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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**

**COL J STREIT, with FLTLT A ROSE and MAJ L CHAPMAN,
Counsel Assisting**

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CPL A Naggs
SQNLDR C THOMPSON, representing WO2 J P Laycock
COL N GABBEDY, representing MAJGEN Jobson
SQNLDR M NICOLSON, representing D10
MS K MUSGROVE, representing the Commonwealth**

1000, TUESDAY, 6 AUGUST 2024

DAY 13

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	11/08/24	(Transcription)

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MS McMURDO: Yes, COL Streit.

5 COL STREIT: Can I briefly indicate Counsel Assisting's plan for today and tomorrow? Can I first mention that – and introduce MAJ Luke Chapman, who is a member of the Counsel Assisting Team, and he will be taking a witness today and two witnesses tomorrow. FLTLT Alexandra Rose will take D55. And MAJ Chapman will take Dr Raymond Matthews; and tomorrow, LTCOL Brendan Reinhardt and Dr Maria Gavrilescu.

10 May I indicate that it is not anticipated today that it will be necessary to enter a private hearing concerning Dr Matthews. One of the annexures to his report is at the “Official: Sensitive” classification, and it may be MAJ Chapman will be able to deal very briefly with that in open session. But if that changes, then MAJ Chapman will advise the Inquiry as soon as possible.

15 And because of the close seating arrangements in the hearing room, I will remove myself to the other end of the table, just to facilitate the mechanics of evidence being properly led by the Counsel Assisting members I have identified, and they will take any matters that the Chair or Deputy Chair raises, or deal with any objections that might occur in the evidence. Thank you.

20 MS McMURDO: Thank you, COL Streit. Yes, FLTLT Rose.

25 FLTLT ROSE: I call a witness who has the pseudonym of D55. Perhaps while we're waiting for the witness, Ms McMurdo, I note that, in accordance with the pseudonym Direction that you made last week, the cameras will not be pointing at the witness box, they will only be pointing at yourselves and Counsel Assisting.

30 <D55, Affirmed

35

<EXAMINATION-IN-CHIEF BY FLTLT ROSE

40 MS McMURDO: Yes, FLTLT Rose.

FLTLT ROSE: Please help yourself to some water.

D55: Thank you.

45 FLTLT ROSE: If you could please just remove your black folio to the side

because underneath there I would ask you to flip over the A3 paper and look for your own name and confirm to me whether you are the person who has been assigned the pseudonym D55?

5 D55: I am.

FLTLT ROSE: What is your rank?

D55: Captain.

10

FLTLT ROSE: What unit are you currently posted to?

D55: 6 Aviation Regiment.

15 FLTLT ROSE: Can you please confirm that you received the following documents prior to appearing today: a section 23 Notice requiring your appearance to give evidence.

D55: I did.

20

FLTLT ROSE: An extract of the Inquiry's Directions?

D55: I did.

25 FLTLT ROSE: A copy of my appointment as an Assistant IGADF?

D55: I did.

30 FLTLT ROSE: A Frequently Asked Questions Guide for Witnesses in IGADF Inquiries?

D55: I did.

35 FLTLT ROSE: And a Privacy Notice?

D55: Yes, I did.

FLTLT ROSE: Did you prepare a statement for this Inquiry?

40 D55: Yes, I did.

FLTLT ROSE: I'll hand you a document. Could you look through the pages of that document and confirm to me that is your statement?

45 D55: This is my statement.

FLTLT ROSE: Is it dated 25 July 2024?

D55: Yes, it is.

5

FLTLT ROSE: And it's seven pages in total.

D55: Correct.

10

FLTLT ROSE: I tender the statement.

MS McMURDO: Yes. What exhibit number is that? 36, right. We're up to Exhibit 36 now. Exhibit 36, that will be.

15

#EXHIBIT 36 - STATEMENT OF D55 DATED 25/07/24

20 FLTLT ROSE: Can I please ask you to be mindful during the course of your evidence today of your security obligations, and if there is anything that is above the "Official" level – so it's "Official: Sensitive" or above – then please indicate to the Inquiry that that is an issue, and myself and other Counsel, and any other questioner, will be respectful of that.

25

D55: Understood.

FLTLT ROSE: Starting with your background and qualifications, you attended Royal Military College Duntroon in 2015.

30

D55: That is correct.

FLTLT ROSE: You commenced your flying training in 2016.

D55: Correct.

35

FLTLT ROSE: You qualified on the CT/4, and then the Kiowa.

D55: That's correct.

40

FLTLT ROSE: CT/4 is a fixed-wing aircraft.

D55: That's right.

FLTLT ROSE: And the Kiowa is a helicopter.

45

D55: Yes, it is.

FLTLT ROSE: You completed your MRH-90 conversion course in 2018.

5 D55: Correct.

FLTLT ROSE: Then posted to a Squadron in 5 Aviation Regiment in 2019.

10 D55: Correct.

FLTLT ROSE: Did you fly the MRH-90 in that Squadron?

D55: Yes, I did.

15 FLTLT ROSE: Then you posted to 173 Squadron and 6 Aviation Regiment in July 2023.

D55: Correct.

20 FLTLT ROSE: That was to fly the MRH-90 again.

D55: It was.

25 FLTLT ROSE: Did you post into 6 Aviation Regiment as a line pilot?

D55: That's correct.

30 FLTLT ROSE: Was this because 5 Aviation Regiment had ceased flying MRH-90?

D55: That is correct. They ceased flying in August of that year.

35 FLTLT ROSE: So they ceased flying in August; however, you did post down in July.

D55: In anticipation, correct.

40 FLTLT ROSE: Noting that the MRH-90 fleet was grounded after the incident on 28 July 2023, did you ever conduct any sorties on an MRH-90 when you were in 6 Avn?

D55: I did not.

45 FLTLT ROSE: Are you now in the process of converting to the Black Hawk?

D55: Yes, I am.

5 FLTLT ROSE: At paragraph 12 of your statement you set out that you had 1105.9 total flying hours on the MRH-90.

D55: Correct.

10 FLTLT ROSE: At paragraph 3 you state you qualified on the H135 in February 2024 through a civilian flying school in Melbourne.

D55: Correct.

15 FLTLT ROSE: What is the H135?

D55: So the H135 is an interim contracted solution. With the retirement of the MRH-90 and the acquisition of Black Hawk, there wasn't the ability to train pilots all at once. So this contracted solution allowed pilots to continue flying sometime between January and December 2024, when eventually all the pilots would be able to finish their training on Black Hawk.

FLTLT ROSE: When you're saying it's a civilian flying school in Melbourne, do you have to travel to Melbourne to do your flying hours?

25 D55: No, while the contract was stood up, the training was conducted in Melbourne. We now have the aircraft based out of Bankstown, about 30 minutes by road from Holsworthy. It's a hired solution.

