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TRANSCRIPT OF PROCEEDINGS TRANSCRIPT-IN-CONFIDENCE

INSPECTOR-GENERAL AUSTRALIAN DEFENCE FORCE INQUIRY INTO THE CRASH OF A MRH-90 TAIPAN HELICOPTER IN WATERS NEAR LINDEMAN ISLAND **ON 28 JULY 2023**

PUBLIC INQUIRY

THE HONOURABLE M McMURDO AC AVM G HARLAND AM CSC DSM

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1000, MONDAY, 31 MARCH 2025

DAY 44

TRANSCRIPT VERIFICATION

I hereby certify that the following transcript was made from the sound recording of the above stated case and is true and accurate

Signed		Date		(Chair)
Signed		Date		(Recorder)
Signed	Epiq Australia Pty Ltd	Date	23/04/25	(Transcription)

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MS McMURDO: Yes, COL Streit.

COL STREIT: Good morning, Ms McMurdo, AVM Harland. Just very quickly before I call the first witness of this week, I can indicate to
Counsel representing that on Thursday LTCOL Anthony Norton will be called to give some evidence, which may be conducted in a private hearing, and I will advise them further when that matter is clarified.

MS McMURDO: So he's being recalled to give some further evidence?

COL STREIT: That's right.

MS McMURDO: Thank you. Thursday.

15 COL STREIT: Thursday. Noting that Thursday's proceedings won't commence until 1 pm. Ms McMurdo, I call COL Jeffrey Robert Brock.

MS McMURDO: Thank you.

20 COL STREIT: While we're waiting for COL Brock, can I indicate for the assistance of families present here, and those listening online, that some aspects of COL Brock's evidence may be confronting?

MS McMURDO: Yes.

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<COL JEFFREY ROBERT BROCK, Sworn

30 **<EXAMINATION-IN-CHIEF BY COL STREIT**

MS McMURDO: COL Brock, let me know if you need a break at any time.

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COL BROCK: Ma'am, sir, thank you.

MS McMURDO: Good morning. Yes, COL Streit.

40 COL STREIT: Thank you, Ms McMurdo.

Colonel, you're being called here in your capacity as the Senior Medical Officer for Aviation Command in 2022/2023. Do you understand that?

45 COL BROCK: That's correct.

COL STREIT: You are a medical practitioner, but for ease of convenience and noting you are in uniform today, I will refer to you as Colonel as opposed to Dr Brock. Both titles are equally applicable to you.

COL BROCK: That's fine, thank you.

MS McMURDO: Are you content with that? Are you happy to be Colonel today?

COL BROCK: Yes, thank you, ma'am, sir.

MS McMURDO: Thank you.

15 COL STREIT: Very quickly, COL Brock, can I just confirm that you received a section 23 Notice from the Inquiry to appear here today to give evidence?

COL BROCK: Yes, I did.

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COL STREIT: That section 23 Notice required, did it, you to answer some questions in the form of a statement?

COL BROCK: Yes, it did.

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COL STREIT: The section 23 Notice, it was accompanied with other documents, including a Privacy Notice, did you receive that?

COL BROCK: Yes, I did.

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COL STREIT: A Frequently Asked Questions Guide for Witnesses?

COL BROCK: That's correct, yes.

35 COL STREIT: An Instrument of Appointment of an Inquiry Assistant IGADF?

COL BROCK: Yes.

40 COL STREIT: A copy of the Inquiry's Directions?

COL BROCK: Yes, I did.

45 COL STREIT: Just to assist you and orientate you, in front of you to 45 your immediate left is an A3 page. It contains a pseudonym list and

associated names relevant to each pseudonym. If you consider, in responding to a question I may ask you or another person may ask you, that you may be referring to a person who has a pseudonym, can I ask that you just check the list to satisfy yourself as to what their pseudonym number is? There's quite a list there.

On one side of the page is a pseudonym list in order of number, and then I think to your immediate right is the pseudonym list in alphabetical order of surname.

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COL BROCK: Understood. Thank you.

COL STREIT: Colonel, can I show you a folder containing a number of documents? Now, just to assist the Inquiry, you have a folder already in
 front of you that you brought in today to assist with your evidence. Can I just confirm with you that the folder that you have brought in is simply a copy of your witness statement and associated references and annexures?

COL BROCK: Yes, that's correct.

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COL STREIT: That's necessary today because I understand that you have noticed that in the statement that you submitted to the Inquiry has a formatting error that starts in about the middle of the statement which means the references in your statement are out by one.

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COL BROCK: That's correct.

COL STREIT: So Reference M in relation to a particular matter is out by one, so it should be Reference N, by way of example?

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COL BROCK: Yes.

COL STREIT: So what we need to do this morning briefly is just to go through the body of your statement to identify where there's a formatting error so that your statement can be as correct as much as it can be.

COL BROCK: Yes. With your permission, I'll refer to my copy of the statement where there is likely to be a mismatch between the narrative and the reference.

40

COL STREIT: Thank you. What we'll do first is just have you confirm that what you have in front of you comprises your statement of 39 pages digitally signed by you on 3 March 2025.

45 COL BROCK: Yes, it is.

COL STREIT: Your statement attaches a three-page reference list. That's correct?

5 COL BROCK: That's correct, yes.

> COL STREIT: So if it will assist, perhaps if we were to start at the point you say the deviation occurs in the formatting which you identified in your own statement that you've brought today.

- COL BROCK: Yes. I think they start about and I apologise for this, but I only noticed it very late last week – at page 22.
- COL STREIT: So if we turn to page 22, and about one-third of the way 15 down is a reference to what is paragraph - - -

COL BROCK: Yes, on page 22, for example, subpara (a), "SI (AVN) OPS 2-121". In my report, it's referred to as "Reference X". Actually, it should be "Reference Z".

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COL STREIT: V for Victor?

COL BROCK: Z for Zulu.

- 25 COL STREIT: Z for Zulu. Understood. To your immediate right, Colonel, is a pen, just in front there. If you could just, on the actual Inquiry's statement, initial on page 22 and make that correction? So make the correction and then just initial. So what follows next?
- 30 COL BROCK: Well, the next one is directly after that, subpara (b), "SI (AVN) OPS 2-112, Flight Authorisation." That's referred to in my report as "Reference X". It should be "Reference AA".

COL STREIT: AA. Thank you. Next?

COL BROCK: Next is, subparagraph (c), "SI (AVN) OPS 2-122, Aviation Fatigue Management". Instead of "Reference X", it should be "Reference T".

40 COL STREIT: Thank you. We might just continue then, Colonel, to the next part.

MS McMURDO: So, Colonel, you're amending the statement that's going to be tendered here at the same time as you're taking us through this?

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	COL BROCK: Say that again, sorry, ma'am?
5	MS McMURDO: Are you amending the statement?
	COL BROCK: I'm amending these, I'm initialling these on your copy provided to me.
10	MS McMURDO: Thank you very much.
	COL STREIT: Do you need another pen?
	COL BROCK: Yes, I think this one's – I've got one.
15	COL STREIT: So where to next?
20	COL BROCK: Look, there are quite a few, so at the risk – we'll proceed if it's best for you. At the bottom of page 22, paragraph 23(b), it begins with, I think, "Reference Q". That should be "Reference P".
20	COL STREIT: Reference P.
	COL BROCK: That's correct.
25	COL STREIT: Next?
	COL BROCK: Over the page, 23(c), it begins "Reference R". That should be "Reference Q".
30	COL STREIT: Reference Q.
	COL BROCK: The next line down, "Reference D" should – where "Reference S" is written, it should be "Reference R".
35	COL STREIT: Reference R, yes.
	COL BROCK: And subpara (e), "Reference", I think it says "T". That should be "Reference Q".
40	COL STREIT: You've made those changes on your statement?
	COL BROCK: Yes, I have.
45	COL STREIT: Thank you. What's next?

COL BROCK: Look, in the italicised narrative of paragraph (e), on the first line it says:

5	<i>Under this SFI, those same requirements apply to the whole of 6 Aviation Regiment.</i>
	And the next line, where it's got, "Annex A of Reference A", that should be, "Annex B of Reference T".
10	COL STREIT: Annex B of Reference P?
	COL BROCK: Reference T. T for Tango.
15	COL STREIT: T for Tango.
	COL BROCK: The next correction is at paragraph 24. Where "Reference U" is written, it should read "Reference T".
	COL STREIT: Where to next?
20	COL BROCK: To page 27, paragraph 28(a), "Defence Health Manual Volume 3, Part 15, Chapter 3, Medication in Aviation Rated Occupations". In my report it says, "Reference DD", it should be "Reference CC".
25	COL STREIT: Next?
30	COL BROCK: Next line down, subpara (b) at the end of the reference, where it has "Reference P", it should be "Reference O".
	COL STREIT: Reference O.
35	COL BROCK: Subpara 28(c), at the end of that reference, where it is "Reference O", it should be "Reference N".
	COL STREIT: Yes.
40	COL BROCK: Subpara (d), "ADF Medication List for Aviation Rated Occupations", where it has "Reference HH", it should be "Reference GG".
	MS McMURDO: Sorry, was that GG?

COL BROCK: GG, ma'am, yes. Subpara (e), "DHM Volume 3, Part 15, Chapter 23", where it has "Reference DD", it should be - I think it's "Reference CC".

5 Paragraph (f), the ADF Medication List, there's an error there at the end of the first line of subpara (f). Where it says "para 27(d)", it should be "28(d)".

Further down in that paragraph, the same error, where it says "para 27.1(a), Ground trial and medical administration actions", that should be "28.1(a)".,

COL STREIT: Thank you.

- 15 COL BROCK: Subpara (g), "Annex 23A and 23B of Reference DD", that should be "CC". Over the page, subpara (k), in the middle of that, at the end of the link where it says, "At Reference EE", that should be "Reference DD".
- 20 Over to page 29, at spatial disorientation, paragraph 29.1, it says, "Definition of spatial disorientation from Reference FF". That should read "Reference EE".

COL STREIT: Thank you.

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COL BROCK: Paragraph 29.2, the same error is carried through; it should be "Reference EE". And then I think the last of the corrections are on pages 32 and 34.

30 COL STREIT: Turning to 32.

COL BROCK: Page 32. So paragraph 31.1(a), "Aviation Medicine for ADF Aircrew", and then there is a link. Where it says "Reference HH", that should be "Reference GG".

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COL STREIT: Yes.

COL BROCK: The line below that, subpara (b), "Professional ADF Aviators Reference Manual", "Reference Z" should read "Reference Y".

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COL STREIT: Yes.

COL BROCK: On the bottom of the page, at paragraph 32.1(a), where it – "Australian Army Aviation Safety Campaign Plan of 15 May". And

then there is an Objective reference, it says, "Reference LL". That should be "Reference KK".

And the line below that, "Army MAO AM Directive 04 of 24,

5 Implementation of the Australian Army Safety Plan", and then there is an Objective reference, and "Reference MM" should be "Reference LL".

COL STREIT: In relation to the Reference KK, can you just repeat that amendment again, please?

COL BROCK: The line above that, 32.1(a), "Australian Army Safety Campaign Plan of 15 May", and then there's an Objective reference.

COL STREIT: I see.

COL BROCK: That should read "Reference KK".

COL STREIT: Thank you.

- 20 COL BROCK: In my report it says "Reference LL". I think the last of the corrections are on the next page, paragraph 34.4. In the second line of 34.4, "The duties of an AVMO supporting an ASIT are described in" where it says "Reference OO", that should be "Reference NN".
- 25 Paragraph 34.5, "Annex 4A of Reference OO", should read "Reference NN". And hopefully the last one is at paragraph 35.1, in the body of that paragraph, "Reference OO" should read "NN".

COL STREIT: Thank you.

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COL BROCK: The last one I think is paragraph 33 – page 33 of 39, at the top of the page, subpara (c), "SI (AVN) OPS ED", where it has "Reference NN", that should be "Reference MM".

35 COL STREIT: Can you just repeat that again, sorry?

COL BROCK: So on page 33 of 39, at the very top, subpara (c), "SI (AVN) OPS ED 6".

40 COL STREIT: Yes.

COL BROCK: There's an Objective reference in my report, it says, "Reference NN". That should be "MM".

45 COL STREIT: Thank you. Does that conclude the changes?

COL BROCK: I think that's all of them. I apologise for this. We had a formatting problem at the time and I have only just detected it in the last few days.

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COL STREIT: No, that is no problem. It's a very comprehensive statement with a number of annexures and references. If during the course of your evidence you detect another formatting error, we'll just make the correction at that time.

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COL BROCK: Thank you, Counsel.

COL STREIT: Ms McMurdo, may I have one moment, please?

15 MS McMURDO: Yes, certainly.

COL STREIT: Ms McMurdo, one of the references that COL Brock provided the Inquiry as Annexure E, Reference P, it is a substantive document, some 600 pages long. It's not before you. I have it on a USB to tender with the Colonel's statement, so I now do so. I seek the tender of COL Brock's statement of 3 March 2025, comprising the reference list on pages 1 to 3, attached to his statement, and Annexures A, B, C, D, E, F, as described on page 39 of his statement.

25 MS McMURDO: The statement of COL Brock, together with the list of references and annexes at pages 38 and 39 of his statement, is Exhibit 188.

> COL STREIT: Thank you. So I don't misplace it, can I provide the Inquiry Assistant the USB, which is Annex E, Reference P.

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MS McMURDO: And Exhibit 188 includes the USB which is Annexure?

COL STREIT: Annex E, Reference P.

MS McMURDO: Annex E, Reference P. Thank you.

#EXHIBIT 188 - STATEMENT OF COL BROCK WITH 40 **REFERENCES, USB, AND ANNEXURES**

COL STREIT: COL Brock, what I would like you to do now is perhaps close the folder that you have of the working copy of your statement 45 you've brought today, and we'll put that to one side for the moment.

Your statement which you have in front of you, Exhibit 188, will remain with you throughout the course of your evidence and, where it's necessary to refer to an annexure or a reference that's attached to your statement, I'll specifically identify the particular reference. And it's been tabbed for your assistance.

COL BROCK: Thank you, Counsel.

- COL STREIT: Can I begin with just identifying the method by which
 you have prepared your witness statement? You set that out on the first
 page, page 1, where in responding to questions contained in the
 section 23 Notice issued by the Inquiry, you've had access to appropriate
 Defence documents, the Defence Electronic Health System, you also base
 your statement on your knowledge and experience as an Army Senior
 Aviation Medical Officer, your knowledge and experience resulting from
 your appointment to the Aviation Safety Investigation Team by the
 Defence Flight Safety Bureau, and your previous experience as an Army
- 20 COL BROCK: That's correct, Counsel.

COL STREIT: We'll deal with some salient features of your background, history and qualifications. So, first, you are a legally qualified medical practitioner and you hold a national medical registration in Australia and a current unrestricted practising certificate. Is that correct?

COL BROCK: Yes, that's correct, Counsel.

30 COL STREIT: You are a member of the Australian Health Practitioner Regulatory Agency in the sense of having been issued a registration number by the Medical Board of Australia to practice medicine?

COL BROCK: Yes, that's correct.

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COL STREIT: Turning to page 2, your tertiary qualifications, you have a Bachelor of Medicine and a Bachelor of Surgery from the University of Queensland, a Diploma of Aviation Medicine from the Royal College of Physicians in London, a Master of Science and Occupational Medicine from the University of London, a Diploma from the London School of Hygiene and Tropical Medicine. You have a Fellowship in Aerospace Medicine from the Australasian College of Aerospace Medicine, and a Fellowship from the Royal Aeronautical Society. Is that correct?

45 COL BROCK: That's correct, Counsel.

COL STREIT: You started life as a Military graduate in Science from the Royal Military College Duntroon in 1972. Correct?

5 COL BROCK: That's correct. Sorry, I commenced serving at Duntroon in 1969, graduated in 1972.

COL STREIT: In those days, it was the case, wasn't it, that Duntroon was where you would complete a degree in some profession?

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COL BROCK: Yes. I did Science, Science and Military Studies.

COL STREIT: It was subsequent, later in time that the function of tertiary study transitioned from the Royal Military College Duntroon, at least for Army Officers, through to the Australian Defence College, ADFA?

COL BROCK: Correct.

20 COL STREIT: You served in the Australian Regular Army from 1969 to 1995, and since that time you have been a full-time member of the Australian Army Reserve Active?

COL BROCK: That is correct. SERVOP C until the beginning of this year.

COL STREIT: You're presently a SERCAT 5 Reserve Officer; is that correct?

30 COL BROCK: That's correct.

COL STREIT: And SERCAT 5 is an Army Reserve Officer who are required to perform a particular level of duty and training days on an annual basis; is that correct?

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COL BROCK: That's correct. I'm held against an Army Position Number in Headquarters Aviation Command, and I've been allocated 150 days for the year.

40 COL STREIT: You have served in the Australian Army, both Regular Army and Reserve, for 55 years. And during your Military service in Australia and with the Royal Air Force at RAF Farnborough you undertook specialist training in Aviation and Aerospace Medicine, extreme weather survival on land and in ocean, combat survival, Aviation accident investigation and Aviation human factors analysis. Correct?

COL BROCK: Yes, that's correct, Counsel.

COL STREIT: During the period 1995 to 1998, you were the Director of
 Aviation Medicine for the Civil Aviation Authority of Australia. That's correct?

COL BROCK: Yes, that's correct.

10 COL STREIT: There is more to you than medical knowledge and experience. You have also been a qualified Army pilot during your career; is that right?

COL BROCK: That's correct, yes.

COL STREIT: Most of your Army flying was in helicopters?

COL BROCK: Yes, that's correct.

20 COL STREIT: You've had limited experience in flying civilian light aircraft and you no longer maintain civilian flying currency?

COL BROCK: I no longer maintain Military flying currency either. Thank you.

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COL STREIT: But you do undertake some Military flying as a passenger and observer, and in simulators from time-to-time. Is that correct?

30 COL BROCK: Yes, I do.

COL STREIT: What's the reason for that?

COL BROCK: That's to maintain my awareness of updated technology,
 handling characteristics of the platforms, configuration, role and the environment of the specific platform.

COL STREIT: You also have a role, and have had a significant role for many years, as an Aviation accident investigator. Is that right?

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COL BROCK: Yes, I have. Thank you.

COL STREIT: You've had experience in analysis of head injuries and other severe trauma, aircraft crashworthiness and survivability, as well as

the evaluation of safety equipment such as restraint systems, flight crew helmets and other Aviation Life Support Equipment. Correct?

COL BROCK: That is correct, yes, Counsel.

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COL STREIT: In past Aviation accidents, both civil and Military, you have assisted forensic pathologists with the interpretation of Aviation accident-related injuries.

10 COL BROCK: Yes, that's correct.

COL STREIT: You regularly participate in post-mortem examinations of those deceased because of aviation, rail, shipping and other transportation accidents and other traumatic causes of death, as well as immersion and environmental exposures. You're familiar with the work of forensic pathologists, toxicologists, forensic laboratory scientific services and the Disaster Victim Identification process conducted by the state police services.

20 COL BROCK: Yes, that's correct, Counsel.

COL STREIT: You have served overseas on operations with the Australian Army as a Military doctor, including deployments in East Timor, Papua New Guinea and operations in Iraq and Afghanistan.

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COL BROCK: Yes, that's correct.

COL STREIT: Over the last 25 years – and I'm looking at paragraph 3.8 of your statement – you've supported many Coronial Inquests as an expert witness to assist State Coroners in those proceedings investigating the deaths of persons who have been injured or killed in aviation, maritime and rail accidents, and for 20 years you've provided the Queensland Water Police, and other state police, and the Australian Maritime Safety Authority with specialist technical support in land and oceanic search.

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COL BROCK: Yes, that's correct.

COL STREIT: Paragraph 39 you identify that when asked you've provided Aviation Medicine technical support as a consultant to the Australian Transport Safety Bureau, and before that, the Bureau of Air Safety Investigation. Correct?

COL BROCK: Yes, that's correct, Counsel.

45 COL STREIT: You have participated in approximately 150 civil and

Military Aviation accident investigations throughout your Military and medical career. Correct?

COL BROCK: Yes, that's correct.

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COL STREIT: This includes accidents in Australia and overseas countries and whilst on Military and peacekeeping operations.

COL BROCK: Yes, that's correct.

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COL STREIT: At pages 4, 5, 6 and 7 you set out the various - - -

MS McMURDO: Paragraphs 4, 5, 6 and 7, is it, or pages?

15 COL STREIT: Pages.

MS McMURDO: Thank you.

- COL STREIT: You set out the various roles and responsibilities of a 20 Single Service Aviation Medicine Adviser-Army, the Civilian Aviation Medical Officer duties, the Military Aviation Medical Officer duties, Senior Aviation Medical Officer duties, and how they interrelate. Correct?
- 25 COL BROCK: Yes, I have.

COL STREIT: Now, I won't go through those duties, they're there for the Inquiry and Counsel representing to read. Can I just ask you this, as I understand your evidence contained in those pages, is essentially your role 30 as a Senior Aviation Medical Officer 2022/2023 within Aviation Command assumes the vast majority of those duties that you've identified earlier by reference to the Civilian Aviation Medical Officer, the Army and a Standard Aviation Medical Officer working in Defence?

35 COL BROCK: That's correct. The only thing that's changed at the beginning of this year, the decision was made because of the workload, was to split the SO1 Aviation Medicine - SO1 AVMED is the acronym split that from the SSAMA-A - Single Service Aviation Medicine Adviser-Army – decouple what was synonymous, that I perform both 40 duties.

> So at the beginning of this year, when I changed to SERCAT 5, I retained the SSAMA appointment and a non-SAVMO sits in the appointment as SO1 AVMED within Headquarters Aviation Command.

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COL STREIT: That separation out of those responsibilities and roles is as a result of the workload?

COL BROCK: Essentially, yes. Prior to that, I was the SO1 and SSAMA, but we had lost several trainees and specialists over the period 5 2022 to 2023. We lost three of the trainees of senior specialists. So I had to actually do three jobs until the decision was made to split them. COL STREIT: So in the role of the Single Service Aviation Medical 10 Officer, or the SSAMA, in that role, who did you report to directly? COL BROCK: In that role, I report upwards to the MAO and downwards, or laterally to the CO of the Institute of Aviation Medicine. 15 COL STREIT: So in that role, the Single Service Aviation Medical Adviser, there's a reporting line to the Commanding Officer of the Royal Australian Air Force Institute of Aviation Medicine? COL BROCK: Yes, there is. Mostly to do with single service policy, 20 Aviation Medicine Policy. COL STREIT: When you say there was a reporting line up to the MAO, that's the Military Air Operator? 25 COL BROCK: That's correct. COL STREIT: That is the Commander of Aviation Command. COL BROCK: Yes, that is. That line is in place due to requirements 30 under the Defence Aviation Safety Regulations, DASR MED. COL STREIT: Just quickly in relation to the role and responsibility of a Civilian Aviation Medical Officer. You've listed those out on page 6, commencing at paragraph 7.8. You'll see at 7.8(e) you say: 35 A Civilian Aviation Medical Officer is expected to advise on aviation and medical factors associated with the general aspects of flying operations, such as fatigue and work/rest cycles,

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of flying operations, such as fatigue and work/rest cycles, standards of aircrew accommodation, nutritional standards, physical conditioning for role, control of noise, toxic and radiation hazards, control of communicable disease, health promotion.

In relation to those matters you have listed at 7.8(e), are they replicated somewhere in the role of a Military Aviation Medical Officer or Senior Aviation Medical Officer?

5 COL BROCK: They are implied, that a SAVMO, a Senior Aviation Medical Officer, we only have Military Senior Aviation Medical Officers. So the pathway to a Senior Aviation Medical Officer is through Civilian AVMO or Military AVMO, which the duties are similar. It's quite complex, I know. But it's implied that a SAVMO could be expected to advise on those aspects that are noted in 7.8(e).

The only thing is that this is a definition from the Defence Health Manual. The reality is that all of our Civilian AVMOs are contractors and their scope of practice, whilst this list is exhaustive, their actual scope of practice is considerably reduced. But nevertheless, a Military SAVMO could be expected to advise on those various categories of advice that you allude to in 7.8(e).

20 COL STREIT: The Inquiry understands that in the first half of 2023 that 20 there was a Civilian Aviation Medical Officer at Holsworthy Barracks who provided advice and support to 6 Aviation Regiment. Is that your understanding?

COL BROCK: That is correct. He is a contracted Joint Health Command AVMO.

COL STREIT: So given the duty list that you've identified on page 6, one of the duties for that particular individual or medical doctor is, as required, to provide advice on aeromedical factors associated with the general aspects of flying operations such as fatigue and work/rest cycles, for example?

COL BROCK: If asked, he would be able to assist with some of that, in conjunction with other health professionals.

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COL STREIT: So this question you may not be able to assist the Inquiry with a response – and if you can't, please say so – but to your knowledge, in the first half of 2023, although the duties you list for a Civilian Aviation Medical Officer are as set out, is the reality that some of those duties are really reactive? So, in other words, if the medical doctor isn't asked for advice about fatigue-related matters, then they're not involved in that process within the unit?

45 COL BROCK: That's partly true. Civilian AVMOs, Military AVMOs, they're the lower tier. They are doctors delivering health treatment,

advice treatment, and management in a health sense as a doctor. Some of that will surface with some, as patients, in the context of perhaps fatigue, sleep disorders and the like. So that is the main role of an AVMO, Military or contracted.

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Just to put it in context, the major part of day-to-day business as usual healthcare for aircrew and non-aircrew is delivered in our Regiments by Joint Health Command civilian contracted AVMO. They do the vast bulk of health delivery. And that includes day-to-day – all manner of presentations, including sleep disorders, for example.

That's the level that they would usually work at. The higher levels here, whilst it's defined in the definition provided in the Defence Health Manual, it would be unusual for a civilian AVMO to be expected to advise a Commander about standards of aircrew accommodation. Whereas talking about nutritional standards may be a little bit on the work/rest cycles, not control of noise. But doctors working at that level would be doing referrals and checking on hearing loss as a clinical presentation.

