IN THE MATTER OF: SUNDANCE HELICOPTER ACCIDENT
 NEAR LAS VEGAS, NEVADA
 Interview of Gaylan Waterfallen

DOCKET NUMBER: DCA-12-MA-020

PLACE: Las Vegas, Nevada

DATE: January 11, 2012

was held according to the record, and that this is the original,
complete, true and accurate transcript which has been compared to
the recording.

Kathryn A. Mirfin
Transcriber