30 FLTLT ROSE: So it's not a Defence asset.

D55: No. The aircraft are operated as state aircraft in accordance with our policy, but they are a civilian registered aircraft.

35 FLTLT ROSE: What is your primary role in 6 Avn Regiment, currently?

D55: So currently I am the 2IC of 173 Squadron.

FLTLT ROSE: What is a 2IC?

40 D55: Second in Command.

FLTLT ROSE: Of what?

45 D55: Of the Squadron.

FLTLT ROSE: So that is an executive role, in a sense.

D55: Correct.

5 FLTLT ROSE: Does it have a welfare aspect to it?

D55: Yes, it does.

10 FLTLT ROSE: Any other responsibilities?

D55: Welfare, security, workplace health and safety, administration.

FLTLT ROSE: And you're Second in Command to? Who, particularly, is your primary report?

15 D55: So to the Officer Commanding of 173 Squadron, who is the rank of Major – one second – D9.

FLTLT ROSE: When did you become the Squadron 2IC?

20 D55: I started taking over in November 2023 in anticipation to be ready for January 2024.

FLTLT ROSE: Understood. At paragraph 9 you state that you promoted to Captain in January 2021.

25 D55: Correct.

FLTLT ROSE: Does that make you a fourth year Captain now?

30 D55: Correct.

FLTLT ROSE: So at the time you were appointed to the Squadron, the 2IC position, you'd only been a Captain for three years?

35 D55: Correct.

FLTLT ROSE: As in you were going into your fourth year?

40 D55: That's correct.

FLTLT ROSE: I'd like to ask you some questions now about fatigue management in 6 Aviation Regiment.

45 D55: Yes.

FLTLT ROSE: At paragraph 13 of your statement you set out that Aviation Command have promulgated various instructions since the incident on 28 July 2023, including about fatigue management?

5

D55: Yes.

FLTLT ROSE: And that 6 Aviation Regiment policy has now directed unit-specific fatigue management instructions with targeted limitations on duty periods, rest periods, fatigue awareness through training, suitability of sleeping environment, et cetera?

10

D55: Correct

FLTLT ROSE: Where are the details of the Aviation Command-level fatigue management instructions contained?

15

D55: So those are contained in Special Flying Instructions. They are issued – that are – they sit on top of our Standing Instructions. So they take effect with precedence.

20

FLTLT ROSE: So are they 6 Aviation Regiment SFIs, or are they Aviation Command SFIs?

D55: They're both. So Aviation Command have issued SFIs, and then units specifically have issued subordinate SFIs.

25

FLTLT ROSE: Does that mean that it comes down to Aviation Command through the Brigade level, down to the Regiment, into the Squadron?

30

D55: That is correct.

FLTLT ROSE: But as you've just explained, the actual instruments themselves were made at Aviation Command level and then Regiment level?

35

D55: Correct. The subordinate SFIs will never contradict a superior one; they may just impose additional restrictions.

FLTLT ROSE: Have those SFIs been turned into – or any intention to turn them into the Standing Instructions?

40

D55: That is the intent. The SFI is issued as an instrument that can be immediately implemented while more formal policy change takes place.

45

FLTLT ROSE: But are you aware of when the policies, the Standing Instructions, will be updated to incorporate those SFIs?

D55: I'm not aware of that.

5

FLTLT ROSE: Because you set out that the policies set out targeted limitations and duty periods as set out. We'll take this one by one.

D55: Sure.

10

FLTLT ROSE: And it's not a memory test and if you can't remember the details of each of these, just say so. But what are the new limitations on duty periods set out in those SFIs?

D55: So duty periods at the 6 Aviation Regiment would be 12 hours of rest and a 12-hour duty day.

FLTLT ROSE: Previous to that, how many hours of rest were set out in the policies?

20

D55: Mandated 10.

FLTLT ROSE: So now it's mandated 12?

25

D55: Mandated 12.

FLTLT ROSE: Of rest.

D55: Correct.

30

FLTLT ROSE: And previous, you said it's 12 hours of duty. Prior to this SFI, what was the mandated hours of duty?

D55: 14 hours by nature of a 24-hour day.

35

FLTLT ROSE: And what does the policy say about those rest periods? Does it go into detail?

D55: They must be free of duty, and one continuous period.

40

FLTLT ROSE: Does it provide anything about how many hours of sleep are recommended?

D55: Not that I'm aware of, in that particular instruction.

45

FLTLT ROSE: Have you received any training about fatigue awareness?

D55: Yes, we receive training. We do mandatory training on it every year.

5 FLTLT ROSE: When you say “every year”, so did you receive the Fatigue Management Awareness training prior to the incident on 28 July 2023?

D55: Yes.

10 FLTLT ROSE: And you received that again in an annual training period?

D55: Yes.

15 FLTLT ROSE: Is it part of a safety day or a specifically targeted Fatigue Management training?

D55: It’s both. So, during particular safety days, fatigue is always something that’s brought up, but also it’s directed training.

20 FLTLT ROSE: Has the training and the contents of that training altered or changed in any way from prior to the incident to post the incident?

D55: I wouldn’t say that the training has been altered. I would just say that it is more at the forefront based on events last year.

25 FLTLT ROSE: Have you heard of or seen a Fatigue Risk Awareness Tool that has been published by the Defence Flight Safety Bureau?

D55: Yes, I have.

30 FLTLT ROSE: I’ll just show you this document.

D55: Thank you.

35 FLTLT ROSE: Is that the tool that you were referring to?

D55: That is the tool.

40 FLTLT ROSE: When did you first see or become aware of this Fatigue Risk Awareness Tool?

45 D55: So the first time I started using it was in January of this year, just by nature of the fact that I didn’t do any flying towards the second half of 2023. When I recommenced flying in 2024, from the first time I flew, we were using the Fatigue Risk Awareness Tool.

FLTLT ROSE: Are you able to say why you weren't flying in the second half of 2023? Is it in relation to the MRH-90 not being available?

5 D55: It is. I was simply qualified on the MRH-90. With no other aircraft category, there was nothing for me to fly.

FLTLT ROSE: And so this tool, was it introduced to the Regiment by a training of some sort; briefed to you from the OC or some other person
10 about how to use this tool?

D55: I'm not aware. So I did spend some time away towards the second half of last year, and I don't recall any specific training regard the FRAT.

15 FLTLT ROSE: Do you use this tool on a regular occasion?

D55: Yes, I do.

FLTLT ROSE: And how is it that you use it?
20

D55: So every member of the crew, prior to flying, will complete a FRAT and then, depending on the result they get from that, we do a self-assessment on fatigue and then actively manage it, or to the point of even cancelling the mission if there are any certain risks raised.
25

FLTLT ROSE: So, in terms of the timing of when you use it, do you use it at the start of your duty or do you use it prior to conducting a sortie?
30

D55: Prior to conducting a sortie.