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COL STREIT: Do you know if in the first half of 2023, whether the civilian Aviation Medical Officer was part of the Command Team at 6 Aviation Regiment? So attending Command meetings, those types of things?

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COL BROCK: The short answer is yes, but to a degree. The usual relationships between a civilian contracted AVMO and a CO relate to -I know the particular doctor, and in our Regiments, the AVMOs, they're all civilian, always attend unit and individual Welfare Boards, for example. So that's where a major part of their relationship rests because of the confidentiality issues. So they are major participants at that level. Then there will be cases where a doctor may call a CO directly about concern for a patient regarding their health issue.

35 COL STREIT: Go to page 8 at paragraph 7.14. In your role as the Single Service Aviation Medical Adviser-Army and the Senior Officer Grade 1, Aviation Medical Officer, you reported to the Director of Operational Airworthiness and the Commanding Officer of the Institute of Aviation Medicine Royal Australian Air Force, and Director Army Health?

COL BROCK: Yes. I have reporting relationships to those that – with respect to DOPAW, the position at the time. My position right now, I don't report to DOPAW. But the SO1 Aviation Medicine, since the

decoupling occurred at the beginning of the year, sits in the DOPAW line of effort, and he was my boss.

- But additional to that, yes, I did report to I had a relationship with the
 CO of the IAM. And the Director of Army Health is also another frequent contact that I have, particularly in regard to the training and the development of the Military AVMO workforce or structure.
- COL STREIT: In relation to performance reporting, therefore in that role as the SO1 Aviation Medical Officer, the Director of Operational Airworthiness, is that the person who is responsible for performance reporting of you or somebody who was performing your role?
- COL BROCK: Prior to that, my reporting was done by the Commander Aviation Command. But as it is now, DOPAW would report on the incumbent SO1 Aviation Medicine. And the Commander, my appointment now as Command Adviser SAVMO, I report directly to – as a SERCAT 5 Medical Officer in the Command, I report directly to the Commander Aviation Command.
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COL STREIT: In your experience in 2022/2023, was the process that if the Director of Operational Airworthiness wished to receive some advice about fatigue management policy that was being considered for Aviation Command, including transitioning from the existing fatigue management framework to the new framework under the Defence Aviation Safety Regulation Fatigue Management, in that context does Director Operational Airworthiness come to you for advice or somebody who's sitting in your shoes in the Command?

- COL BROCK: He could. But this is very complex. Years ago and I'm talking in the last, say, going back 10 years if we looked at the role of a Senior Aviation Medicine practitioner, things like fatigue management, the first cab off the rank would have been an Aviation Medical Officer. But in the last 10 years there has been a big shift for advice to Command with respect to fatigue management at an enterprise level, the shift has been away from Aviation Medicine into the human factors and now we talk about human performance.
- So we have other allied health practitioners, and some of them would argue that they're not even health practitioners, are now assuming that role. They're specialising in large scale sleep management programs, for example, in the airlines, in our civilian airlines. We haven't got to that stage of maturity in the Army, and probably neither the Air Force nor the Navy for that matter. This is all the Army as an enterprise itself. But

Qantas and Virgin, for example, have mature fatigue management systems that track all of their aircrew very, very accurately.

At the moment, the trend is now that Army Aviation, psychologists,

- 5 particularly, and not just psychologists, but people who specialise in fatigue management now exist in the human performance space. In the Air Force, Human Performance and Safety have specialists that they've brought in, either as Reservists or on contract, to deal with, for example, fatigue management. So it is no longer the domain of Aviation Medicine.
 - So to answer your question, Counsel, and I apologise if I've deviated a bit, the DOPAW could choose he would put fatigue management fairly and squarely under his probably SO1 Aviation Safety and he could choose whomever he decides would give him the best advice on a fatigue management program.

I think the long story is we are now at a stage where everything in Army relating to fatigue Army Aviation, until very recently, has been driven from the bottom up. At doctor level, for example, dealing with sleep disorders. Aviation Medicine has had a very limited role in doing anything else other than managing sleep disorders as a health condition and maybe providing advice. That's what I call bottom up.

- The introduction of the FRAT probably saw a shift there where, still in Army, Army flying, I think we are stuck at Commander, Regiment Commander, and lower levels, which I still think is bottom up in terms of approaching and managing a fatigue management program. But we need to shift above that. We have to. We don't have the tools in our armamentaria to manage fatigue management at, say, the mature level that I'd expect to see in an airline, where we track everyone's fatigue levels very accurately. We don't do that. I don't think any of the services do yet. But that's where we're going.
- And even as late as last week the Institute of Aviation Medicine hosted an external adviser on sleep, and even in that forum the specialist, he implied he wanted to keep sleep management away from being over-medicalised and managed more as a human performance in the human factor space but at a higher level as well. So top down as well as bottom up. If that makes sense.

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COL STREIT: Given your significant experience in Aviation Medicine over many years, and particularly within Army, can you assist the Inquiry understand whether is it your view that Aviation Medical Officers should have a role to play in determining fatigue management policy; that is, they

should be engaged in that process and not, it would seem, substituted for other opinions?

COL BROCK: Counsel, I think the answer to that is that we do have a role, but we no longer have the lead. Also, for example, in spatial disorientation, there's more and more of that is being managed by other specialists as well. But to answer your question, yes, I believe we still have a very important role in terms of the human factors element of that. So do Aviation or organisational psychologists. So do sleep specialists or fatigue management.

I should be more clear, fatigue management specialists are out there. They work in human factors. They're not doctors – very few of them are doctors. So, at a doctor level, we'll always manage sleep disorders as part of a fatigue management program. It's like the FIC principle, or the Fundamental Inputs to Capability, we are a very useful source of information, knowledge and experience, but I don't see us, in the future, as taking a lead on this.

But to answer your question, yes, it would be wise to use any health professional that's available to you directly to provide, in the Command – and I shouldn't forget to highlight that DOPAW, for example, has also got the capacity to go directly to the Institute of Aviation Medicine to get advice as well as to go to the human factors people inside DFSB. There are a number of agencies there.

And perhaps the only other one that we use a lot, but probably not in the sleep space now, is DSTG, Defence Science and Technology Group. This is a complex issue and obviously the MAO owns the responsibility to deliver or to see that a fatigue management program is in place. But the way in which a successful program is achieved is multidisciplinary. It's not confined to medicine.

- It's not confined to psychology, and it's not confined to perhaps human performance and optimisation. It's a healthy mix of these specialisations that are all integrated to produce a mature fatigue management program that, as I said, encompasses bottom up stuff from good health, good nutrition, good mental health. All those inputs come from separate health practitioners and allied health practitioners.
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Even, for example, we have other risk reduction requirements to meet in chronic musculoskeletal injuries. These all indirectly contribute to fatigue but we have a problem across the Army with chronic musculoskeletal injury management. And the services, we are looking at developing ways to do risk reduction in that realm as well. That has an impact on fatigue.

So what I'm saying is really the top down solution doesn't rest with one specialisation. It's multidisciplinary. And Commanders need that level of support because they don't have – the Commanders that I'm talking about, Basimant Commanders are the MAO does not have that level these

5 Regiment Commanders, even the MAO does not have that level, those tools, available to them readily inside their formations.

COL STREIT: It belies Army, through Aviation Command, to incorporate Medical Officers within decision-making about fatigue management policies because it's the Medial Officers that are certifying all pilots fit to fly, aren't they?

COL BROCK: That's correct.

15 COL STREIT: So, ultimately, involvement of Medical Officers, given that the Medical Officers are the only ones making that assessment on an individual pilot involving senior Medical Officers within discussion of fatigue management policy and what might not work, that would only be capability enhancing, wouldn't it, as opposed to be a detraction?

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COL BROCK: Yes, you're correct. I think the difficulty that we have at the moment though, is Medical Officers – for example, a Military AVO, Aviation Medical Officer, is very junior. A civilian Aviation Medical Officer is contracted. They might be quite experienced. They see health presentations that may be related to fatigue, or they see presentations of conditions that may lead to fatigue, and they have to manage them.

And they may manage them completely in isolation to a Commander or an Authorising Officer that gets to see the FRAT, for example. Where that might be the only evidence – a doctor only sees someone infrequently. So Medical Officers don't, for example, get to see the FRAT. They have no idea.

If someone fills out a Fatigue Risk Assessment Tool, and completes it,
submits it and it flashes up red, for example, on a particular day, there is no way that a Medical Officer would be aware of that. If I step up to my position as the SSAMA, I am a Confirming Authority. So in the Army we're the only service where a next level SAVMO will review the policies to review every Army aircrew medical on a pilot, an aircrewman or a controller, 20 Regiment UAS controllers.

We have a second order review. When I look at a medical, I will usually look back quickly at maybe the last five years, but I'll look with interest before I confirm. "Confirm" means I actually finalise the certification. The AVMO that did the medical has authority to issue an interim

clearance to fly, and the medical comes to me through the e-health system to confirm. It only goes to one other doctor at the moment. She is a Reservist, a SAVMO at Oakey.

5 And then when we do our confirming process, I take it upon myself to look through, particularly the last 12 months, to see if there's anything that flashes up of concern. The big ones have been mental health but sometimes fatigue is mentioned. I will also add that from time to time an AVO will ring me directly and ask about a case, you know, to get some advice about managing someone who may have comorbidities, mental health, fatigue, maybe musculoskeletal injuries or something like that and to seek advice about whether or not they should recommend them to continue flying and issue you them an interim medical certificate while the case waits to get to me.

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So, if I may, in the context of us dealing with fatigue, I think the simplest way to explain it to everyone is that many health practitioners, doctors and others get – psychologists, get a little bit of the picture, but one gets it all in terms of an individual. So we have mental health is exploding in terms of presentations.

COL STREIT: Perhaps, can I just ask you this, because this might assist? In relation to what you mentioned before about everyone having a little bit of the picture, noting that the Aviation Medical Officer is certifying the aircrew, whether pilot or aircrewman, are fit to fly, and then that's reviewed by you or somebody in your shoes, would it not be sensible for you or the medical officer to have access to the Objective file for that member in relation to their Fatigue Risk Awareness Tool results?

COL BROCK: The short answer to that, Counsel, is yes, it would be beneficial. But it might also be if there's an Aviation psychologist in the Command, they might have a view that they should be involved and maybe observing that as well. Because as it is now, if a FRAT is submitted or is completed, at the moment, as I said earlier, we will have no awareness of that, other than knowledge that it is a mandatory requirement now for people that come to work to fill out a FRAT. But we don't get to see it, nor do we have any awareness of where that FRAT would be other than maybe in a folder, file, in a top drawer and that perhaps it will go to an Authorising Officer when required to as part of a flight authorisation process.

COL STREIT: Can I take you to page 9 of your statement? This is where we deal with matters concerning CAPT Lyon, LT Nugent, WO2 Laycock and CPL Naggs insofar as your review of their medical files are concerned. First, in relation to CAPT Lyon, you say you "did not

know CAPT Lyon personally". You were aware generally, of his position within 6 Aviation Regiment. You note that on a number of occasions, and you list the dates, in your capacity as the SAVMO. And SAVMO is the – can you just explain that acronym again, please, Colonel?

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COL BROCK: SAVMO is a Senior Aviation Medical Officer.

COL STREIT: Thank you. In relation to your role as the SAVMO and Confirming Authority, you issued a form, which is called a PM532, in order to validate medical certification for CAPT Lyon to fly for the next 12 months. That's correct?

COL BROCK: That's correct, yes.

15 COL STREIT: So the last time you issued a PM532 was on 16 July 2023 certifying CAPT Lyon – sorry, providing a valid medical certification for CAPT Lyon to fly for the next 12 months.

COL BROCK: That's correct.

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COL STREIT: You noted on a review of CAPT Lyon's medical file – and I don't propose to go into any detail at all in relation to any of the aircrew's medical files in this forum. What I do propose to ask you is, as a consequence of your review of CAPT Lyon's medical file, he was, wasn't he, subject to a restriction concerning flying duties only insofar as he was fit for flying duties as a pilot with another pilot rated on the same aircraft he was flying?

COL BROCK: That's correct, Counsel, yes.

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COL STREIT: So, in short, CAPT Lyon was certified fit to fly, as at 16 July 2023, an MRH-90 with another MRH-90 pilot. Correct?

COL BROCK: That's correct.

COL STREIT: But he did not have a certification to fly another aircraft where that other aircraft would mean he was the sole pilot in that aircraft. Correct?

40 COL BROCK: That's correct.

COL STREIT: Now, in relation to LT Nugent, you say at paragraph 10.1 you did not know LT Nugent personally. You were aware of his position within 6 Aviation Regiment. You, on one occasion, namely 24 April 2023, in your capacity as the Senior Aviation Medical Officer Confirming

Authority, issued LT Nugent a PM532 in order to validate his medical certification to fly for the next 12 months. Correct?

COL BROCK: Correct.

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COL STREIT: And so that provided LT Nugent medical clearance, as from 24 April 2023, to fly as an Army pilot for the next 12 months?

COL BROCK: That is correct, Counsel.

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MS McMURDO: Aviation Medical Officers clearly have the role in certifying pilots as fit to fly, I appreciate that, and that's clear what your role is there. I seem to get the impression too, from evidence we've heard, that sometimes soldiers will come and see the Aviation Medical Officer for colds, sore throats, conjunctivitis, this sort of thing as well. Is that right? There are clinical duties that are performed too?

COL BROCK: Yes, that's correct. In fact, at Regiment level in a Joint Health Command Heath Centre, Garrison Health, AVMOs, which are almost exclusively for Army units, Joint Health Command contracted AVMOs. That's their bread and butter. All aircrew are required, mandatorily, to see an AVMO for any health condition if they hold a specialist employment category that enables them to fly. It's called a spec.

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MS McMURDO: I see. So they have to use a medical - - -

COL BROCK: They must.

30 MS McMURDO: The Aviation Medical Officers. They must use the Aviation Medical Officers?

COL BROCK: Yes, they must, ma'am.

35 MS McMURDO: And the reason for that is, it's essential that Defence Aviation Authorities are aware of the health of their pilots and aircrew?

COL BROCK: Yes, ma'am that's correct. An Aviation Medical Officer, one of their most important functions in terms of certification is to assess any health condition in the context of its aeromedical significance to the safety of flight.

MS McMURDO: Does that mean aircrew should not have private doctors outside the Military medical system?

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COL BROCK: That's correct. Yes, ma'am.

MS McMURDO: I see.

5 COL BROCK: That's not to say that it doesn't happen, because we know it's happening – not just aircrew, non-aircrew, ADF members generally, for a range of reasons. Aircrew we particularly worry about because – we understand why it happens, because there's a big misalignment of trust. Whether or not aircrew regard their capacity to fly 10 jealously and it's sacrosanct, it is their life.

This is not just Military pilots, this is aviation generally. But Military pilots, they have to have a medical employment category to enable them to do their general duties and deploy, and a specialist employment category to enable them to fly. So it's double jeopardy for them. If they have a health condition, hypothetically, they feel, should it be disclosed, it might enable a higher level review and possibly altered medical certification outcome, including grounding for a while, or even permanently.

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MS McMURDO: So I was going to ask you whether you had access to civilian e-health records? But, I guess, from what you've said, you shouldn't need to. And I suppose if someone was deliberately going outside the Military medical system, then they're probably not going to consent to their e-health records being shared.

COL BROCK: That's correct, ma'am. In the Military, we have no authority to even seek their Medicare records unless they - - -

30 MS McMURDO: Consent.

COL BROCK: Consent. In the context of an accident, deceased, we still don't have authority to access Medicare in relation to a deceased member. The ATSB, Australian Transport Safety – so what I should say is, DFSB in the context of a crash, doesn't have, as far as I know – we've tested this a little – we have no authority to seek private health records from Medicare. The ATSB do have that capacity through the *Transport Safety Investigation Act*, and they have that pathway available to them and it's protected for safety investigations only. So the consequence of aviators, any Military person really, going outside the health system, whilst they have a Medicare entitlement, they are reminded that they should use it only in an emergency.

It's the preservation of our situational awareness so that we understand their health to the very best that we can, so that we can give them the best

healthcare and best health outcomes. That's aspirational, but the real world is that there's been a loss of – not only just a loss of trust, but loss of ease of access or access to Garrison Health Services particularly for aircrew.

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AVM HARLAND: I was going to ask you about that, actually, about what would your opinion be on access to medical services? Like, how many days would somebody be able to wait, or if they have a condition, are they able to get access to an AVMO easily?

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COL BROCK: Sir, it varies. If it's urgent, they will get same day. As long as the Health Centre Manager knows that there's an urgent condition or a Commander, a CO, needs a quick decision about someone's fitness to fly, or availability, or to deploy, if it's urgent, they will get seen. But in the general scheme of things for more chronic conditions, the waits vary enormously around the country and by service, and there are hot spots.

AVM HARLAND: And so we're talking days or weeks for waiting?

20 COL BROCK: Weeks. Sometimes even longer, sir.

> AVM HARLAND: And how would that play out in terms of somebody potentially being motivated to go and seek civilian medical care?

25 COL BROCK: It would increase their frustration the longer they wait. They can elevate it. But many are reluctant to perhaps get their work supervisor or even their CO to intervene to fast-track an appointment. It can be done, and it shouldn't have to be done, but there are mechanisms. But I would think many members would be reluctant to pull 30 that trigger, to say, "I need to see someone urgently". And that's a problem. So the consequence of that is increasing frustration would drive some to go outside.

AVM HARLAND: Yes. Or carry a condition, potentially.

COL BROCK: Correct. Yes, sir.

AVM HARLAND: Rather than get it diagnosed and treated.

40 COL BROCK: Yes, that's true.

> AVM HARLAND: So that's not a very good recommendation, is it, in terms of medical healthcare for aircrew?

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COL BROCK: No, it's not. I don't believe it would be unusual a very serious medical condition is concealed, non-disclosed and managed outside, completely independently and without the visibility of Defence. We have had cases in the past where that's happened. That's a safety risk and we don't want aircrew feeling that they have to do that and that they will disclose regardless of the consequence because they put safety first. But the reality is, sometimes that doesn't happen.

AVM HARLAND: Yes. Thank you.

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MS McMURDO: So just taking you back to what you were saying about the DFSB compared to the civilian investigation authorities, is that a power that you think the DFSB should have when investigating air accidents causing death?

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COL BROCK: Yes, ma'am, I think so. The time has come that we need to – we have had past experiences with, even non-aircrew, where if I can quote – I'll give you a typical condition years ago, not so now, was asthma. So we have, over many years, ADF has changed its policy with regards to asthma, so that it's not a medical condition of exclusion, and many asthmatics can enter the service and get service and have no problems, including flying, subject to some conditions around their surveillance and treatment and so on. Sorry, I've lost the - - -

25 MS McMURDO: Whether the DFSB should have access to medical reports.

COL BROCK: Correct. Sorry, thank you, ma'am. But years ago, I can remember a case that went to an Inquiry not dissimilar to this one. The Army Alpine Association investigated the death of a soldier who fell off a rockface in Yosemite National Park. I mean, it was Big Wall 2000 it was called. And it turned out that the unfortunate soldier that perished had been concealing asthma for many years through fear of had he disclosed it in the context of his service, that he would have been downgraded, made non-deployable, or perhaps even discharged.

So that's many, many years ago. It was in the 1990s. We have moved way past that now. But now I think mental health conditions, particularly, are conditions that are likely to be undisclosed in a Military context. So that if they're out being treated with significant medication, that would affect flying. Otherwise, the answer to your question is yes. I think it's critical that we have those same powers that the ATSB has where needed, not just routinely but when needed. Thank you, ma'am.

45 MS McMURDO: I'm thinking we should probably have the

mid-morning break now. So we'll just have a 10-minute break and resume in 10 minutes. Thank you.

5 **HEARING ADJOURNED**

HEARING RESUMED

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MS McMURDO: Yes, COL Streit.

COL STREIT: Thank you, Ms McMurdo.

15 Colonel, can I just take you to page 11, paragraph 12 of your statement concerning WO2 Joseph Laycock, Phil Laycock as you've referred to him. You say at 12.1 you did not know WO1 Laycock personally, although you were generally aware of his position within 6 Aviation Regiment. At paragraph 13.1 – sorry, is that correct, what I've just read?

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COL BROCK: Yes, that's correct, Counsel.

COL STREIT: At paragraph 13.1 you list the four occasions that, in your capacity as a Senior Aviation Medical Officer Confirming Authority, those times that you've issued a PM532 to validate WO2 Laycock's certification to fly. And the last of those occasions was 12 March 2023. Is that correct?

COL BROCK: Yes, that's correct.

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COL STREIT: So that means as at 12 March 2023 you certified, as a Confirming Authority, WO2 Laycock's medical certification to fly for the next 12 months.

35 COL BROCK: Yes, that's correct.

COL STREIT: Paragraph 13.5 you refer to WO2 Laycock's medical employment classification. You've identified a number of conditions above. But, ultimately, none of those conditions were considered to be aeromedically significant.

COL BROCK: That's correct.

45 COL STREIT: Can I turn to CPL Alex Naggs? At paragraph 14.1 of 45 your statement you say:

I did not know CPL Naggs personally, although I was generally aware of his position within 6 Aviation Regiment.

5 You reviewed CPL Naggs' Military employment classification as an aircrewman on three occasions. The last of which was 4 July 2023. Correct?

COL BROCK: Yes, that's correct.

COL STREIT: And on 4 July 2023 you certified, as the Senior Aviation Medical Officer Confirming Authority, CPL Naggs' medical certification to fly for the next 12 months; is that correct?

15 COL BROCK: Yes, that's correct, Counsel.

COL STREIT: Can I turn now to page 13, paragraph 16, matters concerning stereopsis testing in the Australian Army in relation to Army Aviation. You were asked at that question to set out any Army Aviation policy with respect to the testing/screening of aircrew for stereopsis at any stage of their career, including when the policy was introduced, what types of tests are administered and level of stereopsis pilots are required to have. And you were asked to annex relevant documents.

- 25 This area you've addressed up to page 17 of your statement and is a fairly dense aspect of your statement. So I propose to deal with it in summary form only. First, can I ask you just in broad terms to explain what stereopsis is?
- 30 COL BROCK: Stereopsis is a measure in optometry; that's the geometry of the eye and the way the eye creates images in focus. So there are a number of classifications of acuity that we can measure in the eye: near vision, medium vision, distance vision. And stereopsis is another measure of acuity. But it is a measure of our ability to focus on the summation of images from the left and the right eye from stereoscopic as opposed to monocular vision.

It can be measured and there are methodologies that are available in optometry now that can measure stereopsis as one of the many parameters of eye examination. And I've listed a number of others in paragraph 16.7. Stereopsis is but one.

COL STREIT: So, in short compass, stereopsis is the brain's ability to perceive depth and perception?

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COL BROCK: That's correct.

COL STREIT: And, insofar as testing that's conducted by the Australian Defence Force for applicants to undertake pilot training, is it

5 the case that stereopsis testing is now part of determining applications for new pilots?

COL BROCK: That is correct.

- 10 COL STREIT: And stereopsis, however, was historically not a specific requirement undertaken for applicants in their medicals when they apply to become a pilot in the Army. Is that right?
- COL BROCK: Prior to about August 2019, we did not measure
 stereopsis on any aircrew. Since then, we measure everybody that is an applicant for aircrew selection. We do not have a standard in the ADF, the Army, Navy or Air Force. None of the services have a specific standard which is like a go/no go or pass/fail. There is only one trade group at the moment in Air Force, the Air Refuelling Officers, AROs, who are subject to a standard in terms of their stereoscopic vision.

COL STREIT: Now, you explain page 15 and to some extent 16, the process concerning the test environment and the test procedure. Can I just ask you this question: noting that stereopsis testing is relatively – I think you said 2016?

COL BROCK: 2019, Counsel.

COL STREIT: 2019, I apologise. So I won't say new, but some six years - - -

COL BROCK: Recent.

COL STREIT: - - - recent. Noting that, was there a process undertaken to pick up those pilots who were already in the system, pick up those pilots and have them step through a stereopsis testing regime?

COL BROCK: If you mean retrospectively?

40 COL STREIT: Yes.

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COL BROCK: No, there was not. After 2019, they altered the eye referral and the form and then the capture of stereopsis was dependent on five-yearly medical when all aircrew are required to attend an ophthalmologist or a designated optometrist and have a full

comprehensive eye health check, and all of their parameters measured. So they were picked up ongoing, but not retrospectively.

So 2019 onwards, it was simply for those existing COL STREIT: aircrew. It was simply the case that when they had to undergo a five-year 5 medical, whenever that might be due, then they would also be subject to testing for stereopsis.

COL BROCK: That's correct. In fact, some have had several measures since.

COL STREIT: You deal with matters concerning CAPT Lyon, LT Nugent, WO2 Laycock and CPL Naggs concerning stereopsis testing, commencing on page 16. You say that:

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CAPT Lyon was tested on 8 March 2021.

That's correct?

20 COL BROCK: Yes, that's correct.

> COL STREIT: So is the Inquiry, therefore, to infer that that was when CAPT Lyon's five-year medical was due?

25 COL BROCK: Yes, that's correct.

> COL STREIT: You say:

> > And that the finding of 25 arcseconds is recorded in the PM086.

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So just in relation to arcseconds, what does that measure or represent?

COL BROCK: Look, it's a very small measure, but if you could imagine a 360 degree circle which is made up of many arcs, so when we break down measures of degrees into minutes and seconds, it is actually a 35 measurement but is a very fine distance that's detectable with specific testing. It's a geometric measure.

COL STREIT: What quantity of measurement would cause a concern 40 about a member of aircrew having an issue with stereopsis?