FLTLT ROSE: And who do you discuss the results with?
35

D55: So every Aviation mission that flies is authorised by an Authorisation Officer. Those people have conducted specific training and have had an instruction that allows them to authorise. The discussion is between the Aircraft Captain completing and collating the FRATs from their crew, and that discussion is had between the Aircraft Captain and the Authorising Officer.
40

FLTLT ROSE: In terms that you write this, do you handwrite it into some sort of form or do you input it into a computer?
45

D55: So we use two different methods given that we don't always have access to our protected network. We have paper copies and we have digital copies. We prefer to upload the digital copies, but we also accept the paper
45

version, which doesn't travel with the aircraft and is scanned afterwards. It does make its way into a digital repository, eventually.

5 FLTLT ROSE: So the crews fill out the form, it goes to the Aircraft Captain, who then relays the results or gives the actual form to the Authorising Officer. Is that correct?

D55: That is correct.

10 FLTLT ROSE: And the Authorising Officer then has a decision to make as to whether that crew, or that particular person, is able to fly, based on the results of this?

15 D55: That's correct. And if you look on the right-hand side of the tool, based on the result, there are certain actions you take depending on the fatigue levels assessed.

FLTLT ROSE: Have you found this a useful tool to use - - -

20 D55: Yes.

FLTLT ROSE: - - - in identifying fatigue in yourself?

25 D55: I have. We have a particular check that we do prior to flying and this exemplifies one particular factor of it, and that is the fatigue element.

FLTLT ROSE: Have you ever had a red Caution result?

30 D55: I have not, no.

FLTLT ROSE: Have you ever had an amber Actively Manage result?

35 D55: I have not. Just to clarify, I have assessed, in the past, that I have been what would be considered amber Fatigue. But since integration of the Fatigue Awareness Tool, no.

40 FLTLT ROSE: Is that because, being aware of the questions that you're going to be asked in this Fatigue Risk Awareness Tool, you change how you conduct yourself during the rest periods?

D55: No. No, simply just the fact that since flying this year while the FRAT has been implemented, I haven't considered my fatigue levels to warrant amber.

FLTLT ROSE: Ms McMurdo, I will tender that document. I have some copies with me I can hand to Counsel.

5 MS McMURDO: Yes. The document Fatigue Risk Assessment Tool will be Exhibit 37.

#EXHIBIT 37 - FATIGUE RISK ASSESSMENT TOOL

10 FLTLT ROSE: Would you like an extra copy for yourselves?

MS McMURDO: Yes please. If you've got a spare one, that would be excellent.

15 FLTLT ROSE: I do.

MS McMURDO: Thank you. I'll share it with - - -

20 FLTLT ROSE: I've got spares; one for each.

MS McMURDO: Okay, thank you.

FLTLT ROSE: Apologies, was that Exhibit 37?

25 MS McMURDO: Yes.

FLTLT ROSE: If you could just turn back to that Awareness Tool, D55. There are five questions that are asked of aircrew. The first is:

30 *At the start of duty, how many hours of sleep have you had in the past 24 hours?*

You have three options. It's:

35 *Less than seven hours;*
Between six and seven hours –

sorry –

40 *More than seven hours;*
Between six and seven hours; or
Less than six hours.

45 D55: Seen.

FLTLT ROSE: The second question is:

5 *At the start of duty, how many hours of sleep have you had in the past 48 hours?*

D55: Seen.

10 FLTLT ROSE: It's:

*More than 14 hours;
Between 12 and 14 hours; or
Less than 12 hours.*

15 Do you see that?

D55: Seen.

20 FLTLT ROSE: Question 3:

How many hours will you have been awake at the end of planned duty?

25 *Less than 16 hours;
Between 16 and 18 hours; or
More than 18 hours.*

D55: Seen.

30 FLTLT ROSE: Question 4:

When will you be performing safety-critical tasks during the duty period?

35 It sets out times of day. You've got 7.30 in the morning to 10 at night, or you've got between 6 am and 7.30 in the morning, or between 10 at night and 2 in the morning, or between 2 in the morning and 6 in the morning.

D55: Seen.

40

FLTLT ROSE: Is it your understanding, just turning to that last period of time, 2 in the morning to 6 in the morning, is there something particular about that time of day which would push you more into the red Caution area?

45

D55: Yes. So the intent there is that it aligns with the circadian rhythm; noting that there is a particular note there if you have acclimatised to a circadian rhythm, say, on exercise.

5 FLTLT ROSE: So if you were used to flying night duty/night shifts, you would become acclimatised to flying at those early hours of the morning?

D55: Potentially.

10 FLTLT ROSE: Potentially. But if you are shifting between day shift, night shift, afternoon shift, you may not have acclimatised to that circadian rhythm?

D55: Which is the intent of that line, yes.

15 FLTLT ROSE: So, generally, for people who work day shift, flying between 2 am and 6 am would be at a low circadian rhythm period for them?

D55: And potentially present a risk, yes.

20 FLTLT ROSE: Because you are less alert and less awake at those times because you're not used to being awake at those times?

D55: I believe that's the intent of the document, yes.

25 FLTLT ROSE: Then in the amber section, between 6 am and 7.30 am and then between 10 am and 2 am, it's similar. If you're not used to flying at those times, you might find that more fatiguing?

30 D55: I believe so.

FLTLT ROSE: The final question, number 5, is:

How alert are you feeling?

35 There's quite a few options here. In the green level, it's:

*Fully alert;
Wide awake;
Very lively;
Responsive but not at peak;
Okay;
Somewhat fresh.*

45 For the amber region, it's:

*A little tired;
Less than fresh; or
Moderately tired.*

5

Then in the red section:

*Extremely difficult;
Very difficult to concentrate;
Completely exhausted;
Unable to function effectively.*

10

D55: Seen.

15

FLTLT ROSE: The Inquiry has heard some evidence in relation to a FACE test or FACE check. Do you know what I'm talking about when I refer to that?

D55: I'm aware of that, yes.

20

FLTLT ROSE: Can you tell the Inquiry what FACE stands for?

D55: Yes, so FACE is an acronym, and it stands for Fatigue, Aircraft Crew External Factors. No, that's incorrect.

25

FLTLT ROSE: Is it Attitude?

D55: Attitude. Thank you.

30

FLTLT ROSE: Complacency, External Factors?

D55: Yes, it is. Thanks. I might have some of those right now.

35

FLTLT ROSE: So in terms of how does this new Fatigue Risk Awareness Tool that the unit is using work in conjunction with the FACE check?