COL BROCK: Look, that's a very difficult question because even as recently as about three weeks ago, the Institute of Aviation Medicine hosted a team from the United States Air Force, an ophthalmology team. There's still no agreement about which – as it is, you can break

down stereopsis measurements into near, medium and distant.

5	We've only been concentrating on near. So the Randot test that's done by Recruiting or through the recruiting process only concentrates on near stereopsis -40 centimetres $-$ which as it turns out, has probably got minimal relevance to flying. So I think the consensus of the working group $-$ I wasn't able to attend it $-$ is that we are probably looking at the
10	wrong parameter anyway and should be looking at probably mid-distance, or certainly midrange stereopsis is more relevant to flying.
	MS McMURDO: Is this in respect of the night-vision devices?
	COL BROCK: This is in respect of all vision.
15	MS McMURDO: Yes. So we have heard some evidence that it's particularly relevant to the night-vision devices.
20	COL BROCK: Look, the night-vision devices, if you're talking about TopOwl, has a feature – or the consequence of the design of the balmet mounted display is that it can cause hyper storeopsis in the wearer
	And that's because of the interpupillary distance of the eyes relative to the distance between the two tubes is quite large and it's a geometric optical

this perception that, by looking through the helmet-mounted display when
the tubes are active, that the object of regard is closer than it really is – closer than it actually is.

phenomenon that results in the wearer developing or being subjected to

MS McMURDO: Yes.

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30 COL STREIT: And in terms of the arcseconds for stereopsis testing, is it a sliding scale? So it is the higher the number, the better stereopsis you have, or - - -

COL BROCK: It's the other way, Counsel.

COL STREIT: So the lower the number, the better the stereopsis you have.

COL BROCK: Yes, the better the stereopsis. Saying that though, it's still hard to relate that to real life in every condition. So 40 arcseconds was decided by the Institute of Aviation Medicine in advising the recruiters that that was probably ideal. And, unfortunately, from measurements in the same person through every couple of years, we often don't get concordance of results. So it's very much a problem about the attention to detail and the way the measurement is actually conducted as

much as differences within an individual from measure to measure. If you were to do 10 in a row, you might get a fair spread over, say, if you did 10 measurements over a couple of years, you may get a high level of concordance and you may not. And that depends on the individual and it also depends on the measuring technique.

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So there's a lot of thought now being given into how we better refine the real need for stereopsis, and does a high degree of stereopsis – is it indicative of better optically a better pilot? We don't know the answer to some of these questions. So not a lot of rigour.

The Institute of Aviation Medicine has been capturing the data, but nobody – other than Air Refuel Officers that fly in the tankers, the Air Force, no one else, even if the stereopsis reading, for example, say 40 is deemed to be normal. That if someone presents with a stereopsis of 120 arcseconds, that they're not taken out of the selection pool for aircrew unless they were going to be an Air Refuelling Officer. We don't fail them.

20 AVM HARLAND: Why is the Air Refuelling Officer differentiated?

COL BROCK: I think it's because of the specific task where you're getting a probe to enter the contact with an aircraft being refuelled and the technology that they're using to actually guide that manually, it's deemed to be more important.

AVM HARLAND: To have that depth perception?

COL BROCK: Yes. And as you're probably aware, sir, we're in the midrange that they're looking at that. Even though they may be doing it on a screen, they certainly do it live as well. So that's the only trade group that I know of – and I've checked this – that requires a standard to be applied. So if someone had, I think, 40 arcseconds is the minimum requirement, but if someone with 120 arcseconds would probably be not accepted for an ARO, they could go to another mustering.

AVM HARLAND: Yes. If I compare that to hovering a helicopter close to an obstacle, for example, how would that compare? Because we're talking about depth perception, and call me a layman here, but it seems like the same problem is being solved by the individual using a detection system, whether it be the ARO's detection system or the NVG at night or an ANVIS system at night.

45 COL BROCK: I understand what you're saying, sir. Look, in real life it 45 hasn't been a problem so far with hovering. Well, either that or the
individuals develop other ways of dealing with perhaps a lesser degree of stereopsis than another. But there are other parameters that we measure as well that might give us a clue to people's ability to fuse the images and have functional stereopsis that enables them to fly safely, especially close to the ground. But in the air, it's not such a problem in terms of its, as you say, close to the ground, hovering particularly at night. But the fact that we have not put a standard in place, I've had no reports of anyone struggling.

10 Training does self-select people out. So we may actually have lost people along the way, unknowingly, because they were struggling with hovering, for example.

AVM HARLAND: Formation flying, for example?

COL BROCK: Well, formation flying, yes, that's a good one. It could be relevant there, but Air Force have – I'd have to defer to them because they haven't put in a standard because they do a lot of formation flying. I think with helicopters, where you've got rotor discs involved – disc spaces – it's possibly something for the future.

But this is what this working group is now looking towards now, is what is a suitable functional level of stereopsis for the type of flying we're doing? Trying to match it to a particular type of platform and whether or not a higher degree of stereopsis increases safety or increases a better outcome for flying training? And that, we just don't have that information.

So the Institute has been saving the recorded stereopsis measures as

- 30 people come through recruiting because all initial aircrew categories, special employment categories, are issued by AVMED. So they capture the data and store it, but at the moment they're not doing anything with it.
- AVM HARLAND: I think that probably answered my other question because I was going to say if stereopsis isn't an issue, why test for it, and why record it? But it sounds as though this is really for a longer term research.
- 40 COL BROCK: We're banking those results, but I don't think anyone is 40 quite sure how we would use them ahead. Maybe looking back, perhaps, but as I said, the recent visit by the United States Air Force – I think the suggestion that I saw in the Minutes a couple of weeks ago was that we may actually need to be looking at another measure of stereopsis; not in the near vision, but in perhaps the mid-range vision.

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AVM HARLAND: Are you aware if the United States Forces have a stereopsis standard that they apply to particular aircrew?

5 COL BROCK: I believe, yes, they do, but I don't think they apply it 5 very rigidly. But I stand corrected on that. I don't believe the US Army applies one rigidly.

 AVM HARLAND: One final question before I hand back to COL Streit. If you had a poor appreciation or ability to be able to manage your stereopsis, for want of a better way of putting it – so you had a poor stereopsis performance as a pilot – would that increase your fatigue over time if you were operating in that condition and adapting to it?

COL BROCK: It could if you were – because part of this process is
 cognitive, so if that became more of a task and it required more cognitive capacity, the trade-off may be that something else is suffering. It becomes a sub-threshold distraction if you're devoting more effort to a task that does require intricate stereoscopic vision to the extent that you've got to put more effort into it, that something else might suffer. You know, we've only got a finite amount of capacity.

But, again, I think that's probably research level work that's been done, but it hasn't been applied, to my knowledge. We've had no feedback in Army since I've been working in Army as a doctor to suggest that stereopsis, or lack of, has been responsible for a crash. We've certainly had plenty of – especially in the days when we were flying the Kiowas – many crashes close to the ground, but I can't think of one that was probably related – on investigation, was related to a question about stereopsis, even at night.

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AVM HARLAND: Thank you. COL Streit.

COL BROCK: It might be just lucky, but we don't have any evidence – hard evidence – to say we should be honing in on it at the moment. That's not to say that we might be able to do better.

AVM HARLAND: That's great. Thank you.

40 COL STREIT: CAPT Lyon was tested on 8 March 2021; the finding of 40 25 arcseconds. So he's really over-achieving if a good result is 40 arcseconds.

COL BROCK: Well, in that measurement, but I think if he was to go back maybe a year later, or even two weeks later, he might not have scored 25, he might have got 40 or 60. This is the variability within

individuals that we don't know – we know exists, and we're not sure how/why it should change, other than the rigour in which the test is done to measure it. That's just as important, which is by the observer, rather than by the individual. So the accuracy of measurement is also – and the type of test we use – there are several types of tests for stereopsis. We've chosen one that Defence thought was reasonable and probably easily done in a health centre.

10 COL STREIT: But this test for stereopsis is only occurring every 10 five years, when they do their five-year medical.

COL BROCK: That's correct.

15 COL STREIT: Is there any reason why it was pegged at five years and it's not something you would do more regularly?

COL BROCK: I don't think I can give a definite answer to that.

- Five years in the recent past, every five years one reason is probably because it aligned with CASA certification. So Class 1 Medical
 Certificate holders in CASA, Civil Aviation Safety Authority, require a five-yearly ophthalmology assessment, or designated optometrist. That could be one reason. The other one is that refraction over five years in most normal people doesn't change much.
- We are testing colour vision every two years now. But capturing the stereopsis, because we haven't put a lot of rigour into what are we going to do with the information anyway, I don't think there's been any appetite. There is a consequence of setting a standard with stereopsis, is it's potentially another parameter to knock more people out of the pool. And unless you've got very hard evidence to say you should be doing something – sometimes it's one of the hazards of doing any medical test or measurement; the hazard is what do you do with the result? If you haven't got an absolute go/no go or decision associated with the outcome of any test, what are you going to do with it?
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So that's why we're banking those results at AVMED, because if we were to set a pass/fail level, we'd probably be knocking out people unnecessarily because we haven't got any evidence to say they would be high risk in flying, or at risk of failing training.

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MS McMURDO: Do you know if in the civilian context stereopsis is looked at?

COL BROCK: It's not done, ma'am.

MS McMURDO: Not looked at for anybody at all?

COL BROCK: No, not to my knowledge.

5 MS McMURDO: Thank you.

COL STREIT: They're not generally flying with NVDs though in civilian context, are they?

- 10 COL BROCK: Some helicopter operators, commercial, are using them. Police, many commercial operators, now use night-vision devices for flying. But there is no – CASA has not regulated around pass/fail result stereopsis to date.
- 15 AVM HARLAND: In civilian, are you aware, do they use the night-vision systems for terrain avoidance, i.e., which would then allow them to operate below, like, a minimum safe height?

COL BROCK: Yes, they do. They do now. They didn't before, but now they are.

AVM HARLAND: So they are using them as a primary flight aid, effectively?

25 COL BROCK: In conditions similar to what Military pilots would do.

AVM HARLAND: Thank you.

30 COL STREIT: In relation to LT Max Nugent, at paragraph 17.1(b) your review of his medical records reflect he was never tested for stereopsis. Is that correct?

COL BROCK: As far as I can determine, he wasn't. That's correct.

35 COL STREIT: You note that he did undergo a Defence Recruiting Centre eye examination in 2016, and then again in September 2017. That's right?

COL BROCK: Yes, that's correct.

COL STREIT: But stereopsis testing, at least on those occasions, wasn't required?

COL BROCK: That's correct.

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COL STREIT: In terms of WO2 Laycock, he was tested on 18 August 2022 and recorded a grading of 40 arcseconds. Is that correct?

COL BROCK: Yes, that's correct.

COL STREIT: And CPL Alexander Naggs similarly was tested on 30 August 2021. He also recorded a grading of 40 arcseconds.

COL BROCK: That's correct.

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COL STREIT: Can I turn now to fatigue management at page 17 of your statement? You informed the Inquiry by way of your evidence that there's a certain – my word – limitation concerning the evidence you can give about Aviation fatigue management for the reason that you have never been provided, or been asked to provide, any specific or general Aviation Medicine advice, guidance or information to any ADF agency with respect to the formulation or implementation of any Fatigue Management Policy, Fatigue Management Framework System or Program applicable to Military aircrew or non-aircrew. Is that correct?

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COL BROCK: Yes, that's correct, Counsel.

COL STREIT: You say to date you've had no role in the development of Army's Fatigue Management Program within Army's Aviation Safety Management System. Is that correct?

COL BROCK: That's correct.

- COL STREIT: In circumstances where you've held the role of Senior Aviation Medical Officer within Aviation Command, plus the other roles you've given evidence about today, is it not unusual that you would not be involved in the development, or formulation, or implementation of a Fatigue Management Framework within Aviation Command?
- COL BROCK: Counsel, if you had asked me that question five years ago, I'd say it would be unusual. But as I said earlier today, the shift is away from medicalising fatigue management because we have probably confused many agencies, Commanders, individuals with the medicine and physiology of fatigue, mixing fatigue and sleep, as being synonymous, and they clearly aren't. So right now, whilst I think it's in the, like you know, where we have people that do have experience and knowledge, it still would be ideal, I think, to involve us in that process. But at the moment, as I said, I've seen a big shift away from seeking purely Aviation Medicine is looked at as one domain of health, health delivery, for aircrew.

	There's been a shift away, and others, aviation psychologists and sleep
	management expertise in the commercial world is being embraced far
	more than us, which denies Commanders - with the fact that we don't
5	have mature programs yet, I think it denies the MAO. It denies - in
	Army, I can't speak for the other two services – but we are denying the
	MAO and subordinate Commanders across our capability an opportunity
	to develop a better sleep management framework that works for us. And,
	as I said, one of the big things that we're not doing is tracking.
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So I'm not surprised. I'm a bit disappointed that I'm not consulted. Maybe I should have been more aggressive about kicking the door and saying, "What's going on here?" But we've been distracted by such a high workload in other areas. We are so underdone.

I would certainly encourage them to use the Institute of Aviation Medicine because they have a lot of expertise in this. And, also, go and get help from DFSB. DFSB doesn't have organic Aviation Medicine available to it, the Institute does. So if it's not me, then them.

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MS McMURDO: But, ideally, shouldn't you be part of the mix so that it's this team?

COL BROCK: Yes, integrated. Yes, ma'am.

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MS McMURDO: Integrated team, because you want it to integrate down through all those areas.

COL BROCK: Just we're still stovepiped, and severely 30 resource-constrained at the moment. And the last - - -

MS McMURDO: Yes, so we've heard. So we've heard on many levels.

- COL BROCK: Since the two Class As in 2023, there's been another major hit to us in terms of my availability, and we lost three Aviation 35 Medicine practitioners - one very senior one - between the middle of 2022 and the end of 2023. We lost three. One trainee and two SAVMOs left Army, which was a big hit.
- 40 So there has been a trust issue as well pre-dating that in Army. So I can think of half a dozen reasons why I may not have been consulted. It's not personal, but because of the loss of trust, and probably loss of access because of the knock-on effect of the two Class As in 2023.

In terms of developing a Fatigue Management Program for Army, it may be that my lack of availability was a factor in why we haven't been consulted. That's not to say that the Institute of Aviation Medicine hasn't been consulted. I believe they have.

AVM HARLAND: Just before, when you were speaking you said you have to track it. What do you mean by that?

COL BROCK: This is perhaps one of the limitations of the way we use the Fatigue Risk Assessment Tool: what happens to that document. Since I was invited to attend this Inquiry. I've talked to Commanders and I've talked to aircrew about the particular form, the effectiveness of that form. I hate to think that it's become, like, the benchmark in fatigue management because it shouldn't be.

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It is just the FRAT, as a device, is very good. It's probably the best screening tool we've had that's available thus far, but it is like a blood test. It's just a point in time and, taken in context, it can be very useful as a point in time. And the only time I see it being used at the moment is particularly for flight authorisation and/or perhaps in the non-aircrew workforce, particularly maintenance.

It's a very useful form if it's used every day. But then what? So if it's just shelved or put in a drawer, or it goes into an Objective folder, and then it just sits dormant and then there's another FRAT in tomorrow or next week, and whoever is assessing it, unless they're saving it, will have no benchmark from last week. Is this becoming the norm for this individual, or he's always red, or he's always amber?

30 So this is what I mean about tracking. So if we are going to collect the FRAT, or use the FRAT as a tool, then we should track. We should be tracking them. But this gets to the bigger picture – I'm sorry if I'm rambling a bit – but the bigger picture is not just – managing fatigue is tracking people's – their fatigue levels in the workplace, but we need more than that. We need to know what they're doing when they're not in the workplace as well.

That's why we need a powerful tool to track people's individual and collective, and summate it and integrate it across a workshop – for example, how many people turn up with a red or lots of ambers each day – to see what the trends are. How do we do trend analysis from this form, given that it's a requirement to be completed now under the SIs?

AVM HARLAND: A previous witness, COL Levey, who is on the

organisational psychology sort of side of the house, I guess that performance management side you were talking about, he indicated to the effect that to really make a change in terms of fatigue management, it needed to be data driven.

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COL BROCK: Absolutely.

AVM HARLAND: Is that really what you're saying?

10 COL BROCK: This is one way. This is like collecting the stereopsis information. What do you do with one value, and what do you do with a thousand values when you can actually look at the tasks required in the workplace, and whether or not its relevant? It's what's functional, what's safe. But I agree, it's data collection that informs what we do, how we manage, or how we might better manage something like fatigue with so many variables.

AVM HARLAND: Okay. Thank you.

20 MS McMURDO: What about wearables, the watches that record all these things? Do you think that would be useful?

COL BROCK: Yes, they are. They're very useful medically. We've picked up – a number of aircrew have turned up with heart dysrhythmias. Picked up, that can be downloaded and accurately – they're so good now, you can make a diagnosis from a heart rhythm disturbance that might be just an annoyance to the wearer, who manages to save it and then has it tracked. We've had cardiologists now getting quite used to using data from wearables.

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And eye trackers are another thing, ma'am, that could be used, I think, effectively in flying. There's a lot of work – the Americans are doing a lot of work on eye tracking, and they're building up a database on fatigue, based on eye trackers as well.

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But data loggers, capturing anything, movement, sleep, are all very, very useful if you can integrate it, collect it, and obviously analyse it within the constraints we have about privacy and the like. But in the workplace it's doable.

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It's what's not happening in the workplace that's our concern, I think – more of a concern. When people have – when we can't see what they're doing, and they've had precious time, it's how they better use their time – aircrew particularly. Are they jeopardising useful time for rest because they're busy with their devices, for example? So the way people are using

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devices now in spare time. But then tracking that would be very useful too, but we're into privacy issues.

- MS McMURDO: Well, a lot of aircrew are at the stage of their life where they have young families, young children, broken nights' sleep, 5 children picking up illnesses and sicknesses from kindy and childcare, and passing it on, and adding to the broken nights' sleep.
- But if that information goes into a FRAT, then at least COL BROCK: 10 we've captured the fact that they've had that. The other problem with the FRAT at the moment is the trust issue, and whether or not individuals fill out the FRAT honestly, or they don't want to let the team down, so they under-report their levels of fatigue. And the longer we use the tool, it could go either way. I'm not a psychologist. People might become more 15 likely to report honestly than cover up their fatigue, because they don't want to let the team down.

MS McMURDO: Well, once the education improves and the understanding becomes mainstream that you're not letting the team down, that this is an essential safety factor.

We've seen the same in mental health earlier. It's taken COL BROCK: a long time to shift people to discuss their mental health conditions. It's not perfect, but it's certainly better than it was. But people are now much 25 more likely to disclose a mental health condition and take the risk with the consequences. There's still some mistrust of the organisation to deal with that information sensitively and carefully, but I think we're in a better place now than we were even five years ago with mental health.

- 30 So the same would be with fatigue. There's some shame in reporting fatigue. That's the big bottom line. As a practitioner, because people will tell a doctor because they think – they'll trust the doctor and say, "Don't report this", or maybe the doctor can have a conversation with them even to say, "We need to talk to your Command about this because this is not just a one-off. This is maybe chronic". But it's building trust in 35 Command, and what's going to happen to the information is always the problem.
- MS McMURDO: You have talked about staff shortages in your area. 40 We've heard of staff shortages in other areas in Army Aviation which have placed more pressure on aircrew, particularly Troop Commanders.

COL BROCK: Correct. Yes, ma'am. And this is why people are

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probably reluctant to say, "I'm not up to it", and they know if they pull out, someone else has got to back-up. It's the knock-on effect when we're under-resourced, and we're pretty hollow unfortunately.

5 MS McMURDO: Someone can miss out on an important flight that they need for accreditation.

COL BROCK: That, or just getting on with – Commanders have got to get on with business as usual. Or when we've got, you know, tasks that – you know, we're deployed, or we've got exercises and critical warfighting capability measurements or requirements to have in place, everyone is pushed, so no one wants to put their hand up and say, "I'm the weak link".

MS McMURDO: Thank you. COL Streit.

COL STREIT: Thank you, Ms McMurdo.

To put things in context, you were asked a question to outline Army Aviation's implementation of the DASR Aviation Fatigue Management from 2020 to 2025, and you indicated at paragraph 20.1 you don't feel competent to respond to this question, given what you've flagged earlier in your evidence under the heading, "Fatigue Management". That's correct?

25 COL BROCK: That's correct, Counsel.

COL STREIT: You set out some matters at paragraph 20.2(a) through to (k) as being those things that were impacting you in the period 2020 to 2025 in discharging your role as the Senior Aviation Medical Officer for Aviation Command. Is that correct?

COL BROCK: Yes, I did.

COL STREIT: Two of those things, by way of example, includes at (d) you say:

required to provide extensive subject matter expert support to the New South Wales Coroner during the latter half of 2022 for the Inquest into the Sydney seaplane accident fatalities.

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Correct?

COL BROCK: Yes.

45 COL STREIT: Further:

required to support the ATSB at the beginning of 2023 following the Sea World mid-air helicopter accident on the Gold Coast on 2 January 2023.

That's right?

COL BROCK: Yes, I've withdrawn from that majorly because not long after that we had the first Class A in Jervis Bay.

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COL STREIT: That's what I was going to ask you. You were then Force assigned to Defence Flight Safety Bureau for the two Class A MRH-90 Taipan accidents. The first was the ditching in Jervis Bay in March 2023, and then obviously the matter that's the subject of this Inquiry at present. That's correct?

COL BROCK: Yes, that's correct.

COL STREIT: You are also the only Army Senior Aviation Medical Officer Instructor available to support a number of ADF Aviation Medical Officer Session Courses, and you have listed those out in (g).

COL BROCK: Yes, we assist – the AVMO course is an ADF course to train Garrison Health doctors and AVMOs for the three services, so there's an expectation that, whilst the Institute of Aviation Medicine is responsible for delivering the course and the training, that each of the services contributes commensurately with instructor support. And for the last few years I've been the only SAVMO that Army has had available to contribute.

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COL STREIT: You make an observation at 21(b) in relation to this Question. The question was:

If aspects of the DASR Aviation Fatigue Management have not been implemented in Army Aviation, explain why not; and if there have been delays in implementing any of the requirements in the DASR, explain why there have been delays.

You make an observation to this extent, you say:

My only general comment relating to possible delays in implementation of DASR requirements, should that prove to be the case, is to affirm that the high tempo, constant demands for information, multiple concurrent investigations following two Class A Taipan MRH-90 mishaps, shortage of key personnel,

introduction into service of the Black Hawk UH-60M, and the Apache, and an under-resources, relatively new Headquarters Aviation Command, are all likely to have contributed to any delays in implementation.

COL BROCK: Yes, I believe that.

COL STREIT: In relation to that observation, you're not sure whether or not there was a delay in implementation of the DASR Aviation Fatigue
 Management, but what you're saying is that if there was, then based on your direct observations of those things you've set out in 21(b), that's the likely explanation for any delay.

COL BROCK: Yes, I believe that to be the case, Counsel. I think at the
 ground level there are changes because aircrew that I talk to, and
 maintainers, are talking about it. So fatigue as an issue in the workplace is
 being clearly talked about, possibly acted upon. But probably the big
 change has been that we've improved the documentation, the governance
 around it. We've improved the use of the FRAT, but we still haven't
 given Commanders, or the MAO, the real tools that they need to
 implement a proper program that they can improve and rely on.

COL STREIT: The real tools, what do you mean by "real tools"?

COL BROCK: Fatigue management programs and platforms that are specific to the nature of our – like the airlines use. Obviously, that doesn't work for us, but airlines invested in this, and there are many commercial tools out there for commercial – for example, commercial operators of trucks, helicopters, fixed-wing, relatively low-level operations. Then we step up and look at the airlines.

But the Army, and the three – we need something similar, something that's got – it has a significant resource penalty. We need people and the tools – the tools are the programs – that are matched to the nature of our capability requirements. And I think we're putting too much responsibility on Commanders to manage this – I call it a demon because it's so difficult. It's one of the most difficult problems that we have to manage in peacetime, let alone go to war, because what we do in peacetime may not be transferable to war.

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But certainly making a better effort at getting fatigue managed as a risk reduction to SFARP, as we are required to do in a work health and safety context – once we institute those behavioural changes, over time they're likely to go to war with us as well. They may not be optimal, but they will go to war with us. But we are not there yet, and we haven't given our

Commanders sufficient tools and resources to do this, or the knowledge. We have to bring people in to help us.

And the same way as our Defence e-Health system - there is no off-the-shelf program that we've been able to buy that hasn't required 5 very significant alterations to incorporate for a Force the size of the ADF that's deployable, and with all that we want it to look at - Military medicine. There is just nothing out there. We have to build it from the ground up. And I think a Fatigue Management Program for Army 10 probably needs built from ground to be the up, and evidence-based. That's why the data collection is so important.

COL STREIT: You set out on pages 24, 25, and 26 various matters concerning fatigue management, and how you obtain information
 concerning fatigue management, how matters can be reported by individuals to you, and including the raising of fatigue management issues at unit and individual Welfare Boards. That's correct?

COL BROCK: Yes, that's correct.

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COL STREIT: You say ultimately at paragraph 27(d) that in the event you did receive notice of trends or indicators of aggregate fatigue risk in aircrew, particularly in 6 Aviation Regiment, you would report that finding to DOPAW Headquarters Aviation Command.

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COL BROCK: That, and the Commander affected, would be the two. I should have included that, but I'd obviously inform the Commander, but I'd do them simultaneously because they're very reactive.

- COL STREIT: On pages 27 and 28 you deal with matters concerning ground trials; that is, Army Aviation's policy with respect to running of ground trials and various sleeping medications for aircrew, and how Army Aviation monitors which aircrew have participated in those trials. Is it the case that the ground trial is essentially an individual aircrew-run activity
 in the sense of they have to go to the relevant civilian aviation Medical Officer, or a Military Aviation Medical Officer to participate in the ground trial to see if they're suitable for that type of medical treatment?
- 40 COL BROCK: Yes, Counsel. That's the entry point, is to go to the 40 Garrison Health, supporting Garrison Health Unit, and get an 41 appointment, and initiate a ground trial through the treating AVMO.

COL STREIT: If an individual aircrew did not want to participate in that process or obtain that type of medication, it's really a matter for them, is it?

COL BROCK: Up to a point. For hypnotics, for example, sleeping medication, that's a decision that the individual will make. For pre-deployment medical fitness where we've got to take – anti-malarials is
the other one that comes to mind. Everybody has got to take anti-malarials, so everyone has to have ground trials for anti-malarials at some stage in their early Aviation careers, and before they can actually deploy. So Doxycycline is a good example. It's the very commonly used anti-malarial, but even as common as it is, they have to have a ground trial. But that's a pre-deployment requisite.

Hypnotics is Temazepam, Zolpidem. That's purely voluntary, although it's encouraged because if they don't do the ground trial prior to an activity like TALISMAN SABRE, it's impossible to do it once they're in the exercise area, and there are logistics around the issuance of prescription drugs and medications for the duration. So they need to put their hand up early and get a ground trial done because they can't fly and use hypnotics without a ground trial endorsed in their record.

20 AVM HARLAND: Would that be classed as an urgent or routine appointment at the Garrison Health Centre?

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COL BROCK: If it was close to a kick-off for an activity, exercise

- activity, or deployment, it would be a red flag to get it done quickly, and
 I've seen that happen. It's more organisational and planning. So the conduct of ground trials and the need for them is raised in their initial Aviation Medicine training, and during refresher training. We remind aircrew religiously about the need to plan to get a ground trial. But, as I said to you earlier, sir, if they're short on time because some medications need a week, maybe a bit longer, or three days minimum for sleepers so if they need to do it in a hurry, they can push the button and get their supervisor, Troop Commander, Squadron Commander, to push the urgency, if required, but it does take some planning.
- AVM HARLAND: Yes, is it an Army method, if they're going to go to an exercise where they're going to be operating on the back of the clock, and it's going to be challenging sleeping conditions, that the unit would perhaps liaise with the Joint Health Command Centre and say, "Hey, we want to basically get a bunch of folk the opportunity for a trial", and then it becomes their individual thing. But in doing so, knocking over the barrier of having to get individual appointments.

COL BROCK: Yes, it can be done. It just takes ops. The Ops Cell would be one way. Once they know something is planned – for example TALISMAN SABRE '25, they should be doing it now.

AVM HARLAND: Did they do it for TALISMAN SABRE '23, to your knowledge?

5 COL BROCK: There was an effort made, yes. I did speak to the AVMO that was up there. Some of it was last minute, but they managed to get it over the line because for that very reason, you can't do it on the ground once the exercise has kicked off. So if you need sleeping assistance with prescribed medication, there is no capacity to do it during the exercise.

AVM HARLAND: Yes, understood.

COL BROCK: But they did do it, and there was – I'm confident to say
that those that wanted to have it done, got it done. There was a bit of an issue with the bulk storing of it. It's the dispensing that becomes a bit of an issue, but they got around that as well. They took the AVMO with them, and he had it all organised for them. There's a lot of careful administration about dispensing the medication as well because we've got to conform with the state legal framework around dispensing pharmaceuticals, S4s and S8s.

AVM HARLAND: Yes, understood. Would you think it would be a

- good method as part of your planning into a major activity where you're going to be operating in challenging hours, like late night flights and the like, to effectively do that as an organisational coordination between the flying unit and the Health Centre, to make available the opportunity for individuals to take, in a reasonable time frame in the lead-up to the exercise, rather than it becoming an emergency? And you've already said that people are, by my understanding, less inclined to ask their Commanders to make exceptions for them to get those urgent appointments, so do you think it would be better to plan into it, and have that coordination, rather than leave it to the goodwill of the individual?
- 35 COL BROCK: Definitely, sir. And they have to do it once. It's not like you need to do it before every exercise. They only need to do a Doxycycline ground trial once in their career, and the same would apply to hypnotics, for example.
- 40 AVM HARLAND: But noting that Squadrons turn over and units turn over - -

COL BROCK: They do turn over.

45 AVM HARLAND: --- and you've always got new people coming

through.

5	COL BROCK: Yes, and even timing it around weekends, so that we don't disrupt their flying. If they do the trial over a weekend, for example. It just is all organisation. I get it's very difficult. We can even do it in training because we have this issue with sleep difficulties for pilots in training. Exactly the same.
10	AVM HARLAND: Terrific. Thank you.
10	COL STREIT: Colonel, can I turn to spatial disorientation now on page 29 of your statement? You say:
15	<i>The academic definition for the purpose of training aircrew on the topic –</i>
	which is spatial disorientation –
20	is as follows:
20	The term used to describe a variety of incidents occurring in flight where the aviator fails to sense correctly the position, motion or attitude of the aircraft, or of him or herself, within the fixed coordinate system provided by the surface of the earth and
25	the gravitational vector. In addition, errors in perception by the aviator of his or her position, motion or attitude with respect to his or her aircraft, or of his or her own aircraft relative to another aircraft, may also be embraced within the broader definition of "anotial discrimination" in flight
30	aefinition of spatial disorientation in flight.
	COL BROCK: Yes, that's correct.
35	COL STREIT: As at the time of the accident, 28 July 2023, Army Aviation did not have an instruction concerning spatial disorientation; is that correct?
40	COL BROCK: There was no formal instruction out about the hazard itself, to my knowledge. It was regularly raised in training, but there was no formal instruction on $-$ if you want to call it spatial disorientation, or the hazards of, or maintaining situational awareness, or something along those lines. There is a draft at the moment, I think, in being – but at the time of the crash there wasn't
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COL STREIT: I was just about to ask you, as you sit here today giving your evidence, you are aware that there is a draft instruction being prepared on the topic of spatial disorientation?

5 COL BROCK: I think the correct title of it is "Maintaining Situational Awareness". So spatial disorientation, just so that – the terms are not the same. Maintaining situational awareness is probably a broader and a better subject or title because the end state of losing situational awareness, the extreme adverse outcome from loss of situational awareness, is spatial
10 disorientation. So "Maintenance of Situational Awareness" will be, I believe, the title of the document, but it will be about avoiding – certainly

avoiding. So risk reduction on developing spatial disorientation.

COL STREIT: If you look at 32.1(d), which is on page 33 of your

15 statement, when you say, "situational awareness", are you actually referring to the SFI 11/2024 Maintenance of Spatial Orientation, which is yet to be released?

COL BROCK: Yes.

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AVM HARLAND: Now, surely that's only one side of the story because maintenance of spatial orientation, if you consider a bowtie for risk management, would be on the preventative side of the top event. Do you agree?

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COL BROCK: Yes, sir.

AVM HARLAND: So that's all very well and good, to treat the maintenance of spatial orientation, but what about on the other side of the top event where you've actually lost spatial orientation, and you're now disoriented? You need an opportunity to apply some reactive controls, would you agree?

COL BROCK: Yes.

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AVM HARLAND: So to form the full risk picture, to concentrate only on the preventative side, is that a full picture?

COL BROCK: A full picture covers cradle to grave.

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AVM HARLAND: Yes.

COL BROCK: It should - - -

45 AVM HARLAND: So preventative all the way through to reactive.

COL BROCK: Yes, sir.

AVM HARLAND: So unless there's somewhere else that addresses the management of spatial disorientation when it happens, then that's an incomplete picture.

COL BROCK: Yes, sir.

10 AVM HARLAND: Thank you.

COL STREIT: Just in relation to situational awareness, at 29.2 you say:

The academic definition for the purpose of training aircrew on the topic is to be as follows:

Situation awareness is the awareness of a large group of factors that are important in keeping the aircraft safe from hazardous situations, or a potentially dangerous flight path. These factors include geographical location, weather, tactical environment, weapons capabilities, individual capacities, effective communication, administrative constraints, adherence to proper flight rules, and also spatial orientation.

25 Correct?

COL BROCK: Yes, that's the definition that came from, I think, the ASIT paper.

30 COL STREIT:

Disorientation –

you say –

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has been categorised into three broad categories. Type 1, unrecognised. This is the worst situation. Controlled flight into terrain continues to be a major accident type. No avoidance action is taken as the pilot is unaware of the danger. This is the greatest cause of fatality due to spatial disorientation.

Is that right?

COL BROCK: Yes.

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COL STREIT: You have been involved in 150 aviation accident investigations, and so is that your direct observation, that Type 1, spatial disorientation, is the greatest cause of fatality?

- COL BROCK: Overall, it is not the greatest cause of fatalities, but it's in the top five. Loss of situational I'm even re-thinking this myself. I did a bit of a mental audit this morning on the last since 1985 about Army Aviation accidents, and whilst some are the number of true spatial disorientation accidents in Army are fairly low. The number of accidents
 this is fixed and rotary-wing the number of accidents where loss of situational awareness is a factor is very high. So, for example, the Black Hawk mid-air, I don't believe anyone was spatially disorientated, but certainly there was a huge breakdown in situational awareness.
- 15 COL STREIT: Are you talking the Black Hawk - -

COL BROCK: The Black Hawk mid-air in Townsville in 1996.

COL STREIT: Yes.

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COL BROCK: That's our worst ever accident. That was clearly a loss of situational awareness by at least two pilots. But spatial disorientation, we know from the experience of our US Army colleagues, has been rising. The trigger for the ICASS '24, the International Combat Aviator Safety Symposium, that GEN Jobson initiated last year to invite our Five Eyes friends, rotary-wing operators, together to talk about the unacceptable wastage from spatial disorientation – that was the trigger for the first ICASS '25, and they carried that forward to a meeting in San Diego earlier this year.

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But one metric for looking at the number of accident types is to look at, for example, how many accident investigations result in a finding of spatial disorientation per 100,000 flying hours. With the US Army's experience, for example, we know it's very high. We have such a low ROE here, it's a long time between drinks – pardon the use of it – for true spatial disorientation-related accidents.

So we have had a number of accidents over the years where clearly loss of spatial – sorry, situational awareness is probably the culprit. This accident we're talking about we're here for now, though, is the loss of situational awareness leading to spatial disorientation. It's an SD accident.

COL STREIT: Are you familiar with the 2020 near miss between two MRH-90s in Townsville?

	COL BROCK: Yes, I am, Counsel.
	COL STREIT: That was a loss of situational awareness, wasn't it?
5 10	COL BROCK: Yes, it was. Possibly even hyper-stereopsis that resulted in the break away, what initiated the aircraft leaving the formation in the first place, which I think it was the inadvertent flash-up of a flood light and the junior pilot reacted to what he thought was going to be a near collision end-to-end and broke away. But it wasn't a spatial disorientation.
	COL STREIT: Just in relation to Type 2 spatial disorientation, you say:
15	This is the most favourable situation. The pilot knows that he/she is spatially disorientated and can apply learned techniques to ensure safety until reorientated. This situation is uncomfortable, relatively common and is unlikely to result in an accident.
20	Correct?
20	COL BROCK: That's correct.
	COL STREIT: And Type 3, incapacitating, you say:
25	The pilot is aware that he/she is spatially disorientated; however, is unable to correct the situation. Panic or disorientation stress causes a breakdown in all the skills the pilot could use to rectify the problem. They give up trying to resolve the sensory conflict and accept their fate.
30	Is that right?
	COL BROCK: Yes, that's correct.
35	COL STREIT: You then set out at paragraph 30 the factors that can cause a helicopter pilot to experience spatial disorientation, and you then break them down into sub-categories. So the first is environmental. So aircrew risk factors in terms of environmental:
40	Low light/no light conditions; lack of celestial and terrestrial lighting; no visible horizon or false horizon; poor weather conditions obstructing the horizon (cloud, mist, fog, rain showers, and smoke and haze), sometimes referred to as a goldfish bowl conditions; flight overwater; featureless terrain (sea, snow,

desert) all lack textural cues at night and are degraded visual conditions.

The last one is, "Unexpected scale". What I've read out, is that all correct?

COL BROCK: Yes, that's correct, Counsel.

COL STREIT: "Unexpected scale", what does that refer to?

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COL BROCK: A bit like the scenario you just highlighted. Suddenly you're confronted with something that you weren't prepared for, like the back end of a helicopter in your windscreen. The, "How did that happen?" And then initiating a very aggressive manoeuvre to avoid a collision could precipitate an illusion.

COL STREIT: The next category is Operational, which concerns the pilot. You list the features:

20 *A failure to acknowledge the risk of SD/LSA before departure – inadequate risk assessment.*

"SD" and "LSA", what do they stand for?

25 COL BROCK: Spatial disorientation is SD. LSA is loss of situational awareness.

COL STREIT: So that is about conducting inadequate risk assessment for spatial disorientation and loss of situational awareness before departing on an operation?

COL BROCK: Correct.

COL STREIT: Next is:

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A lack of comprehensive mission planning; a failure to engage safer automated flight modes for the mission profile risk that were available to crew to reduce the risk of controlled flight into terrain; distractions from the task; inadequate awareness, knowledge, training, or procedural inadequacies; high cockpit workload and task saturation; eyes in.

So "eyes in" is a reference to pilots looking into the cockpit as opposed to out through the windscreen?

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COL BROCK: That's correct.

COL STREIT:

5 High arousal leading to coning of attention and degraded instrument scan.

Coning of attention is what?

- 10 COL BROCK: Coning of attention occurs when you because you've been usually with distraction, something that you're not prepared for and that you refocus on that to the exclusion of everything else going on around you. And you lose track of the fact that you've lost for example, you've stopped or reduced your normal scan that maintains the aircraft in a safe flying profile. Because you've become overly focused on a task, you've coned your attention is directed to something that's taking up a higher level of cognitive power to deal with, to the exclusion of other things going on around you.
- 20 COL STREIT: Then last you say:

Degraded crew coordination and situation awareness.

Correct?

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COL BROCK: Yes, that's correct.

COL STREIT: You then identify physiological and cognitive risk factors. They are:

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Fatigue, degraded situation awareness, degraded visual environment, degraded or absent visual cues, loss of depth perception, degraded orientation cues, underestimation of rates of closure, poor distance estimation.

Everything I read correct?

COL BROCK: Yes, that's correct.

40 COL STREIT: You then identify:

Manoeuvre, take-off into degraded weather conditions at night, formation flying, difficult formation for conditions, mission profile, low terrain clearance, turns, low level, low G, sub-threshold motion stimuli.

What does that mean?

- COL BROCK: Our sensory receptors in our inner ear and middle ear inner ear are capable of being – they have physiological limitations. In layman's speak, they're capable of being stimulated – fooled, really – into thinking that everything's normal when it's not. Because the threshold to register "Something's not right here", that threshold is not reached, but they are being stimulated.
- 10

COL STREIT: Next you say:

Bunt manoeuvre, low negative G at night wearing NVD.

15 First, what does "bunt manoeuvre" mean?

COL BROCK: A bunt would be where you initiate – if you're in a climb, for example, a low climb or even straight and level, and then push the control lever, the cyclic, forward more aggressively to actually induce a little bit of negative G and you get not a huge kick, but you get enough to stimulate your odalis or all your sensory mechanisms.

COL STREIT:

- 25 No briefed procedures, loss of visibility of other formation call-signs, difficulty maintaining station, difficulty maintaining height, breakdown of separation.
 - They're all risk factors for manoeuvre for spatial disorientation. Correct?
- 30

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- COL BROCK: They're all potentially risk factors, yes.
- COL STREIT: In terms of the aircraft and alerting factors, they are:
- 35 Cockpit ergonomics and instrumentation, crew seating arrangements, degraded all-round scanning, no eye contact at night, internal/external communication limitations, NVD/HMSD, including crew mix using dissimilar.
- 40 The alerting factors are:

View of the ground, instrument scan degraded, ground proximity warning disengaged because of RADALT mode selection.

45 And over the page:

Other crew communication, expletives from co-pilot or main cabin crew members, alerts from other formation aircraft.

5 So they're all alerting factors dealing with risk of spatial disorientation; is that right?

COL BROCK: That's correct.

- 10 In terms of training of Army Aviation aircrew that was COL STREIT: in place as at 28 July 2023 regarding the management of risk of spatial disorientation, you've listed a number of publications at paragraph 31. Is that right?
- 15 COL BROCK: Yes, I have.

COL STREIT: Is it correct that essentially Army Aviation's training for the risk of spatial disorientation are all essentially spread out through several publications, the ones you've listed there?

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COL BROCK: Yes, I have.

Since the accident, you've listed policy guidance that's COL STREIT: come into existence post the accident, from paragraph 32.1 onwards; is that right?

COL BROCK: Yes, I have. That's from a search through our documents and SIs and the like.

- 30 COL STREIT: You've also noted at 32.1(d) that SFI 11/2024, Maintenance of Spatial Orientation, is yet to be released. Are you able to say or do you know how close it is to being released?
- COL BROCK: I can't honestly answer that reliably. It's probably end of this year earliest. 35

Is that a publication you have been consulted about? COL STREIT:

- COL BROCK: Not yet.
- 40

COL STREIT: Do you know any other Aviation Medical Officer who's been consulted in relation to that SFI?

I'm aware that the Institute of Aviation Medicine had a COL BROCK: 45 Medical Officer in San Diego at the ICASS '25. That was Dr Adrian

Smith. He went over to present. He was accompanied by MAJ Davina Norris. She is a SAVMO, or almost SAVMO – first time we've had one – posted to the Institute of Aviation Medicine. They were both at the meeting in San Diego, and that was when they first became aware of this publication – of this draft. So they are aware of it, and I believe Dr Smith has spoken to the author of the document, I think LTCOL Dore. That's how I became aware of it.

COL STREIT: Thank you.

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AVM HARLAND: D145?

COL STREIT: We'll need to cut the feed.

15 MS McMURDO: Yes, we'll need to cut the feed. I think we'll use that time now to start the lunch break.

COL STREIT: Thank you. I was about to say that.

20 MS McMURDO: We'll resume at 2 o'clock. Thank you.

HEARING ADJOURNED

HEARING RESUMED

MS McMURDO: Yes, COL Streit.

COL STREIT: Thank you, Ms McMurdo.

COL Brock, I'm sorry, a studious person has identified what might be a couple of other minor corrections for references. And given the importance of your evidence, I think we need to just step through a process to confirm whether or not they do need correction.

COL BROCK: Okay.

15 COL STREIT: So I just take you to paragraph 23(b).

COL BROCK: Yes.

20 COL STREIT: Whether the reference to "SI (AVN) OPS, Reference U" 20 and "SFI 12 of 23, Reference R" – that would, I think, be incorrect.

COL BROCK: They are incorrect.

MS McMURDO: So can you give us those again, please, COL Streit?

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COL STREIT: Yes. 23(b), the references there to "Reference U" and "Reference R" are incorrect. And the Colonel is just going to correct them. If you wanted to have access to your other folder, COL Brock.

30 COL BROCK: I think I've got it here. So "SI (AVN) OPS Reference U" should be - - -

COL STREIT: It would seem to be "T", from my reading.

35 MS McMURDO: Sorry. Are they both "Reference T", are you saying, COL Streit? Both "T"?

COL STREIT: The first one.

- 40 COL BROCK: We'll do the second one, "Reference R".
 - COL STREIT: "Reference R" is probably "Reference Q".
 - COL BROCK: Yes, I think that's definitely right. That is correct.

"Reference R" is "Q". I think "Reference U" is meant to be "Reference U".

COL STREIT: Thank you. So the only change to 23(b) is 5 "Reference R" changes to "Reference Q".

COL BROCK: Yes.

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COL STREIT: Next, 23(d), a review of References P to V; is that correct?

COL BROCK: I'd need some time to go and - - -

MS McMURDO: You had your statement where you've marked these things. Would it help if you had your draft statement with you, your personal statement?

COL BROCK: My draft statement - - -

20 MS McMURDO: Would that have these corrections?

COL BROCK: The other one that I brought with me, ma'am, would be exactly the same as this one.

25 MS McMURDO: So that's not going to help you. Well, P to V, are those in that bundle of documents that the Crown has with him?

COL BROCK: Look, P to V, no, they're just straight references. I don't know why that is. P is in -I don't think that helps, ma'am. Because these were the way I just packaged them to send.

MS McMURDO: Does the folder have all those references there or not?

- COL STREIT: It does not. It's whether the list at the back of his statement on pages 1 to 3, where it's listed P, Q, R, S, T, U, V, encompass what he's saying at 23(d). And it may well do; I'm just asking. But if you're unable to answer that question, can I take you to paragraph 23(d)? So that's immediately under where it says:
- 40 *Reference P specifically endorses and recommends the use of the FRAT, but this reference is not incorporated.*

Is that correct, the reference to P?

COL BROCK: Yes, I think – if I recall correctly – I'd have to actually read the reference, but I believe it does.

COL STREIT: That's okay. Can I take you to 25(a), which is a reference to CC?

COL BROCK: No, "CC" should be "BB".

COL STREIT: Thank you. And the last two are paragraph 31.1(d).

COL BROCK: That should be "FF".

COL STREIT: The last one is 31.1(e), so immediately underneath.

15 COL BROCK: So that should be – that is correct. EE is correct.

COL STREIT: Thank you for that. Can I take you to the final aspect of your evidence, which concerns Exercise TALISMAN SABRE, on page 33 of your statement. You did not deploy on Exercise TALISMAN SABRE, that's correct?

COL BROCK: That's correct.

25 COL STREIT: You did not have any role in the initial search and rescue 25 recovery missions for Bushman 83 during Exercise TALISMAN SABRE?

COL BROCK: No, I did not.

COL STREIT: You became aware of the crash of Bushman 83 because the 6 Aviation Medical Officer, who was Force assigned to support 6 Aviation Regiment on Exercise TALISMAN SABRE contacted you at 11.20 pm?

COL BROCK: That's correct.

COL STREIT: He alerted you by message about the incident involving Bushman 83. You spoke to him a little later and he advised you that witnesses had reported seeing the helicopter impact the water, but no members of the crew had been rescued or found. Is that correct?

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COL BROCK: That's correct.

COL STREIT: You spoke with him the next morning. You recommended to him that as soon as Queensland Disaster Victim Identification Police arrived at Airlie Beach, that he should introduce

himself, along with the DFSB Investigator in Charge, in order to alert them that he, as an Aviation Medical Officer on site, would be providing the initial Aviation Medical support to the Accident Investigation Team. Is that correct?

COL BROCK: That's correct.

COL STREIT: At paragraph 34.4 you say:

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The duties of an Aviation Medical Officer supporting an Accident Investigation Team are described in Defence Aviation Safety Manual, Part 2, Chapter 4.

To this extent, you say:

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When an Aviation Medical Officer is providing Medical Officer support to an Aviation emergency first response, the Aviation Medical Officer is responsible for performing the initial medical elements of an accident and safety investigation before arrival of the Aviation Safety Investigation Senior Aviation Medical Officer.

Correct?

COL BROCK: That's correct.

25

COL STREIT: Aviation Medical Officer responsibilities, and you list the annex that they're detailed in.

COL BROCK: Yes, I have, that's correct.

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COL STREIT: Subsequently you were appointed, were you, as the Senior Aviation Medical Officer and supported the DFSB Aviation safety investigation?

35 COL BROCK: Yes, I was.

COL STREIT: And the duties and responsibilities of the appointment are set out in an annex that you've referred to in your evidence. That's correct?

40

COL BROCK: Yes, that's correct.

COL STREIT: You're still assigned to that role; is that right?

45 COL BROCK: Yes, that's correct. I haven't been released.

COL STREIT: The principal area of your responsibility in terms of the accident was survivability; is that correct?

5 COL BROCK: Yes, that's correct.

COL STREIT: Now, paragraph 36, I'll read out the question, because it's important to frame your evidence in this regard. You were asked to:

- 10
- Outline any interactions you had with members of the Queensland Police Service regarding their investigation into the crash of Bushman 83, including any advice you may have provided to the QPS on the survivability of the aircrew and the basis for those opinions.
- 15

And you were asked to annex copies of your communications with QPS. You say on page 35 that since the day of the accident until now – that is, at the time of digitally signing your statement – you have had extensive but intermittent communication with QPS. Is that right?

- 20
 COL BROCK: Yes, I have. With DVI specifically.
 COL STREIT: And "DVI" is Disaster Victim Identification?
 25 COL BROCK: That's correct.
 - COL STREIT: You set out at paragraph 36.4 the following:

On one occasion on Thursday, 10 August –

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I take it that's 2023?

COL BROCK: Yes, that's correct.

35 COL STREIT:

I provided a written opinion to a senior QPS Officer in relation to the continuation of the search for human remains in vicinity of Hayman Island, Queensland, concerning the crash of Bushman 83.

Is that right?

COL BROCK: Yes, that's correct.

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COL STREIT: The person you were dealing with at the time, was that Inspector Adam Dyer of the Queensland Police?

COL BROCK: Yes, that's correct.

COL STREIT: You deployed to Airlie Beach on Wednesday, 9 August 2023 as part of the DFSB Aviation Safety Investigation Team.

COL BROCK: Yes, I did.

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COL STREIT: On the evening of 10 August 2023, you attended a QPS update briefing at Airlie Beach Police Station, which was led by Inspector Adam Dyer and attended by multiple parties, including, but not limited to, the DFSB, ADFIS – the Australian Defence Force Investigative Service – Headquarters Joint Operations Command, Australian Defence Force

15 Headquarters Joint Operations Command, Australian Defence Force Media Affairs, Queensland Police Service Disaster Victim Identification, QPS divers, QPS Forensic Crash Unit, and others.

COL BROCK: Yes, that's correct.

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COL STREIT: You say at 36.9, given your background, well-known to QPS, in crash investigations, oceanic search and underwater medicine body recovery in forensics and survivability in aviation crashes, you were asked to provide your opinion on the situation at the time based on your review of all the relevant factors known to you at that point. Is that right?