D55: So as I mentioned before, the FRAT encompasses the "F" of FACE, and it expands on that. In the past, we may have become complacent in just throwing out the word "fatigue". Everyone says, "Yes, I'm fine". This is a deliberate way to assess fatigue.

40

FLTLT ROSE: So in the past, it was a subjective test. The aircrew would have to say how they felt; essentially, "Do I feel fatigued or not"?

45

D55: Correct.

FLTLT ROSE: There may not have been room for scope of the grey areas of “Somewhat fatigued”, “A little fatigued”?

5 D55: That’s right. Some people tended to use a red/green system and go, “I am Fatigue green”, or “I am Fatigue red”. Some people elected to measure fatigue on a scale of 1 to 10. It was very subjective and then different from crew to crew. My assessment is this is a deliberate way to formalise that.

10 FLTLT ROSE: I note that the questions ask you how much sleep you’ve had in the past 24 hours, but also the past 48 hours.

D55: Correct.

15 FLTLT ROSE: Is that because it’s looking at cumulative fatigue, not just acute fatigue?

D55: Is my assumption, yes.

20 FLTLT ROSE: Have you actually been delivered a brief potentially from a medical Aviation doctor, or anyone like that, to explain why each of these questions are being asked of you?

25 D55: Personally, no.

FLTLT ROSE: So, in a sense, you’ve read this document at face value and that’s how you’ve understood what the document is asking of you?

30 D55: That’s how I’ve done it, yes.

FLTLT ROSE: You’re not sure whether anyone else in the Squadron or the Regiment has, in fact, had a brief?

35 D55: I can’t confirm that, no.

40 FLTLT ROSE: When you have the annual Fatigue training, or that’s incorporated in some of the annual training that you have, does anyone from Aviation Medicine, or some other Aviation doctor, come and speak to aircrew?

45 D55: For the annual training, no. We do training at a less regular interval via Aviation Medicine personnel. Fatigue can be a component of that, but the structure of that course changes depending on what they assess is most relevant to aircrew that particular year.

FLTLT ROSE: Have you ever had any training from anyone from the Defence Flight Safety Bureau who's come to speak to you about fatigue?

5 D55: Not that I'm aware of.

FLTLT ROSE: Is it your understanding, now that you're using the Fatigue Risk Awareness Tool, that there's not just a subjective analysis that the individual aircrew does about their own fatigue levels, but there's an objective element to it, in that you have to state the hours that you've slept and then someone else makes the decision about whether or not you are fit to fly that particular sortie?

10

D55: My assessment of this tool is that it's both objective and subjective. Objective with the hours; that, for example, the last item, "How alert are you feeling?", is kind of a subjective assessment. So I think it's both.

15

FLTLT ROSE: But it has taken, in a sense, the responsibility away from an individual and placed it in the hands of the Authorising Officer to make a decision.

20

D55: I agree.

FLTLT ROSE: Has it affected the way that you conduct yourself when you are on rest periods? Has it encouraged you to sleep more, for example?

25

D55: No, I consider myself quite acutely aware of fatigue and I believe that I've always conducted myself on a rest period like that.

FLTLT ROSE: Just in terms of when you first became aware of this tool, had you seen it anywhere prior to the beginning of this year?

30

D55: No.

FLTLT ROSE: When you say you saw it, this is obviously an A3-size poster that I've given you to look at.

35

D55: Yes.

FLTLT ROSE: Is it that you were given something of this size and it's stuck up on the walls at 6 Aviation Regiment, or is it handed to you on a A4 piece of paper to review?

40

D55: So when we keep the hard copies, we keep them right near our aircraft in a classroom, and normally that's the room in which authorisations are

45

conducted. Otherwise, they sit on a digital repository and we have access to them at all times.

5 FLTLT ROSE: Have you had discussions with your colleagues about the impact that using this tool has had on managing fatigue in the Regiment?

D55: Yes.

10 FLTLT ROSE: Have they been positive or negative discussions?

D55: They've been positive.

15 FLTLT ROSE: So is it your evidence that by speaking to your colleagues, they think that it is helping them to identify their own fatigue or, in effect, manage their own rest periods better?

D55: I agree, yes.

20 FLTLT ROSE: Have you heard from Command about whether they are finding it a helpful tool to use?

D55: Yes, I have.

25 FLTLT ROSE: That's the Authorising Officers as well as the OC?

D55: The Authorising Officers, the OC, the CO of the Regiment.

30 FLTLT ROSE: What happens if somebody's results from using this tool puts them in the amber or red areas? Have you seen that before?

D55: I haven't seen it; noting that I have had quite a low rate of flying this year. But in the right-hand column there's a Direction as to what to do should you fall into an amber or red.

35 FLTLT ROSE: What is the tempo of work like now in 6 Aviation Regiment?

40 D55: The tempo is fluctuating at the moment. With the introduction of UH-60M, there are certain milestones that are looking to be achieved as the year goes on. Sometimes that increases the tempo and then shortly after, it's quite a low tempo while we move on to the next period; noting that that is one particular element of 6 Aviation Regiment. In my Squadron, for example, we are not flying the UH-60, so I would consider our tempo to be relatively low.

45

FLTLT ROSE: Is it the intention that your Squadron will fly - - -

D55: Eventually, yes.

5 FLTLT ROSE: Eventually. Your evidence before was that you had only
been in 6 Aviation Regiment for a couple of weeks before the incident on
28 July 2023. So you may not be able to answer this question, but have you
noticed any difference in the way – in the tempo of work in those few weeks
before the incident, and then of course after the incident leading into this
10 year, 2024?

D55: I can give a very limited view on that. When I arrived, we were in a
period of high tempo. We were preparing for TALISMAN SABRE '23,
and I was aware that that is a particularly high-tempo period. What I can't
15 really speak to is the general operating tempo of 6 Aviation Regiment. But
from what I saw in those few weeks to what I see this year, I would say on
average the tempo was lower.

FLTLT ROSE: Turning to a different topic; it's in relation to a course that
20 you undertook in 2022. If you can turn to paragraph 18 of your statement.
You state that from the 8th to 26 August 2022 you attended a Regimental
Officers' Intermediate Course; is that correct?

D55: Correct.
25

FLTLT ROSE: And that was at Gallipoli Barracks in Brisbane, is it?

D55: It was a week in Gallipoli Barracks, and then the remainder of the
course was at Swartz Barracks, at Oakey.
30

FLTLT ROSE: And Oakey is in Queensland.

D55: Correct.

35 FLTLT ROSE: And you state that this course was to equip Aviation
Officers with skills for them to fulfil Squadron and Regiment executive
appointments and Liaison Officers?

D55: Correct.
40

FLTLT ROSE: And you were a MRH-90 line pilot in A Squadron in
5 Aviation Regiment at that time?