COL BROCK: Yes, I was.

COL STREIT: Post the briefing, you provided a written assessment by email to Inspector Dyer and sent copies to others with your advice on survivability of the aircrew on the basis for those opinions as were set out in that email. Is that correct?

COL BROCK: That is correct.

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COL STREIT: I'm just going to read out parts of the email that you've referred to. I just might note, for families, that this will be a confronting aspect of the evidence I mentioned earlier. Your email commences in these terms:

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Further to our discussion this afternoon, I have reviewed the current helicopter wreckage collection, reviewed recovered Aircrew Life Support Equipment, including helmets belonging to the deceased, with the specialist technicians responsible for this equipment and discussed the likely consequences to the crew

5	flying the accident aircraft with a subject matter expert Structural Aeronautical Engineer. Based on the technical evaluation of all available physical evidence at hand, I consider the following observations are the best that can be provided in respect to the low success rate to date in recovering human remains.
	I'm just going to read out the first two points only:
10	(1) The impact forces on the night of the accident were very substantial, beyond human tolerance by many orders of magnitude.
15	(2) Those forces, in combination with the massive inrush of water, evulsion of crew seats from their mounting points, deformation and disintegration of the entire front and rear cabins and crushing of the rear cabin from the combined weight of main rotor gearbox and engines, would have killed the occupants instantaneously.
20	Do you still hold to that opinion?
	COL BROCK: Yes, I do.
25	COL STREIT: Can I turn now to a matter you raise at paragraph 37? You were asked that:
20	Noting the extract of the Inquiry's Directions, please detail any other matter you wish to bring to the Inquiry's attention that you consider would be of assistance.
30	You say:
35	If time permits, I would like to reinforce the importance of improved risk reduction interventions that address the serious hazard of spatial disorientation in rotary-wing operations including, but not limited to: improved workplace fatigue and management tools: including napping facilities: introduction of
40	permanent workplace coaches to support physical conditioning programs, fatigue reduction programs and data collection, these need to be deployable trainees such as exercise physiologists, Physical Training Instructors, physiotherapists and integrated into Aviation Regiments; mandatory targeted spatial disorientation risk assessments at all flight crew planning
45	briefing and flight authorisation stages, based on the mission profile, environmental, weather and other hazards; integrated

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ground and flight training with appropriate subject matter expert at suitable intervals involving flight competency assessment akin to RAAF PERRT.

5 What does "PERRT" stand for?

COL BROCK: Physiological Episode Recognition and Risk-Reduction Training.

10 COL STREIT:

Better use of in-service subject matter in Aviation Medicine physiology and human factors performance; revisit procurement for the TSAS –

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which is the Tactical Situational Awareness System -

Army to sustain presence in the annual ICASS –

20 International Combat Aviator Safety Symposium –

All governance and regulations in the world will not alter human behaviour when we try to manage fatigue. Fatigue management is a way of life, and it takes significant time and resources to influence meaningful changes in the workforce, individual and collective behaviour. Hence, we need subject matter experts and coaches in the workplace to bring about that change that informs risk reduction.

30 Everything I read, is that correct?

COL BROCK: That's correct.

35 COL STREIT: Just in relation to workplace coaches, when you say, 35 "introduction of permanent workplace coaches", what are you referring to?

COL BROCK: I'm referring to usually allied health professionals such as exercise physiologists or physiotherapists – sorry, there's two things here. There's two elements to this. We've got a musculoskeletal injury issue to manage as well. I know I haven't talked much about that in the report. But coaches that understand the dynamics of fatigue that can assist Commanders with the tracking and collection of – the persistence in the collection and tracking of things like the FRATs or whatever we introduce into the future. And to make sure that that data collection is managed,

collected, and that we encourage the workforce to influence behavioural change in terms of their application and commitment to things like fatigue management, musculoskeletal injury prevention.

- 5 The coach workforce is something we don't have inherent. We have no capacity within the Army, given our numbers, for example, in the Medical Corps. The main repository of medics, physiotherapists and other allied health professionals is on the 2nd Health Brigade, 2 Brigade, but that workforce is hollow. So this is a new workforce we're talking about.
 - Industry is doing the same thing. Not so much with fatigue, to my knowledge, but definitely with musculoskeletal injury prevention. This is in response to position injuries that have developed from the use of either poor seating, head-mounted displays, NVGs, helmets, the ensemble of Aviation Life Support Equipment, which has increased the genesis of injuries that are related to the platforms themselves.

So this workforce I see as being available to COs and committed to just working on the trained workforce that would work on fatigue management in particular, and that's their target in the entire workplace, not just aircrew. In the workshops and in all the support elements to Aviation units right across the whole - it's a total workforce commitment to these coaches. They could be exercise physiologists or physiotherapists, but they need obviously training in fatigue management as well.

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COL STREIT: When you say:

> Mandatory targeted spatial disorientation risk assessments at all flight crew planning, briefing –

and you go on. Is it your understanding there wasn't a requirement specifically to assess the risk of spatial disorientation prior to the accident on 28 July?

35 COL BROCK: Not to my knowledge, no. Neither at the – look, I think fatigue is in the minds of - I'm not sure about Briefing Officers for the mission, but certainly for Flight Authorisation Officers, that is the last other than the Captain of the aircraft, the last safety check we have is the Flight Authorisation Process. So Flight Authorisation Officers need to 40 have fatigue as a conscious assessment of that, based on - at the moment their tool is either verbal handover from the Aircraft Captain or - and possibly the production of all the mission personnel's fatigue FRATs. But to have that become – I think I've actually seen a flight auth safety tick and flick sheet where that is now on it, but we probably don't have the 45 same thing at mission briefing level in the operations part of the flight

mission brief where the weather, the mission itself, the risk factors that were highlighted elsewhere in my report, are considered in a positive sense of what's the likelihood of an SD-related event? It's reinforcement at mission brief. It won't apply to every, single mission, but many missions probably where it should be mentioned in a positive sense, it's not happening.

COL STREIT: Could I just ask you one final area, it's about muscle memory?

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COL BROCK: Yes.

COL STREIT: So that concept of training that you do repeatedly to the point that you're assisted in responding to an incident unfolding in front of you quickly because of the training you've received generates, in part or total, a response. Do you understand that concept?

COL BROCK: Yes.

COL STREIT: In the context of responding to spatial disorientation, when you're dealing with either the Type 2 or the Type 3 version you've described in your evidence – that is, when you're aware of it but just can't get yourself out of it, or you're aware of it and you can get yourself out of it – how much training does one require annually to actually get on top of something like that?

COL BROCK: In terms of flight hours, do you suggest?

COL STREIT: Whether in a simulator, or in the aircraft, airborne.

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COL BROCK: Look, I can't say I could assign an absolute number, but it has to be continuous, not rehearsed perhaps in a short burst, and then forgotten about for a year. It would have to be a planned, scheduled interval training throughout the year with not just the training itself, actually assessment of the competency of the member, the pilot, aircrewman as well, to actually be given a scenario in a – you know, without warning, and to respond to it to the extent that he could be assessed as pass or fail, and not to proceed until he passes. And that would need to be probably done at least every three months. That would be indicative. But that would need to be scheduled training against flight profiles and assessed.

COL STREIT: Are you aware of Air Force or Navy's current practices in relation to training for the risk of spatial disorientation, and its regularity?

COL BROCK: I'm not sure if they – I believe they have PERRT training, either in development or in being, in the F-35 fleet, which we can't discuss how that looks.

COL STREIT: Sure.

COL BROCK: But they are doing very sophisticated – including sophisticated scenarios which includes exposure to hypoxia, and then they ramp up the exposures as their proficiencies improve. So this is a proficiency that we are striving to achieve, I think, in the longer term.

COL STREIT: Just coming back to your earlier evidence, would you say regularity is something at around the three-month mark?

COL BROCK: Well, I've used that as a yardstick, but I think three-monthly would be probably a minimum.

COL STREIT: Thank you. They're my questions.

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AVM HARLAND: I understand that what you're talking about there is effectively unalerted training that involves the whole crew in terms of reacting to something like a physiological episode, or a spatial disorientation episode, that's practised routinely, and assessed routinely, to ensure proficiency.

COL BROCK: Absolutely, sir. It has to be team-based. They rehearse it as they fly it.

30 AVM HARLAND: And the unalerted nature of it allows the assessment of the crew's ability to be able to recognise, diagnose, and react to the event, and successfully overcome it.

COL BROCK: Yes, sir.

AVM HARLAND: That's important. Thank you.

COL STREIT: Thank you, Colonel.

40 MS McMURDO: Any applications to cross-examine?

LCDR GRACIE: Yes, ma'am. Up to 30 minutes.

MS McMURDO: Yes.
COL GABBEDY: About 10 minutes, I think, ma'am.

MS McMURDO: 10 minutes. Yes.

5 CMDR JONES: Two minutes.

MS McMURDO: Yes. That's it? Three. Okay. Thank you. Yes, LCDR Gracie.

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<CROSS-EXAMINATION BY LCDR GRACIE

LCDR GRACIE: Colonel, sir, my name is LCDR Malcolm Gracie.
I represent the interests of CAPT Danniel Lyon, the Captain of Bushman 83. First, can I just commend you on your exceptional service.

COL BROCK: Thank you.

20 LCDR GRACIE: It makes my CV look rather poor in comparison, but it's very impressive, so thank you.

COL BROCK: That's very generous.

25 LCDR GRACIE: Thank you. Can I just ask you, if you don't mind, sir, to go over to – sorry, I lost my way taking a note of your last comment, and I went off my page. Can I ask you, please, to have a look at paragraph 17, which is on page 16, in relation to the testing? I think you talked about the Randot test for the testing of stereopsis.

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COL BROCK: Yes.

LCDR GRACIE: I just want to ask you, I appreciate that stereopsis, as you've said, is the ability to perceive depth and perception, so we're talking about a third dimensional environment, aren't we?

COL BROCK: Yes.

40 LCDR GRACIE: And is the testing done with 3D glasses and images on a chart, for example?

COL BROCK: Yes, it is.

45 LCDR GRACIE: Do the images just pop up on the chart and this test 45 measures your ability to, what, identify those images, does it?

COL BROCK: Yes, it does. It's a booklet. It can be a booklet. Are you familiar with the Ishihara plates?

5 LCDR GRACIE: No, I don't think I've been there.

COL BROCK: Colour vision plates. I mean, there are various ways that the images can be generated, using a screen or booklet, and the glasses, and then there's - I can't say I've done it for a long time, but it is a very basic test.

10 basic test.

LCDR GRACIE: Can you say that again? Hira? The plates?

COL BROCK: Ishihara.

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LCDR GRACIE: Ishihara?

COL BROCK: Yes.

20 LCDR GRACIE: Thank you.

COL BROCK: So that's for colour. That's for colour perception. There's 14 plates, and it's designed to discriminate people that are either colour defective or have a colour deficiency.

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LCDR GRACIE: Where I want to go with this is, are you aware of the Hoffman test unit that's used in terms of resolution and contrast testing for the HMSD?

30 COL BROCK: Yes.

LCDR GRACIE: Is that, in effect, dealing with the same 3D environment that you're talking about in relation to stereopsis? It's to look at a dimensional environment to configure your HMSD?

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COL BROCK: Yes, it is, but it's a crude go/no go test to just determine if the goggles are maximal within the limitations of the acuity. We're looking at visual acuity with the Hoffman tester through the goggles, so that it – to give you the best visual acuity that you can get line by line with the goggles as you set them up for a flight, rather than just go out and focus in the distance on an object of regard and think you've got the best performance out of the goggles.

LCDR GRACIE: Then there's also, I think, the Board test.

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COL BROCK: Yes, the Board test is an alignment test.

LCDR GRACIE: That's alignment?

5 COL BROCK: Yes.

LCDR GRACIE: So Hoffman, we're relating back to the sort of environment - - -

10 COL BROCK: The acuity.

LCDR GRACIE: Acuity. Yes, thank you. Can we just then jump across to page 29 where you're dealing with spatial disorientation? I just want to put a couple of propositions to you. I'm sure you're probably familiar with it. This is taken from something called Aviation Safety Digest, and I just want to step through some of the things that are dealt with in this article. It starts with the words saying:

To most pilots the term "spatial disorientation" conjures up a picture of an inexperienced flyer caught out in bad weather and forced to fly into cloud.

And then there's a reference to panic setting in, control is lost, and so forth, and then it says:

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But there is a common enough scenario where there's also very subtle and dangerous forms of disorientation to which even expert pilots can fall victim. The wings may be level, the course steady, and the pilot completely unaware that it's occurring. This is the false climb illusion.

Could you explain something about what that false climb illusion is?

COL BROCK: Well, this gets to what I said earlier about sub-threshold
 stimuli, sub-threshold exposures to a scenario where the aircraft – if a flight pilot may be distracted with another task, the aircraft starts to climb very, very gently, or turn, and there's no awareness. He'll have no physiological awareness of such a thing happening unless he, or the other pilot, is paying strict, close attention to instruments that would inform them that the aircraft is slowly climbing, or slowly turning. In which case, you know, if that was inappropriate, they would stop that.

LCDR GRACIE: Just indulge me for a moment, but I think historically, certainly around the time of World War II, investigators were finding that a lot of aircraft were crashing after take-off.

COL BROCK: Yes.

5 LCDR GRACIE: And they were finally able to establish that the pilots 5 were deluded into thinking that the aircraft were climbing to a level, when they were actually descending.

COL BROCK: Yes, that's the somatogravic illusion, for example.

10 LCDR GRACIE: I don't know if it's an old story or not, but is that why there's stories of pilots with onions on their belts, to know which way is up and down, or not?

COL BROCK: I'm not sure about that one, no.

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LCDR GRACIE: Okay.

COL BROCK: But certainly the somatogravic illusion is a very powerful illusion. It's often called the Black Hole illusion. Aircraft taking off from a runway into basically a background environment where there is no cultural light, there's just a black hole. And the application of power can create to the otoliths, the accelerometers inside our inner ear, the sense of pitching up. So the instinctive reaction is for the pilot to push the nose down, which actually amplifies the pitch up sensation. And whilst the pilot thinks they're pitching up, he will further push the nose down, and to the extent that the aircraft will just nose over and crash. And all the way in, the pilot would feel that he is pitching up.

In fact, there's a very celebrated accident that resulted in the death of an Army Brigadier at Wondai in Queensland many years ago. BRIG Hammett, I think his name was. He was flying – I think it was a Navajo, or a light twin, and did exactly that, had a crash.

LCDR GRACIE: Is the antidote to that to revert to instruments?

COL BROCK: Absolutely, sir.

LCDR GRACIE: Yes, just a question - - -

40 COL BROCK: It takes a huge amount of discipline when you are so overwhelmingly stimulated into this sense of pitch – and there are other illusions that are just as powerful. It's difficult to overcome the – realise what's going on and put in corrective actions, get onto your instruments and trust your instruments to get you out of it.

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LCDR GRACIE: Yes, and like you are saying, it's very compelling, so it's very powerful to overcome that.

COL BROCK: Yes.

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LCDR GRACIE: One other question, if I may, just regarding helicopters, the types of accelerations that you would experience in a helicopter, would they induce the somatogravic illusion?

10 COL BROCK: Well, yes, you can do it. I mean, one would be going from in a very slow climb, sub-threshold, still climbing – such a climb is like no acceleration. It's a steady – once you're in a steady climb with a set rate of ascent – and it can happen in descent too – and then someone puts in a control which crosses that threshold, and that can result in – remember the otoliths, or the semicircular canals are already being stimulated, but they're at steady state. You don't notice it. But then you overwhelm them with a – it doesn't have to be a very – like a bunt. Yes.

LCDR GRACIE: Then, coupled with that, an acceleration going down the hill exacerbates - - -

COL BROCK: Then the bunt – the aircraft starts, if you're pulling power, for example, trying to maybe – if you have the incorrect perception of your attitude – I think Dr Braden McGrath talked about this at the ICASS last year – he's a local specialist in spatial disorientation – would say that, and then you don't need very much of a control input in a helicopter to accelerate or to amplify the response. And, of course, once the amplification starts, so does over-correction. So it doesn't take that much. Not like a fast jet, where it's quite vicious, but you can get very powerful illusions in helicopters as well from sub-threshold stimuli.

LCDR GRACIE: Thank you. If you're in a scenario where you - - -

COL BROCK: They have no awareness.

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LCDR GRACIE: Sorry, thank you. If you're in a scenario where you have that acceleration and tilt, am I understanding you correctly that the otolith can't differentiate between the two?

40 COL BROCK: The semicircular canals will give you stimuli of – so the otoliths will give you sensations of pitch change. The semicircular canals will be roll. You can get them together, and so it will become quite a confusing sensation. You'd have to get on the clocks to look at am I really rolling and pitching at the same time, and the only way you can sort that out is to ignore your sensory inputs and get onto the instruments,

either on the HMSD or on the screens in front of you, to recover. But that's another one of the benefits of hopefully having two pilots, is while you're doing that, tell the other pilot. Alert.

5 LCDR GRACIE: One with eyes out, one eyes in?

COL BROCK: Hopefully, yes.

- LCDR GRACIE: Can I just put this scenario to you? Let's say that there was this steady, no acceleration, slow climb, the aircraft plateaued, levelled out of the climb, and then there was a tilt, or a left angle of bank of 30 degrees, followed by – that's to the left, followed by 40 degrees to the right. Is that going to have any impact on the way the otolith is receiving - - -
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COL BROCK: That will affect the semicircular canals if it's roll. Manoeuvres in roll trigger the semicircular canals.

LCDR GRACIE: Now, if you overlay that with the scenario where there are no external visual cues, I imagine that reinforces your point that you have to revert to trusting your instruments because there is - - -

COL BROCK: There is no other way.

25 LCDR GRACIE: Either on the symbology or the primary flight instruments.

COL BROCK: Yes, and call for help.

30 LCDR GRACIE: Yes.

COL BROCK: Alert the crew. Even if you don't know what's wrong, or you don't have a diagnosis of "I'm disorientated", but if you make the call that "I'm affected by something", they should have a call that they all understand that alerts them to the fact that I'm no longer able to control the aircraft.

LCDR GRACIE: That's once the pilot has - - -

40 COL BROCK: "Call a friend", I call it.

LCDR GRACIE: Sorry?

COL BROCK: "Call a friend."

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LCDR GRACIE: Yes, but that's once the pilot - - -

COL BROCK: Quickly.

5 LCDR GRACIE: --- has identified that the scenario that he or she is experiencing does not align with the instruments.

COL BROCK: Correct.

- 10 AVM HARLAND: Are you aware of any training that the Army does to expose pilots in a safe way to these sorts of illusions, in particular the somatogravic - -
- COL BROCK: We have basic training in unusual attitude, but we don't have anything like physiological episodes, or recognition and recovery of scenarios which are more likely to be typical of loss of situational awareness, then perhaps moving into a high threat spatial disorientation environment. We don't label it as that. I think all our recovery training is traditional. Basic training is unusual attitudes.

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AVM HARLAND: But theoretically you could demonstrate to a new pilot the somatogravic illusion, for example, by putting him under an instrument flying hood and then accelerating, or decelerating, and asking him to describe the sensation.

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COL BROCK: Well, the British Army were doing that with the helicopter pilots. They had dedicated flight profiles with QFIs, doctors, or Aviation Medicine specialist pilots, who actually would take them up and put them through those scenarios in the live aircraft. We have IPT. We've got procedural trainers that we can – moving base trainers that we can get, that could step people through progressive exposures and degree of difficulty in recognition until we – but you've still got to go out and do it under supervision, in my opinion.

35 AVM HARLAND: In a safe environment.

COL BROCK: In a safe environment, live.

40 AVM HARLAND: Yes, because just like hypoxia, the ability to be able 40 to recognise it in yourself is actually of great assistance when you're 47 exposed to it in a real situation, would it be fair to say?

COL BROCK: Yes. But the safety when you exercise – doing

individual training is one thing which gives you understanding of self, but we don't fly alone anymore. It has to be a crew response, so the whole crew has got to be involved in recognition recovery training.

5 AVM HARLAND: Yes, absolutely. Thank you.

LCDR GRACIE: Thank you, sir.

- I just want to ask you something about the physiology of the eye in terms of the sort of spatial dimensions that we're talking about. This has been taken from the Flight Safety Australia article. I think you mentioned what I'm about to ask, but you might have given it a different name, "dark focus"? Did you mention - - -
- 15 COL BROCK: I'm not sure.

LCDR GRACIE: No? Okay. In this article it says:

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When the visual cues are weak, such as with empty field visual conditions in daytime or at night, the muscles controlling the eye adjustments tend to take up an intermediate or a resting state, empty field or dark focus.

COL BROCK: Empty field myopia, we call it.

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LCDR GRACIE: Yes, thank you. And it says:

It's not an infinity, but on average at a distance of just one metre, though there are wide variations between individuals.

Am I right in understanding that means that your resting focus - - -

COL BROCK: You're looking outside, but you're not really outside. Your eye has set itself at maybe a metre for accurate focus, given the circumstances.

LCDR GRACIE: So it could be picking up the cockpit window struts, or something like that?

40 COL BROCK: It should be, yes.

LCDR GRACIE: So it reverts to shorter distances.

45 COL BROCK: An intermediate distance, yes. A position where it will either track something that's visible, or it will just settle – you know, if

you're outside in the dark, completely black outside, and there's nothing around you at all that you can focus, it will just go to the setting of empty field myopia. So if you're in a cockpit and then you pay attention to the instruments, you should be able to get onto the clocks with good resolution quickly.

LCDR GRACIE: So the ability to detect objects beyond the cockpit where you have perhaps rain on the windshield is going to be affected by that?

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COL BROCK: Yes, it's degraded.

LCDR GRACIE: It's degraded. And, of course, add on night-vision devices and it's further degraded again?

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COL BROCK: Yes.

LCDR GRACIE: Because there is that perception, isn't there, that night-vision devices – and I don't mean perception in your area of work – but as a public perception, people seem to think that night-vision devices turn night into day. They're only as good as the illumination that can be picked up by those NVDs, isn't it?

COL BROCK: The degraded vision that they work at is very, very low acuity. The perception is I've got – especially since we've gone to white phosphorus, for example, but the real – and that's why the Hoffman test is a good example of that, that what we think is good night vision with a night-vision goggle is still very, very low quality vision for safety. We are still – I'll use the term "flying blind".

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LCDR GRACIE: Yes.

COL BROCK: But we've got so much other technology around us, we can fly safely in that degraded visual state, provided we do everything in our power, using everything that we have – we prioritise the scan, only focus on information that keeps us safe, and by safe, I mean safe height. You're not going to – if you're in formation, it's very tricky, very difficult. Safe distance, and that we don't let the aircraft drift away without your attention being constantly monitoring it.

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LCDR GRACIE: If you experience that empty field myopia, is the symbology that's nearest to your eye more compelling for you to have regard to than perhaps the primary flight instruments?

COL BROCK: It could be, but you should make – pilots should be not dwelling on particular points all the time. They should have a regular cockpit scan, and that's why degraded night vision is such a hazard. But in a crewed environment there should be normal communications between the two pilots, checking in, that you're both aware, situationally aware, what the other pilot is doing, either by control input, where their head might be – they're moving that they're active, that they're scanning, or that they call that. But that the crew resource management is maintained, and so that the workload is diminished, but whoever is the flying pilot is being monitored by the non-flying pilot at the time constantly.

LCDR GRACIE: In the next few questions I've got – there's not many more – but I just want to put this scenario to you to provide some context to the questions. There has been some evidence before the Inquiry by one of the pilots on this sortie on 28 July '23 to this effect in terms of the operating environment. It was described as challenging.

> There was significant portions of the sky that had cloud coverage, reducing light levels, several rain showers, and I could not see a visual horizon. It was hard for me to see where the ocean stopped and the sky started.

So you've got that environment. In that environment you are going to have two factors, I want to suggest, that are relevant. One is the specific individual issues of that pilot flying in terms of how he or she might react in those circumstances, and there's systemic issues. In your report you talk about the aircraft. There are systems within the aircraft that are also relevant to how you deal with this scenario, isn't there?

30 COL BROCK: Yes.

LCDR GRACIE: What I want to know is whether or not in your role in the DFSB investigation, or even before that, you were aware that there was documented record of what was identified as system deficiencies that AATES identified with the HMSD symbology upgrade to what was known as version 5.1, and that utilising that software was likely to cause spatial disorientation in those very conditions I've just described, low visual cues at night? Were you aware of that report by AATES?

40 COL BROCK: Yes, I was.

LCDR GRACIE: Did it give you any concern in relation to the documented deficiencies in the system that the pilots were utilising in that degraded visual environment?

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COL BROCK: Look, I was not involved in that line of inquiry for the investigation, and I really can't speak to that. Any helmet-mounted display system is always going to be challenging to a wearer. We are – not entirely because of this accident, but we are bringing in another helicopter platform for Army, the Apache, which has a completely different display system, and myself and another colleague have already started looking at that system, and the possible impact with identified – I won't say hazards, but certainly identified limitations with that particular display. I have not – you know, another part of the team has devoted its attention to that line of enquiry, so it's not appropriate for me to give you an answer on that in terms of my own feelings about the shortcomings of it, or otherwise.

LCDR GRACIE: Certainly, all right. Thank you, sir. I appreciate that answer. Thank you, ma'am, sir.

MS McMURDO: COL Gabbedy.

20 <CROSS-EXAMINATION BY COL GABBEDY

COL GABBEDY: Thank you, ma'am.

25 COL Brock, I'm COL Nigel Gabbedy. I appear for GEN Jobson. I just want to start by following up on a couple of questions you were asked by LCDR Gracie. He talked to you about the false climb, and the issue of spatial disorientation. I think you indicated that distraction was an element. Is that right?

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COL BROCK: It can be, yes. Yes, it is.