D55: I was.
45

FLTLT ROSE: And you would have only been a second year Captain in 2022?

D55: Correct.

5

FLTLT ROSE: So why is it that you were on this course?

D55: That is in fact the target range for people attending that course.

10 FLTLT ROSE: So they're finding you or giving you this instruction prior to you taking on essentially executive or command positions?

D55: Absolutely, yes. Before, that's right.

15 FLTLT ROSE: And did you know that was in your career development, that you would have a particular executive or command role imminently?

D55: At that time, I didn't know that I had one coming up, but yes.

20 FLTLT ROSE: At paragraph 19 there were some colleagues of yours from 5 Aviation Regiment on this course?

D55: Yes.

25 FLTLT ROSE: Including CAPT Matthew Goodridge?

D55: Correct.

FLTLT ROSE: CAPT Campbell Rogan?

30

D55: Correct.

FLTLT ROSE: And CAPT Ben Jackson?

35

D55: Correct.

FLTLT ROSE: They're all Chinook pilots, aren't they?

D55: Yes, they are.

40

FLTLT ROSE: There were also some persons from 6 Aviation Regiment, and I'm going to use their pseudonyms. So if you could just turn over that page again, I'll say their pseudonym. And if it's the correct pseudonym, just confirm that is the person you're referring to. D15?

45

D55: Correct.

FLTLT ROSE: D129?

5 D55: Correct.

FLTLT ROSE: And then CAPT Danniel Lyon?

10 D55: Correct.

FLTLT ROSE: They're all MRH-90 pilots; is that correct?

D55: Yes.

15 FLTLT ROSE: Was this the first time you had met CAPT Danniel Lyon?

D55: Yes.

20 FLTLT ROSE: Did you meet him again when you were posted down to 6 Aviation Regiment in July 2023?

D55: Yes, he was my Troop Commander.

25 FLTLT ROSE: So, essentially, he was your Troop Commander for about three weeks?

D55: Yes.

30 FLTLT ROSE: You state at paragraph 14 that Dan – you referred to him as Dan, did you, CAPT Lyon?

D55: Yes.

35 FLTLT ROSE: He was a helpful and an insightful Troop Commander?

D55: Yes, he was.

40 FLTLT ROSE: And he was always willing to share lessons he had learnt along the way?

D55: Correct.

45 FLTLT ROSE: I take it from your evidence before that you didn't fly MRH-90 when you were in 6 Avn?

D55: Correct.

FLTLT ROSE: So had you flown with Dan previously in 5 Aviation Regiment?

5

D55: I had not.

FLTLT ROSE: And had you met LT Max Nugent when he was at 5 Aviation Regiment in 2022?

10

D55: Yes, I have. Yes, I have.

FLTLT ROSE: Were you in the same Squadron?

15

D55: We were.

FLTLT ROSE: Did you fly with him at that time?

D55: I did not.

20

FLTLT ROSE: And you met him again when you posted down to 6 Aviation Regiment?

D55: Correct.

25

FLTLT ROSE: And were you in the same Troop?

D55: Yes, we were in the same Troop.

30

FLTLT ROSE: Did you know WO2 Phil Laycock?

D55: I didn't meet Phil, no.

FLTLT ROSE: You didn't meet him when you posted down to 6 Aviation Regiment? You didn't meet him at that stage either?

35

D55: Not in the three weeks that I was there, no.

FLTLT ROSE: And did you know CPL Alex Naggs?

40

D55: We were in the same Squadron when I posted down to 6 Aviation.

FLTLT ROSE: The same Troop, or the same Squadron?

45

D55: Same Squadron, different Troops.

FLTLT ROSE: And did you fly with him?

D55: I did not.

5

FLTLT ROSE: If you go to page 6 – so it's paragraph 20, page 6 of your statement. We're just turning back now to the Regimental Officers Intermediate Course that you attended in 2022. You said you recall having conversations with senior officials in Aviation Command, including the following persons – and I'll list them – was this at Gallipoli Barracks that we're referring to, when you met the senior Aviation Command officials?

10

D55: It was at both venues.

15 FLTLT ROSE: Both venues. So there was BRIG Dean Thompson?

D55: Correct.

FLTLT ROSE: What role was he in at that time?

20

D55: He was Commander 16 Brigade.

FLTLT ROSE: And do you recall if that was at Gallipoli Barracks or Oakey?

25

D55: That was at Gallipoli Barracks.

FLTLT ROSE: There was LTCOL Pidgeon?

30

D55: Correct.

FLTLT ROSE: Is that a male or female?

D55: Male.

35

FLTLT ROSE: And what role did he have at that time?

D55: I believe he was the S3 of the Brigade.

40

FLTLT ROSE: Of the Brigade.

D55: Correct.

FLTLT ROSE: And is that at Gallipoli Barracks or Oakey?

45

D55: Gallipoli Barracks.

5 FLTLT ROSE: Now, if you can turn over – or just have a look at the pseudonym list. There's someone there with the pseudonym of D9. You have referred to them before.

D55: Seen.

10 FLTLT ROSE: And that's the current OC of 6 Aviation Regiment?

D55: That is the current OC of 173 Squadron.

15 FLTLT ROSE: Squadron, apologies. And is that the same person that you also had presentations or discussions with on the ROIC?

D55: Correct. That was at Gallipoli Barracks, and he was in the role of Brigade Major for the 16th Aviation Brigade at the time.

20 FLTLT ROSE: And then the final person is COL – is it Gilfillan?

D55: Gilfillan.

FLTLT ROSE: Is that a male or female?

25 D55: That's a male.

FLTLT ROSE: And what role did he have at the time?

30 D55: I believe he was the DOPAW, Director of Operational Airworthiness, at the time.

FLTLT ROSE: So DOPAW - - -

35 D55: D-O-P - - -

FLTLT ROSE: D-O-P-A-W.

D55: Correct.

40 FLTLT ROSE: And you just said it was the Director of Operational Airworthiness.

D55: Airworthiness.

FLTLT ROSE: Do you remember if that was at Gallipoli Barracks or Oakey?

5 D55: That was at Gallipoli Barracks.

FLTLT ROSE: So you met all four of those officials at Gallipoli Barracks.

D55: Correct.

10 FLTLT ROSE: You state that you also had a conversation with COL Lynch at Swartz Barracks.

D55: Correct.

15 FLTLT ROSE: Where is Swartz Barracks?

D55: Swartz Barracks is Oakey, Queensland.

20 FLTLT ROSE: And is COL Lynch male or female?

D55: COL Lynch is male.

FLTLT ROSE: And what role did he have at that time?

25 D55: I believe he was Commandant of the Army Aviation Training Centre at the time.

30 FLTLT ROSE: At paragraph 21 you state that Dan Lyon raised on more than one occasion that his primary focus in the Regiment – and that's at 6 Aviation Regiment – was on non-flying tasks.