COL GABBEDY: How does that play into the development of spatial disorientation in that scenario that LCDR Gracie gave you?

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COL BROCK: Well, if you're distracted from monitoring a situation that the aircraft is in because of, say, a power setting or a pitch setting, and you're not paying attention to what the aircraft is doing, and then sometime later you suddenly realise you are not where you – for example, if you're in a formation, or you've been distracted by some other task, and then you suddenly realise that the aircraft has got ahead of me, then you might consider that you've got to recover that situation. I mean, with two pilots this shouldn't happen, but it does happen because two pilots can be simultaneously distracted, maybe on the same task. So if you get to that situation and you've realised the aircraft has got ahead of you, and is –

depending on what ahead of looks like – it's either climbing, or it's accelerating, or worse still, you're heading to the earth, and gaining speed, but don't have any awareness, don't have any physiological symptoms associated with speeding up. Then once you realise that, then you've got to recover that situation so that you make the aircraft safe. And in doing that, if you aggressively try and recover that, you may actually worsen the scenario.

- So going from distraction to this is the Type 2, where you have allowed the lost situational awareness, the aircraft has started to get away on you, you then have got sub-threshold stimuli going on, and then you realise, because you've picked it up on the cockpit scan, or a crewman said, "What are we doing, boss?", or the other pilot has said something – hopefully the other pilot will intervene and then correct the situation – but if you happen to be the only one flying, and then you start making fairly rapid control inputs, you may actually inflict on yourself even more aggressive physiological stimulus. Does that make sense?
- COL GABBEDY: It does. Thank you. In the early part of your answer you said "with two pilots this shouldn't happen". What did you mean by that?

COL BROCK: Well, one, the aircraft should be being monitored at all times by both pilots. Clearly the task allocations are done so if one pilot is designated as the flying pilot the other pilot should still be monitoring other aspects of the mission. For example, if you're in a formation everyone should be looking outside to make sure that all aircraft that are normally identifiable in that formation are visible, and that distances – you're not closing in on it. But secondary scans going on that the aircraft systems are good, heights are – you know, we're on our assigned altitude, on our assigned heading, navigating, communicating, and aviating. They should all be going on. Even though the second pilot may not be actually hands on the controls, he should still be watching, checking that everything is okay.

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COL GABBEDY: Is that a role of the non-flying pilot, those secondary scans?

- 40 COL BROCK: The non-flying pilot may be assigned as the Mission 40 Commander, and may be doing other planning, and have his attention 40 focussed on the mission planning, but that's not to say that they shouldn't 40 periodically look up and see what's going on, checking on the state of the 40 other pilot.
- 45 COL GABBEDY: Is that what you'd expect from the flying pilot as

well, secondary scans whilst flying the aircraft, or is that more a job of the non-flying pilot?

COL BROCK: Well, both – the flying pilot should be devoted to primarily to flying the aircraft safely. Keeping the aircraft on station, at height and, if in formation, formating on the aircraft that is visible, and making sure that they've maintained keeping up speed, and they don't drift out of formation, for example. If they're on a mission somewhere, and they're on their own, then clearly there's less work to do probably, but navigating, if the flying pilot is still flying the aircraft, but in the end – and he'll be navigating as well, but the other pilot, even though they may not be hands on the controls, they should still be watching what's going on, not completely divorce themselves from the safe handling of the aircraft and the mission.

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COL GABBEDY: Thank you. That's helpful. If I could take you to your statement, to the very end? Have you got paragraph – actually, the final page, page 38, in front of you? At the very bottom of that page, at (viii), you say this:

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All the governance and regulation in the world will not alter human behaviour when we try to manage fatigue.

I just wonder if you could expand on that comment?

COL BROCK: Well, we impose on – at the moment, the bulk of responsibility currently in the fatigue world in Army rests on individuals. We are reminded of our individual responsibilities to preserve our health, to provide all the guidance that's available in books, in briefs and so on about your responsibility to minimise fatigue however you can, and we give – educating people, there's a tendency to think that that's enough, that the individual - that we all know what's required of us to do it, and we should all do it.

- Well, you can wrap governance around it. You can almost regulate to do certain things, but it doesn't make people change their behaviour really, deep down. They need other tools to do that. This is why I think coaching is so important. They need reinforcement. They've got to change their behaviour. It may be you know, and this is in the workplace we can change people's behaviour because we can program how people work, when they work, when they rest, how they even do that, and where they do it. We can even set up improved working conditions for them.
- 45 When they go home, and they get in their car and drive home, it's a

completely unregulated environment. So giving people advice about what they should be doing, and giving them the sense, "It's all up to me", is not really a good idea because we can't deal with the stresses that people have outside the workplace unless we know of them, and then we have to factor in that those are issues that we can't control. So we have to be aware of that. We have to give them tools that support them, but when they are – so that they can actually put their hand up and say – and this is the behavioural change, is they will put their hand up and say, "I'm spent. I'm done. There's a lot going on here. I need some help", and have that, and not made to feel that they're letting the team down, or somehow they're a failure.

This is what I alluded to in the mental health space, is that we beg people to put their hand up, but we don't always provide a safe environment still to put their hand up and say – and I think that's come out of the Royal Commission. We expect people to behave the way we want them to behave. It's their responsibility, but we don't give them a safe environment to do it in.

- And I think with fatigue we have to do the same. They've got to do it, and supported, but we can do that's why I think coaches are a bit like a kelpie in a sheep pen, running around barking and yapping, but keeping the flock together. There's a lot of teamwork in this involved as well, because we work in teams, in small teams. So I think the next step is to get the compliance is what we're talking about here, about governance, but at the moment we put all the pressure on the individuals, and the junior Commanders, to take and, you know, COs have got the bulk they've got so much on, but they're made to feel like it's their problem.
- It's beyond that. And we're starting to put a lot of governance around it. We put it in the Safety Regulations, and we've given them the sort of formula, what we think is the formula for success, but it's not really. We've given them the framework, but we haven't given them the tools so that they can move their workforce, their whole workforce, get
 inside that framework, and have resources available to sustain it. So it's a complex problem.

COL GABBEDY: So building on that, Colonel, are you familiar with COL Martin Levey?

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COL BROCK: Yes, I do know Martin.

COL GABBEDY: He gave some evidence last Friday that he had spent a period of time trying to develop a tool to enable fatigue to be tracked, and was unsuccessful in that. He said there was a civilian tool out there

that, for security reasons, wasn't suitable for Army. You gave some evidence about that as well today. Is it your opinion that the development of such a tool is central to proper management and remediation of fatigue?

- 5 COL BROCK: Yes, I do, wholeheartedly. We may have to reinvent ourselves here because we can't buy it off the shelf. There are an array of programs. I think the mining industry have got programs that probably work for them, but I've spoken to you at length about the airlines. They do. But their workforce is much more amenable - it's a more controlled 10 environment, and their scheduling is pretty well understood. There's not much complexity in the workplace in an airline. Notwithstanding there is a lot, but it's not to the extent that we do, particularly in Army, and probably to some extent Navy. We operate anywhere, any time, all over the place, and at least in Navy, they're operating from a fixed base. It's either an airfield or a ship. So they've got a home. But for the Army, we 15 are, as I said, all over the place at some stage or other, and we operate 24/7, and in austere environments.
- And that's the difficulty about a tool that probably COL Levey was talking about, is it's very hard to design a program or system that can incorporate all the nuances of the way we operate, and our Regiments are not mirror images of each other. They have entirely different mission profiles, and that applies to the workforce that supports the flying. They're not always the same. So it's complex, but we have to do it.

COL GABBEDY: Do you have any appreciation as to what would be involved in terms of time and resources, and money, to develop such a tool?

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COL BROCK: Well, from the ground up, it could take – by the time you – we could probably adapt some of the learnings from those that are successfully doing it now. Small commercial helicopter operations do it. So we could probably start there, and build on it. I expect it would take a couple of years to get from ground zero to something that's implementable. And money? Quite a lot. We have to do it. The overall cost of that, compared with the cost of losing an airframe, or the program that we're supporting, is probably a drop in the bucket, frankly.

40 MS McMURDO: Let alone the cost of human life.

COL BROCK: Yes.

MS McMURDO: Trained human life.

COL BROCK: Yes, ma'am.

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COL GABBEDY: If I could just go somewhere slightly different now, Colonel? You made a comment very early in your evidence that fatigue and sleep were not synonymous. Could I just get you to expand on what you meant by that?

COL BROCK: Fatigue is a – sleep is a – or sleep disorders, degraded sleep, is a factor in developing fatigue, but fatigue is a physiological state. I prefer to use the word "exhaustion" or "near exhaustion". The tank is empty. You're challenged cognitively, you're challenged functionally. And those two, combined, mean that you're in a very poor state of function. Whereas degraded sleep, sleep loss, and disturbed sleep, is one of – it's a major input to developing fatigue because disturbed sleep over an extended period clearly leads to exhaustion.

But I mean, the quality of work, overwork, nutrition, physical health, intercurrent health issues, all contribute to fatigue. It's just that I don't think we put enough emphasis on the individual as a whole, and the sum of all those inputs that surely – you know, good sleep is number 1 in the terms of priority of combatting fatigue, but there are other things as well. I think there's exercise, it's scheduling people, getting time to cram 27 hours into 24. And the other thing is, obviously, there are behavioural changes needed, and I would keep coming back to misuse of electronic devices. It's time-wasting. It's distracting. We've got to re-educate people about how much time, what their priorities are in terms of minimising drifting into fatigue.

- It's like letting an aircraft get ahead of you. Fatigue is like letting a condition get ahead of you. Like I said, letting an aeroplane get ahead of the pilot, and then playing catch-up to recover the situation and get everything back to a safe state, or steady state, and fatigue is the same.
- Unless you start, obviously, looking for early signs that you're not performing, all those things that we can teach people about. But, you know, you often need someone else to be prompting you as well in the workplace. That's why I think coaches are good because it takes a long time to get people to change their behaviour so that they are in a safer place and we're avoiding the early stages of fatigue before we get there. And we can take those skills to war.

MS McMURDO: And is another current problem that there just aren't enough trained aircrew, maintainers for people to safely feel that they can FACE out with fatigue because they feel there's no one to replace them, so therefore - - -

COL BROCK: If you're talking about the maintenance workforce, mechanics - - -

5 MS McMURDO: Well, I was talking about both maintenance and aircrew.

COL BROCK: Absolutely. I mean every time someone goes offline, for whatever reason, and they can't be replaced, then someone's got to step up.

MS McMURDO: Which is another pressure on them not coming forward about fatigue.

15 COL BROCK: Yes.

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MS McMURDO: And I presume that in the commercial/civil airspace there is that fat in the system.

20 COL BROCK: There's more depth in airlines - - -

MS McMURDO: Or depth in the system.

COL BROCK: --- because their business is profit. They have to provide a service to make a profit. And they have to make a profit because it's a very expensive business keeping airlines running successfully. But they do have probably more depth than we have. I know things right now are probably pretty grim in the airlines after COVID, but airlines, generally, have got more depth and reinforcements

30 available to them than we have.

MS McMURDO: Well, they can't make a profit if they lose their ability to fly by safety reasons.

35 COL BROCK: No. But the danger, of course, is when you're doing that everyone starts taking shortcuts, getting more productivity out of a tiring workforce, which might be okay for short bursts but it's not sustainable. The trouble is, the Army is trying to sustain this hollow workforce interminably against a backdrop of recruiting and retention pressures.

COL GABBEDY: And just back on sleep again. One of the issues is it's not just quantity, it's quality, isn't it? You need quality sleep.

45 COL BROCK: Yes.

COL GABBEDY: And that's where you need NREM and REM sleep. There needs to be a certain amount of each?

5 COL BROCK: Yes, you do that. And we can, with specialist coaches, educators, teach people about that. You can even adapt, you know, you learn skills to actually improve the quality of your sleep. The productivity benefit of good sleep, we can do that, to an extent, you know, with understanding the physiology of sleep, without getting buried in it, but tweaking it to suit you.

And management sleep disorders, for example, we've got a rising tide of problems with sleep apnoea now, for example. Correcting things that we can fix and should fix because there's risks if we don't. But sleep apnoea is a great example of a health condition where degraded sleep has got some serious knock-on consequences, notwithstanding the fact that your performance at work is degraded.

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So in an eight-hour day you might only be productive for 60 to 70 per cent of it. That's lost productivity, but it's not actually easily measurable. So teaching people to improve their sleep hygiene and, I mean, there is a lot of mileage in that. Again, people can't do it alone, they need help with it. And I think that's part of a program to – you've got to attack sleep because it is a major contributor, poor sleep, to fatigue. But I'm not sure that answers your question.

COL GABBEDY: It does. Thank you, Colonel. And just one final question on this topic. There's a potential downside of using things like Temazepam and Zolpidem, isn't there? Because although that might increase the period of sleep, it can decrease the quality of sleep; is that right?

COL BROCK: Yes. It's not designed for persistent poor sleep, it's designed to be used in short bursts for circumstances that are perhaps outside your normal experiences. It could be shifting from day operations to night operations, or somewhere in the middle – living in the field; you know, just adapting to environmental changes that we don't often have to live in, at short notice.

40 A good example is that Army aircrew and Army teams embark on a Naval platform for a couple of months. Some take a while to adapt to that environment, others find it refreshing that they can benefit from being at sea, but others find it quite difficult because they're living in a different environment. It smells different. It's tight. It's maybe right outside their

experience space. So all those things can contribute to a need to use, short term, short bursts of hypnotics.

But anxiety and insomnia are the two big presentation conditions to general practice – poor sleep.

COL GABBEDY: I've just got one final topic for you, Colonel. I take it you're familiar with the Samn-Perelli Fatigue Scale?

10 COL BROCK: Yes.

COL GABBEDY: And apparently a fatigue score of six means that a person would be extremely tired and find it very difficult to concentrate. If you were interacting with a person that was described as extremely tired, very difficult to concentrate, what visible signs would you expect to see? Say if you had 20 minutes to talk to them, what would trigger to you a concern that they were extremely fatigued?

COL BROCK: Well, history-taking.

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COL GABBEDY: Would they exhibit external signs? Would they - - -

COL BROCK: Yes, they may just look jaded. They'll have that look about them. Most people have got a healthy complexion. Giveaways would be how they communicate. Are they flat? Their affect may be flat. They just may look unwell. But others can hide it. But someone at that level I'd expect would not be looking good and would not be communicating very well, and you could probably do a simple desk test, you know, just a simple test that we do in neurology to test their responsiveness or, you know, their mathematical skills or their quick thinking and all that.

COL GABBEDY: Would you expect that their communication would be either garbled or occasionally non-sensical?

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COL BROCK: At six, their communications may be blunted or slowed. I'm not sure that they'd be – because they were in an environment here, they'd probably be concentrating more on avoiding saying something foolish or something that was a giveaway if they were that fatigued. But around six or beyond, yes, you may see that, and others might notice it. Some others might come to you and say - - -

COL GABBEDY: Some people that knew them well might notice it.

45 COL BROCK: I'm sorry?

COL GABBEDY: People that knew them well might notice it.

COL BROCK: Yes.

COL GABBEDY: Would they look tired?

COL BROCK: Yes.

10 COL GABBEDY: Would you expect them to yawn?

COL BROCK: Yes.

COL GABBEDY: Would you expect any other visible signs or sounds 15 from them?

COL BROCK: There might be blinking a lot. They might be prone to nodding a bit, inattentive, difficulty concentrating, withdrawn; features we sometimes see with depression. But their behaviour would probably be different, but certainly yawning would be a giveaway.

COL GABBEDY: Thank you very much. That's been very helpful. I've nothing further, ma'am.

25 MS McMURDO: CMDR Jones?

<CROSS-EXAMINATION BY CMDR JONES

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CMDR JONES: Ma'am, I suggested that I might be two minutes. I might have been a little bit optimistic, closer to five.

COL Brock, would you agree with me that in the medical profession it would be widely accepted that sleep latency - that is to say, the time 35 between lights out and falling asleep – for most healthy adults is between 10 and 20 minutes?

COL BROCK: Yes.

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CMDR JONES: And are you familiar with the American Academy of Sleep Medicine?

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COL BROCK: I've heard of them, but I don't know much about them, 45 to be honest.

CMDR JONES: Well, as the name suggests, they're an American medical society specialising in sleep. They issued a joint consensus statement with the Sleep Research Society, another American organisation, that adults – and this is in June 2015 – that adults should sleep seven or more hours per night on a regular basis to promote optimal health. In your experience, and based on your study and reading the literature, does that sound appropriate to you?

10 COL BROCK: Yes.

CMDR JONES: So if you saw an individual was receiving seven hours a night, you wouldn't - all other things being equal, you'd expect them to be functioning as if they'd had an appropriate amount of sleep?

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COL BROCK: Generally, yes.

CMDR JONES: Now, you mentioned in answer to a question from COL Streit that airlines track fatigue levels very accurately. I just wanted to know how they do that?

COL BROCK: I don't know if they track fatigue. They track the workforce, their scheduling, very regularly. So if they are pushing pilots on a bit or out a bit because of shortages, they are very aware of their precise amount of time, clock on/clock off in their scheduling. Maybe I was a bit misleading there. I don't know that they can track fatigue as an entity very accurately, but they can certainly track their hours at work, their absence times, their leave times, in such a way though that they can pull up their history and look at them in a meaningful way, either individually or in the context of the workforce.

CMDR JONES: And would I be accurate in saying that in the absence of some form of cognitive testing, it'd be very difficult to determine with any degree of scientific rigour that someone was cognitively impaired as a consequence of fatigue?

COL BROCK: There's no other way to do it than some form of a screening test.

40 CMDR JONES: You're – sorry.

COL BROCK: Unless we're tracking people. Like, we've got advanced technology and we're doing eye tracking or some other validated means of monitoring people that's the cleared ethical way and so on. But I mean, we could, and perhaps we should, be doing it.

CMDR JONES: Now, on that measure - - -

COL BROCK: But that's more of a – sorry, that's more of an acute safety measure. It's like eye trackers for monitoring in flight. I mean, we can monitor the health of aircraft remotely. You know, there are advanced systems around that can interrogate long haul flights, interrogate any number of parameters of that aircraft. In the old days, they used to have to talk to the crew, "Switch this now. Do that now". It's all done.
Absolutely, it's all done by datalink, and we do it with truck fleets. We do it with aircraft. We do it with locomotives. That base stations know every parameter that they need to know about engines, systems, oil temperatures, all the settings of the aircraft at any one time. It's all automated. And you can even anticipate when something is likely to probably go wrong. Now, we can't yet do that with humans.

But the time is fast coming when I think we could do it, but the ethical problems are probably about – because it's not just a problem of monitoring people at work, we need to know as much about them as well. We need to know how much really good rest time they are having in their off work, off duty times, without invading their lives completely.

CMDR JONES: Now, on that, were you aware that, first of all, the Commanding Officer of 6 Aviation Regiment undertook an initial sleep study of his workforce in 2022?

COL BROCK: Yes. This was a couple of years ago?

CMDR JONES: Yes.

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COL BROCK: Yes, I was aware of that. I didn't know what the result was. We weren't allowed to see it.

CMDR JONES: And that he also sought funding to conduct a further sleep study in order to obtain empirical data to manage the fatigue in his workforce?

COL BROCK: Yes.

40 CMDR JONES: Are you aware of that?

COL BROCK: Yes.

CMDR JONES: And would you agree with me that one of the great

difficulties in assessing fatigue or managing it is the lack of objective or empirical data available to managers in respect of their workforce?

COL BROCK: Yes, I agree.

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CMDR JONES: And would you agree that undertaking or initiating a sleep study of that nature was a very proactive thing for a Commanding Officer of an operational Regiment to do of their own volition?

10 COL BROCK: Yes.

CMDR JONES: And you mentioned a bit earlier, too, that the – and I took it you mean the units, the Aviation Regiments, would benefit from coaching in understanding a management of fatigue?

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COL BROCK: Understanding, teaching and learning, monitoring, promoting, supervising even, more than just educating. They've got to have a presence that normalises their role and that their workforce understands, "This is serious. They're here for my benefit". So the workforce starts to alter its behaviour around, "They're here to help me. I need to contribute. I need to participate".

CMDR JONES: Now, to that end, were you aware that the Aviation SO2 psychologist, a MAJ Sam James – are you familiar with MAJ James?

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COL BROCK: Yes, I know MAJ James.

CMDR JONES: He's a, I understand, human factor specialist psychologist.

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COL BROCK: Yes.

CMDR JONES: Were you aware that he spent some considerable time with 6 Aviation Regiment during 2022 to assist them in understanding and managing fatigue?

COL BROCK: I was generally aware.

CMDR JONES: And that his funding for him to travel to do that was approved by the Commanding Officer of the Regiment. Again, would you agree that that encouragement of having MAJ James with the unit was, again, a very proactive step by the CO to take in managing fatigue and teaching and educating his workforce about it?

COL BROCK: Absolutely. That's the human factors work, the sort of in-coming experts in this area. Yes, absolutely.

CMDR JONES: Thank you. Sir, I have no further questions.

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MS McMURDO: No other applications to – yes.

AVM HARLAND: I just had a follow-on question regarding civil airlines. Are you aware of whether civil airlines aircrew have substantial other duties other than flying?

COL BROCK: Generally, no, not that I'm aware. They do not. They - - -

15 AVM HARLAND: It's only flying. A simpler proposition is to track.

COL BROCK: Yes, much easier. That's another problem we have with Army, is that everyone's got second and tertiary duties. And pilots, it's like doctors in New South Wales health system at the moment, off their feet, they're so exhausted. So are the nurses. We haven't got a large enough workforce, and I know that many of them carry additional duties of supervising and training registrars, that eats into – they're working 60-hour weeks because, apart from doing their normal duties as surgeons, they have the additional burden of overseeing, supervising registrars, trainees.

And that runs them into large excesses of overtime. The ADF, in my view, gets a third workforce about the untracked overtime that some of its workforce works. Not everybody, but a significant percentage of overtime is worked in, I know in the Army, that doesn't get tracked. I mean, there are ways we can compensate, but it's not a good system because it does not eliminate the fatigue.

Because these people that are working overtime are already fatigued. So in the airlines, most airline pilots are left completely alone. It's their job is to fly, maintain their proficiency, that's all that's expected of them is to keep maximum productivity, maximum competency, and they're given the tools to do that. But they're not hampered by additional work.

40 AVM HARLAND: Yes, so it makes it a more straightforward proposition.

COL BROCK: Definitely.

45 AVM HARLAND: Yes, thank you.

MS McMURDO: So there are some more applications to cross-examine.

MR O'MAHONEY: Yes, there are.

MS McMURDO: How long will you be?

MR O'MAHONEY: O'Mahoney. I appear for Airbus. And I apologise I didn't give an indication before.

MS McMURDO: Yes.

MR O'MAHONEY: There's just a handful of questions.

15 MS McMURDO: I think we might have a 10-minute break now.

MR O'MAHONEY: Thank you.

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HEARING RESUMED

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MR O'MAHONEY: Thank you, ma'am.

MS McMURDO: Yes, Mr O'Mahoney.

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<CROSS-EXAMINATION BY MR O'MAHONEY

MR O'MAHONEY: Colonel, my name is O'Mahoney. I appear for Airbus, and I just have a couple of matters that I want to very briefly explore with you. The first is drawing upon your experience, I think, across 130-odd civil and Military accident investigations, I was interested in whether, on inspecting the aircraft the subject of this accident, you identified anything in relation to the seatbelts that you'd draw the Inquiry's attention to?

MS MUSGROVE: I'm sorry, that can't be answered and if the feed could be cut, please.

45 MR O'MAHONEY: Okay.

MS McMURDO: Yes.

- MS MUSGROVE: It hasn't been released publicly. It's still
- 5 "Official: Sensitive".

MS McMURDO: We haven't actually been asking questions about the DFSB investigation; isn't that right?

10 COL STREIT: That's right.

MS McMURDO: Prior to the release of the report later this week.

- COL STREIT: Yes, there's a security classification issue. And I note the witness answered (indistinct). I can indicate to my friend that the Director of DFSB will be called on 28 April and the report will be tendered through him, and it will be in a Private Session.
- MS McMURDO: Yes. COL Brock did give an opinion about his view of the accident, but he didn't refer to DFSB in that.

MR O'MAHONEY: No, and I'm grateful for that indication. I certainly didn't mean to, in asking that question, traverse any report.

25 MS McMURDO: No, no, no.

MR O'MAHONEY: Could I then switch gears - - -

MS McMURDO: Well, I think if we were to wait now until we can restart the feed.

MR O'MAHONEY: Okay.

MS McMURDO: It's okay? It's on again. Okay, thank you.

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MR O'MAHONEY: Thank you. Colonel, you gave some evidence about the importance of communications between a flying pilot and a non-flying pilot when it came to one alerting the other about a loss of orientation or a loss of spatial awareness. Do you remember giving some evidence about that?

COL BROCK: Yes.

45 MR O'MAHONEY: Are you aware of any training that pilots in the 45 Army receive in that regard?

COL BROCK: Not to the extent that I understand the airlines do in their training for line checks and so on. I think they're much more structured.

- 5 MR O'MAHONEY: If you could, and I don't want to put you on the spot, but could you speak to the spread or the difference between your understanding of the education or training received in a commercial context versus, say, here in the Military context.
- 10 COL BROCK: The commercial context is probably better.

MR O'MAHONEY: Are you able to elaborate on that?

COL BROCK: I think it's just more structured probably because it's a more stable environment, workwise over a long period of time. So a well-established career resource management in the airlines. In the Military, I think the cockpit workload is higher and I think we probably – in Afghanistan we rehearsed all sorts of scenarios in perfecting pilots, but I've not seen the same extent here in peacetime.

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And I think it's something we've just probably not – so there was a standard drill for incapacitation. But what you're alluding to is a form of very serious subtle incapacitation; it could affect both pilots. But are we training people to deal with it? I don't believe so.

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MR O'MAHONEY: Have you got a view on whether we should?

- COL BROCK: Absolutely we should. This is part and parcel of probably a more advanced training with the physiological episode, recognition and recovery. So whilst that's talking about the sort of aeromedical hazards that we know about – hypoxia is a good example – but you could easily say subtle incapacitation of a crew member, even if it's in the back, should be part of that training.
- 35 MR O'MAHONEY: Thank you. And I think it probably follows from the answers you just gave, but are you aware of any protocols or procedures within Army for such communication?

COL BROCK: Not formally, no.

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MR O'MAHONEY: And to ask the same question, do you think there should be?

COL BROCK: Yes, there should.

MR O'MAHONEY: I don't have any further questions.

MS McMURDO: Thank you. Yes, SQNLDR Casha.

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<CROSS-EXAMINATION BY SQNLDR CASHA

SQNLDR CASHA: Yes. Good afternoon, sir. SQNLDR Ian Casha
representing the interests of LT Nugent. I'd just like to ask you a few questions on crew coordination and it kind of follows off my friend's questioning about crew coordination. As you may or may not be aware, LT Nugent was in the left-hand seat, co-piloting at the time and CAPT Lyon was in the right-hand seat piloting the aircraft at the time.
You said that in a crewed environment the co-pilot should be monitoring the pilot. Do you recall saying that?

COL BROCK: Yes.

20 SQNLDR CASHA: Have you heard the transcript or read the transcript audio of the accident?

COL BROCK: I think we're getting into - - -

25 SQNLDR CASHA: Only if he's read it or – I don't expect an answer of what was contained in it.

COL STREIT: Well, the issue is, really you shouldn't be asking any questions about matters from certainly the safety investigation or his involvement in it, that it's made clear in his statement.

MS McMURDO: Yes. So, yes, it might be "Official: Sensitive".

SQNLDR CASHA: Okay, I'm happy with that. I'm happy with - - -

MS McMURDO: So if you'd perhaps rephrase the question.

SQNLDR CASHA: I'll rephrase. I withdraw that question.

- 40 Hypothetically, if the co-pilot said to the pilot as the pilot made inputs to the control of the aircraft questioned the manner in which he did that, would that, in your opinion, be a good example of where the co-pilot would be monitoring the pilot's control of the aircraft?
- 45 COL BROCK: In a theoretical situation?

SQNLDR CASHA: Of course.

5 COL BROCK: Yes. I'd expect that that's one way of monitoring, apart from verbal communication.

SQNLDR CASHA: Yes.

COL BROCK: "What are you doing? Are you okay?"

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SQNLDR CASHA: If there was a verbal communication, would that be a good example of the co-pilot hypothetically monitoring the pilot's inputs?

- 15 COL BROCK: Yes. I mean, it might be the first step before he says, "I think I'm taking over", if he thought there was something really wrong. But if he was just inquisitive you've got to be inquisitive when you're flying all the time. So in a scenario where a co-pilot generally becomes a little suspicious something is not quite right, then he should do something,
- 20 say something. The same as the crew in the back, if they sense I mean, they can't see what's going on in the cockpit, but if they sense that both crew have gone quiet, or communications have stopped, or there's something not quite right, they should speak up.
- 25 SQNLDR CASHA: And a verbal cue would be the first step before a physical takeover of the controls?

COL BROCK: Yes. Unless the aircraft - - -

30 SQNLDR CASHA: If there's time, that is, of course.

COL BROCK: Unless the non-flying pilot realises that the aircraft's in a dangerous situation, like, heading towards the ground, and would take over. But, yes, if he thought, early suspicion that something is not quite right, to speak up.

SQNLDR CASHA: And just finally, if the pilot was greater in rank and greater in experience than the co-pilot, do you think that would play a factor in a co-pilot's decision to question the manner in which the more experienced and ranked pilot is controlling the aircraft?

COL BROCK: Look, there have been scenarios in the past where rank gradient has been a barrier to communication. But hypothetically, it could be the difference between speaking up and not speaking up. But I think our pilots are better than that. I think they would speak up. Even if it's

just a gentle nudge, "Are you okay boss?", or something along those lines, "Everything okay?" Something just straightforward, unambiguously clear that you're checking on him and you expect a response.

5 SQNLDR CASHA: Okay, thank you, ma'am. Nothing further.

MS McMURDO: Yes. No other applications to cross-examine? Thank you. Any re-examination?

10 COL STREIT: No, thank you.

MS McMURDO: Thank you very much COL Brock for your assistance to the Inquiry and the time you've taken to prepare your statement and the annexures to it. It's greatly - - -

COL BROCK: I apologise for the mix-up with the references.

MS McMURDO: Well, the length of the statement, the number of references, perhaps it's not surprising. But could I also thank you for the long and distinguished service you've given to Army Aviation and, indeed, to the people of Australia. It's greatly appreciated.

COL BROCK: Thank you, ma'am. It's very kind.

- 25 MS McMURDO: And finally, could I say, even an experienced Aviation Medical specialist like you could sometimes find giving evidence to an Inquiry like this difficult. Don't hesitate if you find, in the coming days or weeks, you need some assistance, to take advantage of the support that's available.
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COL BROCK: I think I'll be fine. Thank you, ma'am.

MS McMURDO: Well, I suspect that's the case, but even so, everyone has a breaking point sometimes and it's worth keeping in mind.

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COL BROCK: Thank you very much, ma'am. Thank you.

MS McMURDO: Thank you.

40 COL BROCK: Thank you.

<WITNESS WITHDREW

MS McMURDO: Yes.

MAJ CHAPMAN: Thank you, ma'am. The next witness is MAJ Lamb.

5 MS McMURDO: Yes, thanks, MAJ Chapman. MAJ Chapman, are you hoping to finish this witness today?

MAJ CHAPMAN: My best efforts, but I'm afraid I may fall short of that. It may be that he goes over for a short time.

MS McMURDO: Yes, there's no imperative if it continues over until tomorrow? No.

MAJ CHAPMAN: We'll sit, I propose, Chair, to 5.30. Is that – or 5?

MS McMURDO: Well, will it make a difference to finishing tomorrow?

MAJ CHAPMAN: Probably not. There could be a 9.30 start. I've discussed that with - - -

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MS McMURDO: So what are MAJ Lamb's – he's not a local witness?

MAJ CHAPMAN: No. He'll be overnight tonight.

25 MS McMURDO: He'll be overnight anyway.

MAJ CHAPMAN: Arrangements have been made.

MS McMURDO: Do we need to start at 9.30 tomorrow? We can, if we need to. But I don't know what's – what is the schedule for tomorrow?

MAJ CHAPMAN: The schedule: following MAJ Lamb will be GPCAPT Davidson, and then move to BRIG Fenwick. It'll be a full day, I expect.

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MS McMURDO: And are there time imperatives in finishing witnesses that day?

MAJ CHAPMAN: I think the short answer to that is, yes.

MS McMURDO: So you'd like to sit until 5.30 today?

MAJ CHAPMAN: If we can sit till 5, Chair, and start at 9.30? Is that going to be - - -

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MS McMURDO: All right then. Yes, that's what we'll do. Thank you.

<MAJ DAVID STEWART ANTHONY LAMB (RETD), Sworn 5

<EXAMINATION-IN-CHIEF BY MAJ CHAPMAN

- 10 MS McMURDO: And let me know if you need a break at any time, MAJ Lamb, and we're hoping to sit until 5 o'clock today, but we don't expect that that will be sufficient to finish your evidence today, so you'll probably need to come back tomorrow.
- 15 MAJ LAMB: Understood.

MS McMURDO: Thank you. Yes, MAJ Chapman.

MAJ CHAPMAN: Thank you, Chair.

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Can you please state your full name and your current position?

MAJ LAMB: David Stewart Anthony Lamb, and I've recently retired from the ADF.

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MAJ CHAPMAN: And can you confirm, MAJ Lamb – and just maybe I'll pause there. It's fallen into habit referring to MAJ Lamb - - -

MAJ LAMB: That's okay.

MAJ CHAPMAN: Are you comfortable with that, Mr Lamb?

MAJ LAMB: I am comfortable with that.

35 MAJ CHAPMAN: Thank you. Can you confirm you've received each of these documents: a section 23 Notice requiring your appearance today?

MAJ LAMB: Yes.

40 MAJ CHAPMAN: An extract of the Inquiry Directions?

MAJ LAMB: Yes.

MAJ CHAPMAN: A copy of my appointment as an Assistant IGADF?

MAJ LAMB: Yes.

MAJ CHAPMAN: Frequently Asked Questions Guide?

5 MAJ LAMB: Yes.

MAJ CHAPMAN: A Privacy Notice?

MAJ LAMB: Yes.

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MAJ CHAPMAN: Thank you. And you've prepared, MAJ Lamb, and signed for the purposes of the Inquiry, a further statement which is nine pages in length?

15 MAJ LAMB: That is correct.

MAJ CHAPMAN: And I hand you a copy.

MAJ LAMB: Thank you.

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MAJ CHAPMAN: And it has three annexures – sorry, I withdraw that. Do you recognise that to be your statement, 26 March 2025?

MAJ LAMB: I do.

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MAJ CHAPMAN: And do you wish to make any amendments to the documents?

MAJ LAMB: I do, please. So if we go to page 5, paragraph 16, second line, delete "11 October", insert "21 October".

MAJ CHAPMAN: Thank you. Anything else?

MAJ LAMB: No.

MS McMURDO: Have you made that amendment to the statement yourself? Would you mind?

MAJ LAMB: Yes, certainly.

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MS McMURDO: Just make the amendment and initial it, please.

MAJ CHAPMAN: And just to be clear, MAJ Lamb, this is the second statement that you've prepared. The first being on 4 October 2024?

MAJ LAMB: That is correct.

MAJ CHAPMAN: Which, Chair, that's Exhibit 86.

5 And, equally, it's the second occasion that you've appeared to give evidence before this Inquiry. The first was on 18 October 2024.

MAJ LAMB: Correct.

10 MAJ CHAPMAN: Thank you. Chair, I tender the second statement of David Lamb dated 26 March 2025.

MS McMURDO: Would it be best to keep those two statements together?

MAJ CHAPMAN: Certainly, ma'am.

MS McMURDO: So we'll make the original statement 86A and the second statement 86B.

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#EXHIBIT 86A – ORIGINAL STATEMENT OF MAJ LAMB (RETD)

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#EXHIBIT 86B - SUPPLEMENTARY STATEMENT OF MAJ LAMB (RETD)

30 MAJ CHAPMAN: Now, at the time that you made your first statement in October 2024, and indeed when you gave evidence, you were, at that time, still a member of the Australian Defence Force. Correct?

MAJ LAMB: That is correct.

MAJ CHAPMAN: And you note in your statement at paragraph 4 that from about 31 October '24 you retired from the ADF. That's correct?

40 MAJ LAMB: That is correct. If I may, MAJ Chapman? Just as a point 40 of order, my employer is the Civil Aviation Safety Authority and would 10 like me to read out, for public record, this disclaimer.

MAJ CHAPMAN: Certainly.

45 MAJ LAMB: Ma'am, if that's okay?

MS McMURDO: Of course.

- MAJ LAMB: So it's about the separation of the testimony given that the first testimony was within service of the ADF but now I'm in the Aviation Safety Authority, obviously of which they have an interest in aviation safety, but in exclusion to this Inquiry. So the statement reads, for public record, as in my statement:
- 10 My written statement and testimony for the purpose of these proceedings derive from my engagement with the Australian Defence Force during the period 26 April '94 to 31 October 2024 and do not relate to my work at or for CASA, nor should they be taken to represent or reflect CASA's view or position on any of these issues I may address.

Thank you.

20 MAJ CHAPMAN: Thank you. And presently, so that's saying you're 21 not serving in any Reserve ADF role?

MAJ LAMB: No, I'm not.

MAJ CHAPMAN: And at your retirement date in October 2024, you already had in place your CASA role?

MAJ LAMB: That's correct.

MAJ CHAPMAN: And so again, just to be clear, your decision to retire was unconnected to any evidence or your involvement in the Inquiry?

MAJ LAMB: That is correct.

MAJ CHAPMAN: And you say at paragraph 5 of your statement that, as you just noted, you're employed by CASA?

MAJ LAMB: Mm.

MAJ CHAPMAN: And you say also at paragraph 5 that you're
employed as a Senior Standards Officer with the National Operations and Standards Division?

MAJ LAMB: That's correct.

45 MAJ CHAPMAN: And could you just briefly explain, in your own

words, what that role encompasses?

MAJ LAMB: So it's a new role. It's a role that's established to derive policy for emergent technologies. Emergent technologies include unmanned systems, how that integrates into extant airspace environment. Also, it requires consideration and making recommendations around exemption applications against the extant Civil Aviation Safety rule set. And notably as well, there's a responsibility to give advice, not dissimilar to the advice I gave in Defence around suitability of personnel to undertake experimental flight tests in this civilian environment.

MAJ CHAPMAN: And you've previously given evidence, MAJ Lamb, that you've got experience with issues of standards and also in the field of governance in the context of Aviation safety. Is that right?

MAJ LAMB: So that's correct. So I had a tenure – initially it's in my first testimony with CASA from 2012 to 2014 and that was established in draft in instructions to the Office of Parliamentary Counsel for what is today now the CASA. I had a secondment during my time at the Air Warfare Centre through the Chief of Air Force office through to the Aviation Policy Unit directly to the CEO in DAS of CASA on matters that had interest to both ADF and the civilian regulation.

- And then in that same period I was the Staff Officer to the DoSA-FT sorry, the Delegate of the Safety Authority Flight Test for three years, with the Air Warfare Centre from 2022 until my retirement in 2024. So it's not unknown to me.
- MAJ CHAPMAN: And we'll get to some further details about that. In terms of what might be an obvious point, is the role that CASA plays in the civilian context similar to what DASA does – so the Defence Aviation Safety Authority – in the Military context.

MAJ LAMB: In many ways, yes. Yes.

MAJ CHAPMAN: And is it your understanding, do these bodies, from time to time, collaborate and work together where they can?

MAJ LAMB: In fact, they do. There's an established Memorandum of Understanding between the Air Force which represents the Airworthiness Authority. So it includes Army and Navy as well, of course and CASA. And there was a project within Army Aviation that I advise to, Plan Corella, which was the advent of the civilian registered AW139 operations in Army Aviation, which is ongoing today.

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MAJ CHAPMAN: I'd just, with that background, like to turn to ask you some questions on the first major topic of your further statement. So that's the Military Permits to Fly.

5 MAJ LAMB: Mm-hm.

MAJ CHAPMAN: So just starting at the macro, before we go into some of the detail. Can you just broadly explain, please, in your own words, the circumstances in which a Military Permit to Fly is required to fly Military aircraft?

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MAJ LAMB: Certainly. So the Military Permit to Fly construct is the instrument or mechanism that provides the assurance function to undertake flight tests whereby the aircraft has been modified or yet to achieve a certification basis; to do that as a mechanism, as a bridge, to undertake testing to evaluate the system under test on its suitability for its intended role and environment.

MAJ CHAPMAN: And can I take you to paragraph 6 where you begin your discussion in your statement about this? And you commence with a heading before paragraph 6 there, "Military Permit to Fly", and a document reference. Do you see that?

MAJ LAMB: I do.

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MAJ CHAPMAN: And that is a document reference to a form, what's known as a Form 18b. Is that correct?

- MAJ LAMB: That is correct. Well, in fact, if I may, MAJ Chapman? The Form 18b are the flight conditions which we've heard testimony of in October, and I think that's been discussed at length. It is also the application to the approval, which is the Form 21. And then there is the Instrument of Approval in itself, which is the Form 20A.
- 35 MAJ CHAPMAN: And can I just take you now to a document which appears at paragraph – it's in tab 17 of the folders there at flag 1. And I'm going to show you a document. I'll just pause there. I'll just ensure I have the right one.
- 40 MAJ LAMB: Thank you.

MAJ CHAPMAN: Now, sir, do you recognise that to be a Form 18b, Flight Conditions For a Military Permit to Fly?

45 MAJ LAMB: I do.

MAJ CHAPMAN: And do you see on page 4 of that document it is signed by you on 11 October 2019?

5 MAJ LAMB: That's correct.

MAJ CHAPMAN: Ma'am, I tender that document as the DASA Form 18b in relation to the Operational Evaluation.

10 MS McMURDO: 189.

#EXHIBIT 189 - DASA FORM 18b

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MAJ CHAPMAN: And to put this into context, this is the Military Permit to Fly in support, as I say, of the Operational Evaluation or the OPEVAL, is it?

20 MAJ LAMB: That's correct.

MAJ CHAPMAN: And just to assist the Inquiry step-by-step with this process, you've provided, in your statement, an explanation of when a Military Permit to Fly would be required, and you've given some evidence about that. Correct?

MAJ LAMB: That's correct.

MAJ CHAPMAN: And this form, is it correct to say, is an initiating instrument for a Military Permit to Fly?

MAJ LAMB: That's right. It sets the enabling conditions for the Military Permit to Fly to be considered.

- 35 MAJ CHAPMAN: And it's among a package of documents, but it's the first sort of formal paperwork that goes through to the authority, or the delegate, for consideration and approval?
- MAJ LAMB: So it does. So that's correct. More to the point, it encapsulates all the supporting technical substantiations. The test plan, the risk management, it encapsulates that in a single source document and you'll see in that MPTF, the Form 18, which is in front of you, it's heavily referenced to a number of other enabling documents of which that build an application for approval.

MAJ CHAPMAN: And can I just hand you two further documents. And Chair, these are in tab 17(2) and (3), for your reference. But what I'm handing you is a DASA Form 20A and a DASA Form 21.

5 MAJ LAMB: Thank you.

MAJ CHAPMAN: And, equally, do you recognise those to be, as I've just described, the DASA Form 20A and 21?

10 MAJ LAMB: I do.

MAJ CHAPMAN: And you signed those, did you?

MAJ LAMB: I signed the 20A, which is the – sorry, the 21, which is the application. But you'll note that the 20A only has the signature of the DoSA himself or the DoSA Flight Test which, in this case, was CMDR Greg Davison.

20 MAJ CHAPMAN: And, Chair, can I tender those documents also – perhaps forming part of the last exhibit, because they all go together.

MS McMURDO: Well, we'll make the Military Permit to Fly Exhibit 188; the DASA Form 20A, is it?

25 MAJ CHAPMAN: Yes.

MS McMURDO: 188B and the – what's the third one?

MAJ CHAPMAN: It's Form 21.

MS McMURDO: Form 21 - - -

MAJ LAMB: So, ma'am, if I may?

35 MS McMURDO: Sorry, 189. Yes, 189. 189A, B and C.

#EXHIBIT 189A - MILITARY PERMIT TO FLY

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#EXHIBIT 189B - DASA FORM 20A

#EXHIBIT 189C - DASA FORM 21

MAJ LAMB: There's a degree of illogic in there. Actually, the application is 21 and the approval is 20A. So it's in a reversed numerical order.

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MS McMURDO: That's the way they've been tendered, so thank you for that.

MAJ LAMB: Thank you.

MAJ CHAPMAN: Thank you for that.

MS McMURDO: Thank you, that's helpful.

15 MAJ CHAPMAN: And you see reflected on page 1 – this is the 18b form, it says this:

DASA Form 18b is the official DASA form to apply to the Authority for approval of flight conditions under the Defence Aviation Safety Regulations 21(a).

It continues:

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The form is considered part of the application pack. It should be submitted with the appropriate evidence to support the application.

Correct?

30 MAJ LAMB: Can you just go through that? I think you'll find it's sub-part (b). Can you just point out exactly which paragraph you're referring to, please?

MAJ CHAPMAN: So I'm at the middle of the Form 18b.

MAJ LAMB: Yes. On page 1?

MAJ CHAPMAN: Yes.

40 MAJ LAMB: Thank you. Yes.

MAJ CHAPMAN: And that is just how - - -

MAJ LAMB: "Applicant", correct. Understood, yes. That's right.

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MAJ CHAPMAN: Yes. And that's just reading out, in the middle of the page there, the purpose about this form and the application process.

MAJ LAMB: Yes, understand.

MAJ CHAPMAN: Do you see that?

MAJ LAMB: I do, yes.

10 MAJ CHAPMAN: And just to unpack that a little more, where the form refers to "apply to the Authority", who is the Authority for this purpose? Is that DASA or - -

MAJ LAMB: So it is actually DASA.

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MAJ CHAPMAN: Yes.

MAJ LAMB: Because when you look at the signature block on the Form 20A, you will see "dated 21 October 2019". I'll just wait for the – so are you happy for me to continue with that? It says, "For and on behalf of the Defence Aviation Safety Authority". So CMDR Davison's delegation is on behalf of the DASA.

MAJ CHAPMAN: And in the present case – and we're going to get to some more detail about this – but you applied to the DoSA-FT, which is the Delegate of Safety Authority, and the "FT" is Flight Test?

MAJ LAMB: That's correct, yes.

30 MAJ CHAPMAN: And if I've understood correctly, in the broad, when you're applying for a Military Permit to Fly, it's open to an applicant to apply to DASA actual or to the DoSA-FT. Is that right - - -

MAJ LAMB: That is correct.

MAJ CHAPMAN: - - - for practical purposes? In your experience, you'd be applying to the DoSA-FT; is that right?

MAJ LAMB: Certainly. So we'll stop there. There is additional – so there are DoSA platform DoSAs. They are engineering, chief engineers ordinarily, if I was to speak generically. And they can provide an approval to do Category 4 Military Permits to Fly only. It wasn't prudent to do that given the succession of testing that we were doing and to retain that within the DoSA-FT office.

45

And you'll see in GPCAPT Young's email and correspondence, when we get to that, that this was the most appropriate DoSA.

5 MAJ CHAPMAN: And have you heard of an application for a Military 5 Permit to Fly going directly to DASA actual or - -

MAJ LAMB: I have. Yes, sir. I can't think of an example. Actually, I can, yes.

10 MAJ CHAPMAN: That's unusual. It'd be - - -

MAJ LAMB: It is unusual. We had a circumstance at the Air Warfare Centre where we were doing an application where we believed there was a conflict of interest, for that to be considered by the Air Force DoSA, who has a number of hats. The DASA was comfortable that that delegation remained and there was separation and independence.

MAJ CHAPMAN: When Military Permit to Fly is applied for and, indeed, in a successful case, granted, is DASA actually sent – or the office sent a copy of any of these applications for their situational awareness?

MAJ LAMB: In my written statement you may note that I highlighted that actually the file structure is held within the Defence Aviation Safety Authority, the Directorate Initial Airworthiness. And so in actual fact, whilst the drafting might occur, let's say, in its initial genesis on a desktop and then is held within either the Flight Test Organisation's file structure – you will note it then transfers, with approval, into the Directorate Initial Airworthiness' file structure.

- 30 And the evidence, or the illustration to that is, when you go into AATES' ARDU, the Aircraft Research Development Unit or AMAFTU's file, you'll see that they hold an alias copy to the master document which is within DIA.
- 35 MAJ CHAPMAN: So just putting to one side file structures and its significance though, are you, as an applicant, under any obligation to forward to DASA, or the office, (1) the application? You are, yes or no?
- MAJ LAMB: So not at the no, so it goes to the DoSA-FT, which is the delegate. And it's held in there until such time that that delegate considers the application. It's only after approval does it get forwarded to DIA.

MAJ CHAPMAN: When you say "only after approval", would you forward it or is that something which is done by the DoSA?

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MAJ LAMB: No. Well, in the structure of the Air Force there is a Staff Officer to DoSA-FT. I held that position for three years. It's obligated on them and there are business rules around that within the Air Warfare Centre, Test and Evaluation Directorate. Within the AMAFTU structure, it's not artirply clear bacques it's unique in that he decen't have a Staff

- 5 it's not entirely clear because it's unique in that he doesn't have a Staff Officer position to his organisation. He would second duty that role to one of his other staff. Normally, in my experience, that's been the Chief of Flight Test, or the XO, or the most senior test pilot.
- 10 MAJ CHAPMAN: So just to get to the focus of my query. Based on your experience having been in that SO2 role before, your understanding is that once an MPTF is approved, it is forwarded for information in some form or another to the office; that is, to the DASA?
- 15 MAJ LAMB: So, in actual fact, there's a bit more rigour to that. There's a distribution list. There's a protocol, a Standing Instruction, that has a distribution list of stakeholders to that Military Permit to Fly.
- 20 MAJ CHAPMAN: And is it your understanding that DASA can overrule 20 any decision of the DoSA-FT?

MS McMURDO: Well, sorry, there's a distribution list. So is DASA on that?

25 MAJ LAMB: Not directly, ma'am, no. No. Sorry, MAJ Chapman, can you say that question again?

MAJ CHAPMAN: My question was, are you aware of the DASA having the ability to overrule, for example, an approval that the DoSA-FT has issued?

MAJ LAMB: Well, this would be my opinion, given that it's a delegation in authority, the DASA would retain the right to overrule. That would be my interpretation of that.

- 35 MAJ CHAPMAN: So have you ever experienced that? Have you ever seen that occur?
 - MAJ LAMB: Not in my immediate memory, no.
- 40

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MAJ CHAPMAN: So that would, presumably, depend on DASA, in the first place, having some awareness of the application and the decision?

45 MAJ LAMB: That's exactly right. Yes, there would have to be dissatisfaction in there, or concern.

MAJ CHAPMAN: Now, as referenced in your statement, you applied, in this case, to the DoSA-FT for the Navy. Is that correct?

5 MAJ LAMB: For this, that's right. You'll see initially in its infancy, we could foresee that there was going to be a conflict with GPCAPT Young's exit from Australia. So - - -

MAJ CHAPMAN: If I just break that up, MAJ Lamb.

MAJ LAMB: Yes.