D55: Correct.

35 FLTLT ROSE: Do you recall what roles – plural – he was fulfilling in 6 Aviation Regiment at the time?

D55: I believe if he wasn't already in the position, he was shortly going to be the 2IC of the Squadron, the position I'm currently in.

40 FLTLT ROSE: As well as being a MRH-90 pilot.

D55: Correct.

45 FLTLT ROSE: Who was Dan Lyon saying those things to out of the list of people that you've referred to in your statement?

D55: Anyone who would listen.

5 FLTLT ROSE: So was all four of – or essentially all five of them. So the four at Gallipoli Barracks, he said those words to the four persons: BRIG Thompson, LTCOL Pidgeon, D9, and COL Gilfillan?

D55: Correct.

10 FLTLT ROSE: And he also repeated it to COL Lynch at Oakey?

D55: Correct.

15 FLTLT ROSE: When you say “anyone that would listen”, what do you mean by that?

20 D55: Dan was quite vocal about his opinions on these matters because they were very important to him, and he was not outspoken but very direct. Yes, if someone was willing to listen to him when he was speaking about these things, he would definitely chew their ear off.

25 FLTLT ROSE: And you state that he then said that even though these administrative duties did not help to further his abilities as a pilot, he was still expected to progress his flying career and gain experience as an Aircraft Captain. Do you recall him saying that?

D55: Yes, I do.

30 FLTLT ROSE: He also said that periods of high tempo exacerbated this condition and led to people burning out either through chronic fatigue or lack of job satisfaction, and that in the extreme case, this could result in an impact on safety.

35 D55: Those were his words – yes, to that effect.

FLTLT ROSE: Did you share his concerns?

D55: I did.

40 FLTLT ROSE: Did the other participants in the course?

D55: We all did.

45 FLTLT ROSE: Is that because you had discussed it amongst yourselves prior to the course or in informal parts of the course?

5 D55: We all came from individual backgrounds and we all came together on this course, and we all shared those sentiments without talking to each other. And we just happened to realise, when we were having these discussions, that there was a common thread.

FLTLT ROSE: So when Dan was voicing these concerns, were you also raising the issue or supporting his words?

10 D55: Definitely supporting.

FLTLT ROSE: And were others in the course supporting what he was saying?

15 D55: They were. And giving their own unique perspectives from their Regiments/their Squadrons, yes.

FLTLT ROSE: Is it fair to say there was a unanimous feeling amongst the course participants that you supported what Dan Lyon was saying?

20 D55: Yes.

FLTLT ROSE: There was no one suggesting otherwise?

25 D55: There was no one.

FLTLT ROSE: How did the leadership in the room respond to Dan Lyon's concerns? And you can take it one by one if, for example, a certain person had a different reaction to another person, that you can recall.

30 D55: Given that the course was two years ago, I don't recall particular reactions. What I do recall is that as Commanders, you know, everything we said was taken on board; there was definitely a two-way discussion. When it comes to the specifics, I can't recall from two years ago.

35 FLTLT ROSE: But it was received, they listened to Dan's concerns?

D55: Absolutely, they were listened and received. There was no dismissing of any concerns; they were acknowledged by everyone on that list.

40 FLTLT ROSE: Did you get the feeling that Dan had said these particular concerns to those particular people before, or was this the first time he was saying it to them?

D55: I'm not aware if he had any conversations with those members before, so I can't speak to that.

5 FLTLT ROSE: Did you see any concrete actions come out of those conversations, or the process of raising those concerns?

D55: No, I didn't see any concrete actions. I can't really speak to if those discussions drove policy change; I'm not aware of that.

10 FLTLT ROSE: So this was in August 2022. When is it that you were given a secondary duty – or, in fact, a primary duty in an executive or command role?

15 D55: For me, a primary or executive in a command role would've been this year: 2IC, 173 Squadron, 2024.

20 FLTLT ROSE: You have given evidence to the Inquiry that the tempo is less this year than it was last year, but have you seen any concrete changes, now that you're in an executive position, taking on board the concerns that Dan Lyon was raising in 2022? Have you seen any changes in the way that those executive and command positions are appointed, or the expectations on the pilots that are fulfilling them?

25 D55: Yes, I definitely have seen changes. It's very hard when you're experiencing low tempo, because the workload is less and so it's really hard to make an objective assessment there.

30 FLTLT ROSE: In the time that you have been fulfilling your executive position, have you had to shift the focus away from your flying progression so that you can focus on the administrative tasks, or the welfare tasks, required of your executive role?

D55: Yes.

35 FLTLT ROSE: What does that mean in actuality? Are you flying less?

40 D55: Again, a very non-standard year, so I can't speak as to whether I'm flying less than I would've been. If it were my assessment, I would say yes, if this were a normal year, I feel like I would be flying less, just to prioritise the work that is required of me.

FLTLT ROSE: How many hours a day does your executive role take up?

45 D55: Anywhere from 10 to 12.

FLTLT ROSE: Which is essentially the duty period?

D55: Yes. It is my job to ensure that I'm not going over my duty period.

5 FLTLT ROSE: But you definitely have enough work to do in that executive role, to fulfil it for a whole day?

D55: Yes.

10 FLTLT ROSE: And you gave evidence before that you are still flying, but on the civilian aircraft.

D55: That's right.

15 FLTLT ROSE: When do you fit that in?

D55: I mean, we get our programs weeks out and so I will structure my day knowing when I am flying.

20 FLTLT ROSE: Is it just that you just have to do less administrative tasks on those flying days?

D55: That's right.

25 FLTLT ROSE: It's not the case that you go home and login, and keep working on the administrative tasks?

D55: No. If I were to go home and login, that constitutes my duty day, and it must be within those 12 hours.

30 FLTLT ROSE: Paragraph 24, you said that you've seen mitigation measures such as flying task prioritisation and isolation from secondary duties be introduced into 6 Aviation Regiment.

35 D55: Correct.

FLTLT ROSE: What do you mean by that?

40 D55: Periods of high tempo still exist, secondary duties still exist. I feel that there are deliberate measures put in place to focus on the flying, and that might mean separating those members from their secondary duties for a period of time, or allocating extra duties to members who aren't flying, to allow people to focus on the primary job, which is flying. I feel like that's a deliberate push from the Regiment.

45

FLTLT ROSE: Excuse me, I'm not an aviator, but is that a sort of concept of a flying box, where you have a period of time – you know, maybe an hour – before you're to fly where you're not allowed to be distracted by external sorts of things?

5

D55: So I refer to that as the “mission bubble”.

FLTLT ROSE: Mission bubble.

10 D55: And we don't like to get inside someone's mission bubble when we're moving up towards a mission.

FLTLT ROSE: How can you tell if someone's in a mission bubble?

15 D55: You know they're flying by looking at the program; they will tell you they're in a mission bubble – “Don't get in my mission bubble” – or you might see them planning. That's the only way I would - - -

20 FLTLT ROSE: But it's not as if they've got earmuffs or headphones on, or something obvious physically on them that sort of says, “I'm not to be interrupted at this point”?

25 D55: Correct. And some people like to isolate themselves in their office, close the door, not have conversations with people while they do their planning, just so they can focus 100 per cent on that.

MS McMURDO: Is there a particular time period allocated to this?

30 D55: No, ma'am.

MS McMURDO: Just what the flyer - - -

D55: An individual subjective assessment.

35 AVM HARLAND: Is that a new thing, or has that been around for a long while?

40 D55: As far as I'm aware, sir, that has always been a thing, but it's never been formalised. We just speak of the mission bubble as, “I don't want to be bothered right now because I'm trying to prepare for my mission”. I'm not aware of any formal timeframe.

45 AVM HARLAND: So somebody could make a judgement that they were happy to take an administrative task inside their mission bubble because that was their judgement?

D55: Absolutely.

AVM HARLAND: Thank you.

5

FLTLT ROSE: Have you noticed a change in terms of the OC trying to enforce the use of mission bubbles this year?

D55: Nothing direct, no.

10

FLTLT ROSE: You also said “isolation from secondary duties”. Is that all part of the same mission bubble discussion we just had, or is that something separate?

15

D55: It’s the same.

FLTLT ROSE: It’s the same. At paragraph 13 of your statement you state that the staffing levels in 173 Squadron aircrew are quite low because of the introduction to Service of the Black Hawk.

20

D55: Correct.

FLTLT ROSE: How has this affected staffing levels?

25

D55: So as the UH-60 Mike is implemented, members are drawn away from 173 Squadron, and they will conduct their training with the School of Army Aviation and eventually move over to 171 Squadron. We’re essentially a feeder Squadron, while that implementation happens, until the point we are the priority in receiving UH-60M.

30

FLTLT ROSE: So there is less aircrew now, but the intention is to improve on those numbers next year?

35

D55: Absolutely. I believe the priority at the moment is to fully staff 171 Squadron, the operational Squadron, and then, when the priority shifts, 173 will be built-up to, ideally, full capacity.

FLTLT ROSE: Are you going to stay in 173 Squadron?

40

D55: That hasn’t been determined yet. That is my intention, yes.

FLTLT ROSE: You also state that the experience levels of the Squadron aircrew are quite junior at the moment.

5 D55: And that's by the same nature: members are being selected based on either their previous experience with the S-70A-9 Black Hawk, or members who are previously SO qualified; that leaves the rest, and that's mostly the junior aircrew, with the exception of a handful of individuals.

FLTLT ROSE: Are you SO qualified, yourself?

D55: I'm not SO qualified.

10 FLTLT ROSE: I'd like to turn to a different topic, and this is briefly to ask you some questions about Exercise TALISMAN SABRE 2023.

D55: Yes.

15 FLTLT ROSE: Were you involved in that exercise?

D55: Yes, I was.

FLTLT ROSE: Where were you deployed to?

20 D55: So I was based out of the higher Headquarters at RAAF Richmond.

FLTLT ROSE: And the "higher Headquarters", is that meaning you were working with Aviation Command Unit, or was it a combined - - -

25 D55: It was a combined. So it was the Combined Joint Special Operations Task Group Headquarters, and that was superior to the Special Operations Aviation Task Unit based out of Proserpine.

30 FLTLT ROSE: Was that a non-flying role?

D55: Correct.

FLTLT ROSE: Did you have a liaison role with those deployed at Proserpine?

35 D55: Yes, I did.

FLTLT ROSE: What was that? What was your role?

40 D55: So my role was a watchkeeper in the Headquarters. I would essentially be the contact point for external units, either from superior units or subordinate units, and then I would filter information, orders, requests for information, et cetera.

45

FLTLT ROSE: Is that because you'd only recently posted to 6 Aviation Regiment and you hadn't done any flying, essentially, yet?

5 D55: That's right. Any of the members who are currently doing the flying were SO qualified, as I was not.

FLTLT ROSE: Was the CO, the Commanding Officer, of 6 Aviation Regiment with you in the Headquarters?

10 D55: Yes, he was.

FLTLT ROSE: And within the Combined Joint Special Operations Task Group Headquarters?

15 D55: Yes, he was.

FLTLT ROSE: Could you just look at that pseudonym list again, and tell me the pseudonym of the Commanding Officer of 6 Aviation Regiment who was with you then?

20 D55: D19.

FLTLT ROSE: Thank you. Were you on duty when Bushman 83 crashed on 28 July 2023?

25 D55: Yes, I was.

FLTLT ROSE: That was at Richmond?

30 D55: Yes, I was.

FLTLT ROSE: Did you play any role in the search and rescue efforts?

35 D55: My role was essentially liaising with that unit, getting requests for information that came from the CO and then getting the answers from the unit. Further, it was any Direction that he had for the unit, I would pass that down. I was also the focal point for any enquiries coming into the Headquarters.

40 FLTLT ROSE: Did you work through the night and through the morning?

45 D55: No. I left shortly after midnight with the anticipation that I would come back the next day and – so it was expected that I needed to get some rest. I had been on for – since about 4 pm that day. So they got a reserve crew in while I had a rest.

FLTLT ROSE: Did you stay at Richmond for a period of days after that?

D55: I believe it was only two days before we were cut away from duty.

5 FLTLT ROSE: And you returned back to Holsworthy Barracks after that?

D55: That's right.

10 FLTLT ROSE: And were still parading for days or weeks after that?

D55: Very non-standard, very short days. Yes.

FLTLT ROSE: Have you heard of snapshot surveys?

15 D55: Yes, I have.

FLTLT ROSE: Can you just describe to the Inquiry what they are?

20 D55: Essentially, it's a survey that's put out at a particular time of year and then it gets a sense of people's feelings about operations at that particular Regiment, or wing, or unit, et cetera. It's an assessment on that particular point in time; things about fatigue, tempo, morale, et cetera.

25 FLTLT ROSE: Is it run by the Defence Flight Safety Bureau?

D55: It is.

FLTLT ROSE: So it's a digital survey you're to fill out?

30 D55: Correct. It's done on the Defence Protected Network.

FLTLT ROSE: And it's anonymous?

35 D55: It is anonymous.

FLTLT ROSE: But they do know which Squadron or Regiment you're from?

40 D55: I believe so, yes.

FLTLT ROSE: Have you received any briefings on the results of these snapshot surveys?