MAJ CHAPMAN: So just the first proposition that you applied to the DoSA-FT for Navy in respect of the OPEVAL MPTF. Correct?

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MAJ LAMB: That is correct.

MAJ CHAPMAN: And at that time that was CMDR, now CAPT Greg Davison.

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MAJ LAMB: Correct.

MAJ CHAPMAN: And, Chair, I just note that we'll be hearing from CAPT Davison tomorrow.

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Sir, in the timeline, we have this application being made by you on 11 October 2019.

MAJ LAMB: That is correct.

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MAJ CHAPMAN: And at that time you were at AATES? Sorry, where "at the time" is post the AATES testing where AATES identified the ambiguous attitude issue.

35 MAJ LAMB: That is correct.

MAJ CHAPMAN: And that was identified around June 2019?

MAJ LAMB: That is correct.

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MAJ CHAPMAN: So we're at the point of you applying for the Military Permit to Fly in respect of the OPEVAL that was being conducted by Standards?

45 MAJ LAMB: That's correct. And there's regulatory reason for that.

MAJ CHAPMAN: And the Testing Director was nominated and was COL Anthony Norton.

5 MAJ LAMB: That is correct.

MAJ CHAPMAN: And consistent with the evidence that you gave in October last year, and evidence the Inquiry has received since, you are applying for the Military Permit to Fly actually in support of the Operational Evaluation?

MAJ LAMB: That is correct. It's the enabling instrument without which the activity could not have been undertaken.

- 15 MAJ CHAPMAN: And that was because, am I right, that following the AATES testing you and SO1 AATES, COL Reinhardt, had agreed to participate in the OPEVAL to the extent of planning and seeking the necessary authorisations? Correct?
- 20 MAJ LAMB: Sir, that is correct. And just for clarity, the process of a Minute administering the application is an obligation, it's not a vote at the table as to whether a DACM-directed task is undertaken. So when that is directed, then our responsibilities are to ensure that if this is an inevitable test activity to be undertaken, then it must be done in the most safe and proper manner.

MAJ CHAPMAN: And I think you gave some evidence about that – quite a bit of evidence – last year.

30 MAJ LAMB: Correct.

MAJ CHAPMAN: If I could just summarise that evidence. You, essentially – and I'm paraphrasing – took the view that it was prudent to be involved given that AATES wanted to have some input in that process to reflect the concerns that had arisen during the initial testing. Is that fair?

MAJ LAMB: So that is correct. What also is correct is that the 16 Brigade Operational Airworthiness Management Plan, paragraph 4.8.4, 40 mandates that AATES provide the governance oversight and safety oversight to the task. They can't do it without that approval. Additionally, AATES is the only – or was, at that time – I'm sure it remains the same today, but could be corrected – is it's the only approved Land Test and Evaluation Unit as well.

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MAJ CHAPMAN: Understood.

MAJ LAMB: Yes.

- 5 MAJ CHAPMAN: So while you were key to obtaining the authorisations and involved in the planning – which we will touch on again briefly – you were not, yourselves – and when I say "you", I mean COL Reinhardt and you – were not, yourselves, involved in the Operational Evaluation sorties.
- 10

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MAJ LAMB: Not at all. No, we weren't even in location.

MAJ CHAPMAN: Now, I've asked you some preliminary questions about that Military Permit to Fly. Can you go to paragraph 4 of that Military Permit to Fly? And do you see it was a Category 4 flight test activity? That's the Operational Evaluation?

MAJ LAMB: That is correct.

20 MAJ CHAPMAN: And it's described as "a follow-on initial operational test – sorry, a follow-on from initial operational test and evaluation activities. Correct?

MAJ LAMB: That is correct.

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MAJ CHAPMAN: And just to be clear, the initial operational test and evaluation activities is a reference to the AATES testing, the earlier AATES testing. Correct?

- 30 MAJLAMB: So initial operational test and evaluation is actually the term in itself. So there's initial operational test and evaluation. And then, subsequent to that, there is follow-on operational test and evaluation. Being it's first of kind, by definition it's initial.
- 35 MAJ CHAPMAN: And is the Inquiry to understand that separate from this Form 18b, which is in respect of the Operational Evaluation, there was a similar 18b form and associated documents submitted for approval for the AATES testing. Is that right?
- 40 MAJ LAMB: That's correct, yes.

MAJ CHAPMAN: And just in terms of that application for Military Permit to Fly, that was for Category 2 testing and not Category 4. Correct?

MAJ LAMB: That is correct.

MAJ CHAPMAN: And do you recall making that application on behalf of AATES?

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MAJ LAMB: I do.

MAJ CHAPMAN: Can I just show you a document? And this has been circulated, a physical copy to Counsel representing. So I'll just hand this to you, MAJ Lamb.

MAJ LAMB: Thank you.

MAJ CHAPMAN: And do you recognise that to be the Form 18b for the AATES testing in which MAJ Wilson flew the test sortie?

MAJ LAMB: I do.

MAJ CHAPMAN: And you again applied to the DoSA-FT, although in this case it was to the Air Force GPCAPT Steve Young, and you did so on 31 May 2019?

MAJ LAMB: That is correct. So just for formality, his appointment is known as the RAAF-Army DoSA-FT.

MAJ CHAPMAN: RAAF-Army, thank you.

MAJ LAMB: Yes.

30 MAJ CHAPMAN: And we see the application is approved on 31 May 2019.

MAJ LAMB: So this is the Form 18 application. Sorry, the approval to the Form 18 is on that same date, yes.

MAJ CHAPMAN: Yes.

MAJ LAMB: Correct. Yes, my apologies.

40 MAJ CHAPMAN: No, that's all right. And, as I say, this formed part of the pack which included the Form 20B and the Form 21. Correct?

MAJ LAMB: 21 and 20A.

45 MAJ CHAPMAN: Sorry, 20A, thank you. Ma'am, can I just tender as a

single exhibit the Military Permit to Fly and associated documents in respect of the AATES testing.

MS McMURDO: That will be Exhibit 190.

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#EXHIBIT 190 - MILITARY PERMIT TO FLY AND ASSOCIATED DOCUMENTS RE AATES TESTING

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MAJ CHAPMAN: Did you just receive another - - -

MAJ LAMB: 18b, yes. 21 and 20A.

15 MAJ CHAPMAN: I think that's the pack. I think that's the tender copy.

MS McMURDO: Swap. Could I have a look, please?

MAJ CHAPMAN: And do you see at paragraph 6 of the Military Permit to Fly – and this is on Form 18b – they include a number of proposed flight conditions and restrictions? Do you see that?

MAJ LAMB: I do.

25 MAJ CHAPMAN: And these are, as it says, "Proposed flight conditions and restrictions", though also included in this is the restrictions included in the test plan. Is that right?

MAJ LAMB: Yes, that's correct.

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MAJ CHAPMAN: And these ones, on this form, include:

It must be conducted in accordance with the Taipan Flight Manual.

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Do you see that?

MAJ LAMB: I do.

40 MAJ CHAPMAN: And that the Flight Authorising Officer and the Aircraft Captain are to do two things: firstly, to ensure knock it off criteria is briefed and understood. And just pausing there, "knock it off" meaning that crew understood certain conditions would require them to cease continuation of the activity.

MAJ LAMB: That's correct.

MAJ CHAPMAN: And the second being that the Authorising Officer and Aircraft Captain are to ensure the Risk Management Plan for the activity is valid and required controls are in place. Correct?

MAJ LAMB: That is correct, yes.

MAJ CHAPMAN: And there was an Aviation Risk Management Plan which was enclosed with the test plan which formed part of the package that went to the DoSA-FT?

MAJ LAMB: That's correct. They're the enabling artefacts to the Form 18b flight conditions.

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MAJ CHAPMAN: Thank you, MAJ Lamb. And if you turn over the page on this document, we go to paragraph 7 under the heading, "Substantiations". Do you have that?

20 MAJ LAMB: I have that.

MAJ CHAPMAN: And we have a description here of the purpose of the activity which includes:

- 25 technical substantiation to disclose any technical risk, control limitations and a test that there are no technical limitations preventing the aircraft and aircrew from being capable of safe flight wearing HMSD 5.1 –
- 30 among other statements.

MAJ LAMB: That is correct.

MAJ CHAPMAN: And just returning to the categorisation. So this is a flight test which is in Category 4; is that right?

MAJ LAMB: That's correct, yes.

40 MAJ CHAPMAN: And as set out in the form, the reason that's noted there is that:

The MRH is an already certified type with the embodiment of not yet approved design change, HMSD 5.10, where flight is required to fully verify compliance with the design requirements.

MAJ LAMB: That's correct.

MAJ CHAPMAN: So is this essentially to say that the purpose of this test, this is the OPEVAL test, is to test the performance of 5.1 to ascertain whether it impacts, adversely or otherwise, on the platform systems, in a very general sense?

MAJ LAMB: So it can't be stated in a general sense because the context was for an interim capability under very strict controls. So like I think I said last time, I'd like to reiterate again by illustration, if I could?

MAJ CHAPMAN: Sure.

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- MAJ LAMB: So the approval, the service release of a product, if you imagine that, ma'am, as a soccer ball, that's what the system could be able to do in its full potential. But these restrictions under the OT&E, for which you are pointing to, is like contracting to something the size of a golf ball. And that's because to allow 6 Aviation Regiment, in particular, to progress their capability whilst as it says in the test plan, to develop a permanent solution. So it would be not appropriate to say that it's a general approval for a test. It has to be in the context of all the constraints and restrictions that were laid out in that test plan.
- MAJ CHAPMAN: And I'll just quote above from a form here that, 25 "already certified type with embodiment". So if that's the Category 4 purpose, how is it different, can you describe, to the Category 2 testing?
- MAJ LAMB: So the Category 4 testing is for the context which I've just described. The Category 2 test, by definition, is done with additional rigour by an approved flight test organisation. The primary differentiation that you will foresee is the full scope and anticipation for the envelope and the human machine interface specific to that. In conducting the Category 2 testing, it considers the full envelope of testing for the HMI integration. So how the human will respond in interacting and interfacing, in this case, a visual system or a symbology set. Whereas the Category 4 system is only constrained to the context for the projected approval, which I think I've illustrated.
- 40 MAJ CHAPMAN: So I think, in using your own words there, we have 40 there in a Category 4 testing, a test approach which applies less rigour 40 than a Category testing?

MAJ LAMB: So less rigour and, very importantly, it doesn't require, under the DASR's, qualified personnel in test and evaluation. So you include and seek advice from operators on their opinion. But it's only that

opinion. They've already been constrained in the context of that opinion by the bounds provided by the flight conditions. So it's contextual to that.

One of the distinctions between a qualified test personnel and someone who is yet to – or has not yet undertaken that, is to anticipate or project forward what it will be like in other circumstances than other the experience that they have on that single sortie. So for that reason alone, taking full advice that needs to be taken in context, because it's incomplete and it doesn't take into account if a circumstance got worse than the conditions that you're in, what would be the consequence of that.

MAJ CHAPMAN: What I'm just trying to understand, MAJ Lamb, is that you've got an "unacceptable" finding in a Category 2 testing and then in your evidence, the OPEVAL moves to consider or obtain further information, is the evidence that the Inquiry has received, though it's done with necessarily less rigour than the first testing. Is that correct? Is that a fair summary?

MAJ LAMB: So it is a fair summary. I think it warrants clarification. 1t's information particular to a narrow permission that we were considering providing to them. So not further information to the testing that had been undertaken by AATES. That was conclusive and there was a certainty around that. Further information has probably been – that interpretation of those words, I say respectfully, probably implies additional to the AATES testing.

It wasn't additional to the AATES testing. It was only related to the narrow or the very small area that would enable them to continue operation in that aircraft and not more. It wasn't to add to the AATES testing. That stood on its own.

AVM HARLAND: And so in that sense, are you saying that the "unacceptable" finding still stands?

35 MAJ LAMB: Absolutely.

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AVM HARLAND: Because the OPEVAL didn't actually address the "unacceptable" finding?

MAJ LAMB: No, it didn't. That's exactly right. So the "unacceptable" finding, by definition, in the report mandates that Defence must do something about it. And that's the exact words, "must", being compulsory. This OT&E activity, we put the constraints around that to say, "Okay, if you are going to go and fly with this, then this assessment is to establish by the operators can you do it safely".

But it's only in that context. But with similarity, the Navy Flight Trials Unit did their assessment and identified the deficiency. They articulated that. As you'd know, in both their test plan and their test report they described it accurately, and exactly the same way that we described it. So there's no contention in that regard. But for their role and environment, a bit like moving forward for this very narrow permission for 6 Regiment, they said that they've got other mitigating factors.

And CMDR Davison can talk about that tomorrow, but things that I think he would likely allude to is that there is strong visual cues when you're operating to the vertical and horizontal lines. There's precision approach path indicators. So that with the indicators that are available to you, the manifestation and the consequence of the ambiguity in the display doesn't manifest itself.

The other aspect that my understanding would be is that the off-axis requirement when you're approaching the back of a ship, is like a stabilised approach when you're flying your aircraft. You're looking conformal to the longitudinal axis of the aircraft, so there's no off-axis cueing. There's a slight off-axis on final but that's mitigated by the large structure that gives you certainty about what right looks like in terms of visual orientation or spatial orientation.

25 AVM HARLAND: Okay.

MAJ LAMB: Yes.

AVM HARLAND: So I understand, so contextually the AMAFTU 30 findings were made on a different basis in comparison to what the Army operating context would be?

MAJ LAMB: That's right. And so my public position has always been that the AMAFTU test report is correct. But when you look at, I believe it's paragraph 3 – I did write it down – in the AMAFTU report, it clearly states that that is very different to the turning manoeuvres that would be required in the Special Operations role. So they have correctly come to a conclusion, in my professional opinion, that there is a deficiency there. It's an undesirable deficiency.

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But that's distinctly different to the projected role for 6 Regiment. To the point, that in their test report and in a minute which is -I can give you the reference to - it states that they would like to participate in the trial because they would like to learn about that, and to the extent of having test points in the test plan so that they could seek learning the

understanding if they're in not dissimilar environment, what that means for them.

- So there is absolute consensus on the ambiguity in the display. That's not for debate. It's the application. I reiterate again to you, sir, they identify too – they forecast as well that this consequence in this role and environment, overwater, at night, low level, no visual horizon, degraded IIT performance – Dr Gavrilescu spoke about that in August last year because of the absorption of the IR – very different. They were onto it.
 - AVM HARLAND: So the importing of the AMAFTU findings without re-contextualising it for Army would be an invalid thing to do.
- MAJ LAMB: That's correct. You can't draw that application to every other area. And AMAFTU state that in their report. They differentiate. They disassociate themselves from that, saying, "Do not draw a parallel conclusion to this". So if that is being claimed, that's misrepresented, I would suggest, as what is stated in the AMAFTU report, which in my deliberations in establishing the risk conditions with COL Reinhardt, we were well informed by their observation.

AVM HARLAND: That's good. That helps a lot. In terms of the moving from a Category 2 to a Category 4 flight test, what I understood was the Category 4 flight test was not intended to replicate and sit over the CAT 2 flight test.

MAJ LAMB: No, not at all.

AVM HARLAND: It was for a very narrow set of conditions - - -

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MAJ LAMB: Yes.

AVM HARLAND: - - - that were defined by limitations. Were those limitations that list of 24, I think?

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MAJ LAMB: 24, correct.

AVM HARLAND: Which was claimed to be quite a substantial list of limitations in comparison to other flight tests?

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MAJ LAMB: Yes, that's correct.

AVM HARLAND: So that was how we got to the CAT 4.

45 MAJ LAMB: Mm-hm.

AVM HARLAND: In that sense, when you go through that testing, wouldn't it be reasonable that those limitations carry over into the operation of the TopOwl in service?

MAJ LAMB: So, more to the point, sir, in paragraph 68 of the test plan that has the signature of both myself and COL Reinhardt, it states – and I can get the quote for you – and it's probably worth bringing out, that we strongly recommended that a Special Flying Instruction be drafted that captured exactly this, and that that information was provided to aircrew. So we forecast that and we captured that in paragraph 68 of the test plan.

AVM HARLAND: So did you foresee that those limitations would effectively be limitations imposed to service release for TopOwl, and that they would carry on into - - -

MAJ LAMB: I can't draw that conclusion, sir. But what I needed to be able to do, to have a clear conscious, was ensure that limitations were carried through whilst they had that interim approval, until such time a permanent solution was found. So that paragraph was deliberately crafted or drafted to capture those limitations so that they weren't lost unintentionally through the system. The actual quote to that, would you like me to say that, MAJ Chapman, or - -

25 MAJ CHAPMAN: In answer to the Air Vice-Marshal? Sure.

MAJ LAMB: Yes. Correction, sir, it's paragraph 63, "Test Plan". Para 63 stated:

30 SO1 Standards must articulate these limitations. The overall OT&E concept and data cards and HMSD 5.1 description in LMP easily accessible to operational aircrew. It is suggested that the relevant information is summarised into a Special Flying Instruction signed by DG AVN before conduct commences.

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So I understand from the broader audience, and I know you know, sir, but a Special Flying Instruction is an interim instrument that would normally succeed into permanency and Standing Instructions. But I say that, and qualify that, that this was always only an interim approval. That's stated also in the test plan at paragraph 3, 4 and 30. Thank you, sir.

MAJ CHAPMAN: And just really to follow on two things what the Air Vice-Marshal has just raised, it was your expectation, whether in a Special Flying Instruction or conditions attaching to service release, that in one way or another the substantive controls that you put on the OPEVAL

would be carried through to operational aircraft and service release?

- MAJ LAMB: So to stop short, not before service release because we also qualified that this was an interim capability only. So what that meant was to never go to service release. And interim capability is exactly maybe I didn't articulate that sufficiently clear enough in the test plan. But an interim capability was to only allow 6 Regiment develop its proficiency and pedigree and acumen and develop its procedures with the aircraft.
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Because by not doing that, it was advised that this would be an impost to Plan Palisade. So this was an avenue for them to go and do this in a very safe and controlled environment, whilst in the background or on the side a permanent solution was made available. Others would testify, in the Flight Test Organisation, there always was another option available to you and that was regression back to 4.07, which excluded, obviously, the distance to run information.

- MAJ CHAPMAN: Just so I'm understanding your evidence correctly, you're saying the position, in fact, is worse than not applying these controls to service release. You're saying it should never have gone to service release at all?
- MAJ LAMB: That is correct. That is to hold to our statement in the test plan. It's an interim capability only.

AVM HARLAND: So were you surprised when it went to service release?

30 MAJ LAMB: I was. That's my personal opinion and professional opinion.

AVM HARLAND: Just one question on the "unacceptable" finding. Just going through the documentation where you apply for MPTF to the
Navy Delegate of the Safety Authority Flight Test, there's no real reference to the "unacceptable" finding that I could see there in the document. Was he made aware of that finding and the potential impact of that on the MPTF he was signing?

MAJ LAMB: That's correct, sir. So in the test plan – and I would need to have a look at it exactly, sir, but the normal structure for a test plan would have results of previous testing of which, that transparency, that information would have been handed over. But certainly in terms of conscience, I make a statement in my submission to this testimony today, that whilst I can't recollect exactly what we spoke about and what the

correspondence was at that time, five or six years ago, the normal things that would be included would be things such as that, the context. Yes.

AVM HARLAND: So you felt that that was transparent, and that the Navy DoSA-FT would've been aware of that.

MAJ LAMB: Absolutely. And there's the benefit, of course, sir, of his testimony tomorrow. But I'm very confident that he was aware, yes.

10 AVM HARLAND: Okay, thank you.

MAJ CHAPMAN: And, MAJ Lamb, just also to return to something earlier. You were talking about the First-of-Class Flight Trials with the Air Vice-Mashall. You're aware that that was referenced in the Operational Evaluation report?

MAJ LAMB: I'd have to have a look. I haven't accessed - - -

MAJ CHAPMAN: Well, maybe, so my next question: the Inquiry has received evidence that decision briefs that were taken by the then Director-General of Army Aviation relied, at least to some extent, on the First-of-Class Flight Trials in recommending service release. Correct?

MAJ LAMB: That's right.

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MAJ CHAPMAN: And if I'm understanding your evidence in your exchange with the Air Vice-Marshal correctly, your position is, to the extent that that recommendation relied on the First-of-Class Flight Trials, that was entirely misplaced.

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MAJ LAMB: That is correct. It was contextual for – so the First-of-Class Flight Trial, to put into plain language, that is the establishing the ship operating limits in and around the ship. It's not the en route - - -

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MAJ CHAPMAN: Yes. And, in your view, there was no value in including the reference to the First-of-Class Flight Trials in terms of the Director-General recommending service release and the decision that he took. Is that right?

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MAJ LAMB: Say that again, sir?

MAJ CHAPMAN: There was no inherent value in relying on the First-of-Class Flight Trials in support of recommending service release of 5.10?

MAJ LAMB: That is correct, sir. You know, I have a view on that.

MAJ CHAPMAN: Do you want to offer that view?

MAJ LAMB: So the view is, is the technical literacy just wasn't present in Avn Command to draw at that distinction, which at a superficial level may appear similarly. Another Flight Test Organisation has provided a recommendation or found a deficiency in the ambiguity, but it's insignificant. But that's a very superficial and incomplete understanding, as I am describing today.

It's circumstantial to the context of what they were operating. And in my professional view, they got it right for that. It was an undesirable. Not that I've flown that profile to that - - -

AVM HARLAND: You mean Navy?

MAJ LAMB: AMAFTU.

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AVM HARLAND: AMAFTU, yes.

MAJ LAMB: Yes, AMAFTU, that's right. So I don't question at all their ability. They are a reputable and highly competent Flight Test Organisation, and they got that assessment correct. Noting they also 25 identified that's a very different finding or conclusion to draw than what was projected for 6 Regiment.

So in terms of what MAJ Chapman is looking for, I alluded to this at the 30 conclusion of my October briefing to you, sir, when I spoke about how I felt that there was a distinction between the Military Air Operator's organisational constructs from what I experienced with Air Force, Air Warfare Centre, ACG, AMG, AFTG, et cetera, in that there is within their organisations a scattering of technical experts that have technical literacy that can help the Commander make a fully informed decision as opposed 35 to a superficially interpreted position.

Because that interpretation that, "Because AMAFTU can fly it in their environment, we can fly it in our environment", is a very insufficient and 40 incomplete understanding of the actual truth. With these systems, it's all about the nuances and the context, and that takes real detail to be able to extract that out and inform the decision-makers, the accountable managers, so that they can make appropriate choices. Yes.

AVM HARLAND: Would the same be true for accepting a foreign Defence Force certification as well, that it would need to be done with some caution and some analysis to make sure that it applied to the operations you intended?

MAJ LAMB: So that's exactly right, sir. That's the very reason for being – for having the Flight Test Organisation. I could take a couple of minutes – I anticipated this question, not that I've been watching the Inquiry now I'm a civvie, but the – so it's right and appropriate that DASA have an establishment like we do in CASA. And I'm not talking for CASA, but we have a recognition of certification bases of allied nations, of which Germany is one.

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- That's appropriate for the service-wide envelope, the ability to use that approval to bring that into consideration so that we don't have to duplicate establishing the certification of the system. But that's only really entry control. The due diligence and the gate-keeper is the purpose of the Flight Test Organisation.
- So we, from an engineering perspective, acknowledge the certification basis of a like organisation. But we need to now understand what that will be like, how that will apply for the way we want to operate it and where we want to operate it, the environment we want to operate it, and the role we want to operate it. And that is the purpose of being for the Flight Test
 Organisation. You know, in other discussions and hearings and, you
- 25 Organisation. You know, in other discussions and hearings and, you know, I can make comment to this in a "Protected" space, ma'am, but I've been in front of Senate Estimates about a not dissimilar matter - -

MS McMURDO: We might not go there because of Parliamentary privilege.

MAJ LAMB: I understand. No. So there is a permission for talk about that that I have. But it talks to that as well.

35 MS McMURDO: Permission from whom, sorry?

MAJ LAMB: So from the Committee. Yes. But I'll go back if – maybe I need to talk about that offline – but, you know, in terms of doing that – so the distinction is really we're talking about the service flight envelope of the equipment. So that's the engineering approval. What we then need to be able to do is apply it in an operational context, is the operational flight envelope.

The operational flight envelope are further restrictions that we might apply in the way that we operate the aircraft. So to say that the German

certification gives us the authority to apply that in the Australian context is true only to a point. We then need to do that due diligence. So an analogy that I offer to you if that's not entirely clear, is that we could recognise a vehicle's design and approval standard, like, a Toyota Corolla, for example. And we could bring that into Australia and the Australian Standards folk could recognise that and say that "Meets our Australian Standards". And we could release that into market for use in Australia. But if I then want to go and take that Toyota Corolla up into the Blue Mountains and take it down a fire trail in the middle of the night, in the pouring rain, that was never the intent of that vehicle design.

There's no question on the design. There's no question on recognising the certification. No one's done anything wrong there. The mistake we've made is we've tried to use that in the environment for which it was not designed for, if that makes sense.

AVM HARLAND: It does. So if I'm to understand correctly, what you've really described there is how for two organisations, one organisation could find something to be acceptable and very useful in terms of the design of the aircraft and the way they operate it.

MAJ LAMB: Yes.

AVM HARLAND: But another organisation could find it unacceptable. And the two truths can live together.

MAJ LAMB: That's exactly right. And that's the example, sir, that you alluded to with AMAFTU and AATES. That's exactly the two truths do live together, in my professional opinion.

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AVM HARLAND: Great, thank you.

MAJ CHAPMAN: I see the time, Chair.

35 MS McMURDO: Yes, I think this is probably a good time to finish for the day. We'll start again in the morning at 9.30 if that's all right with you? Thank you. Yes.

40 **<WITNESS WITHDREW**

PUBLIC INQUIRY ADJOURNED UNTIL TUESDAY, 1 APRIL 2025 AT 0930