45 D55: Yes, I have.

FLTLT ROSE: Do you receive that every year?

5 D55: Usually, yes. It is the Commander's discretion whether they brief it to the subordinate units and I've only had one instance, long in the past, where we did not receive a brief.

10 FLTLT ROSE: So when you were in 5 Aviation Regiment, you got these briefings?

D55: All except one time at the 5th.

15 FLTLT ROSE: How many briefings have you received since you've been at 6 Avn Regiment?

D55: Zero. But I have been away when the brief has been given. I have been back briefed by other members.

20 FLTLT ROSE: So if you're not there in person, you essentially miss out on it. There's not an email that comes out with a summary version or PowerPoint slides of what the briefing was?

25 D55: Again, that's the Commander's discretion. I never received anything. I was proactive in asking.

FLTLT ROSE: I understand that you've only received a back brief for the one. Was that from 2024 or 2023?

30 D55: That, I actually can't recall, I'm sorry.

FLTLT ROSE: From what you remember from that back brief, did the surveys reveal any issues with fatigue for aircrew in 6 Aviation Regiment?

35 D55: Yes.

FLTLT ROSE: Can you recall what you were told the survey results were about that issue?

40 D55: I can't recall the particular results. With the snapshot, it uses each element and compares it to that same unit's result from the previous year. I believe, if I recall correctly, that the fatigue was assessed as slightly worse than the preceding year.

45 FLTLT ROSE: So whether it was the 2023 results or the 2024 results, it was worse than the preceding year this time around?

D55: Yes. And I apologise, I can't recall if that brief was for the '23 or '24 results.

5 FLTLT ROSE: You've received these briefings over time, since you've been an aviator.

D55: Yes.

10 FLTLT ROSE: Is there a trajectory where fatigue is generally getting worse or does it fluctuate?

D55: It absolutely fluctuates.

15 FLTLT ROSE: You don't have a background of previous 6 Aviation Regiment results because you were only relatively new to the Regiment.

D55: That's correct.

20 FLTLT ROSE: Those are my questions.

MS McMURDO: The snapshot surveys, just one a year, is it?

D55: One a year, ma'am, yes.

25 MS McMURDO: Thank you. Yes, thanks, FLTLT Rose. Any applications to cross-examine? No.

30 Thank you very much, Captain. We appreciate you coming and giving evidence. You're free to go.

FLTLT ROSE: If you could just leave the exhibit on the table.

MS McMURDO: Is that the actual statement that you were shown?

35

D55: Yes.

MS McMURDO: That's Exhibit 36, I think, and Exhibit 37. Thank you.

40

<WITNESS WITHDREW

MS McMURDO: Yes, MAJ Chapman.

45

MAJ CHAPMAN: Ma'am, I call Dr Raymond Matthews. Ma'am, just while we're waiting, I've just been reminded that the camera to the witness box can be reactivated.

5 MS McMURDO: Yes, indeed. That's happened. Thank you.

<DR RAYMOND MATTHEWS, Sworn

10

<EXAMINATION-IN-CHIEF BY MAJ CHAPMAN

MS McMURDO: Yes, help yourself to water.

15

MAJ CHAPMAN: Can you please state your full name and your current position, please?

20

DR MATTHEWS: Dr Raymond William Matthews, Fatigue Management Lead in Human Performance and Safety within Air Command, Royal Australian Air Force.

25

MAJ CHAPMAN: Can you also confirm that you received each of the following documents that I'm going to read to you, prior to today? So the first is a section 23 Notice requiring your appearance today to give evidence?

DR MATTHEWS: Yes.

30

MAJ CHAPMAN: An extract of the Inquiry Directions?

DR MATTHEWS: Yes.

35

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

DR MATTHEWS: Yes.

40

MAJ CHAPMAN: The Frequently Asked Questions Guide for Witnesses in IGADF Inquiries?

DR MATTHEWS: Yes.

45

MAJ CHAPMAN: And lastly, a Privacy Notice for witnesses giving evidence?

DR MATTHEWS: Yes.

MAJ CHAPMAN: Have you prepared and signed, for the purposes of the Inquiry, an expert report dated 26 July 2024?

5

DR MATTHEWS: Yes.

MAJ CHAPMAN: Can I hand you a copy of that document?

10

DR MATTHEWS: Thank you.

MAJ CHAPMAN: Can you just confirm that is a copy of the report you prepared?

15

DR MATTHEWS: It is.

MAJ CHAPMAN: It includes four appendices?

DR MATTHEWS: Correct.

20

MAJ CHAPMAN: It's 44 pages in length.

DR MATTHEWS: Yes.

25

MAJ CHAPMAN: That's your signature that appears on page 1?

DR MATTHEWS: It is.

30

MAJ CHAPMAN: Do you wish to make any amendments to the document?

DR MATTHEWS: No.

35

MAJ CHAPMAN: Just in relation to your report, can you also confirm that you were approached by the Inquiry to prepare an expert opinion?

DR MATTHEWS: Correct, I was.

40

MAJ CHAPMAN: That you were provided with a letter of instruction from the Inquiry dated 9 July 2024?

DR MATTHEWS: Correct.

45

MAJ CHAPMAN: And that letter of instruction – you've just turned over to Appendix A. That's the letter of instruction that you were sent?

DR MATTHEWS: Yes, it is.

5 MAJ CHAPMAN: Thank you. Chair, can I tender the report of Dr Raymond Matthews?

MS McMURDO: Yes. That will be Exhibit 38.

10 **#EXHIBIT 38 - REPORT OF DR R MATTHEWS**

15 MAJ CHAPMAN: Thank you. Dr Matthews, just before we begin the substance of your evidence, can I just ask you to be mindful – as we have asked all witnesses to be mindful – of your security obligations throughout your evidence to be given today; and if you could just let me know if there are certain topics that I, or anyone else, might ask you that may lead to discussions which reach the “Official: Sensitive” level or high levels of security?

20 DR MATTHEWS: Yes, sir.

MAJ CHAPMAN: If we do get there, we may need to take some evidence in a private hearing. Sir, do you understand that?

25 DR MATTHEWS: Understood.

30 MAJ CHAPMAN: Thank you. Now, I just want to begin, if I may, with some questions concerning your current position. As you’ve noted, you are currently the Fatigue Management Lead working in a civilian capacity within Headquarters Air Command in the RAAF.

DR MATTHEWS: That’s correct.

35 MAJ CHAPMAN: You are described in your statement, under your name, as a “Specialist labour hire to Defence”.

DR MATTHEWS: Correct.

40 MAJ CHAPMAN: And that is through, I take it, your company, Operational Performance and Safety Australia?

DR MATTHEWS: That is right.

45 MAJ CHAPMAN: You and others are contracting to the RAAF, and you

sit within – is it the Human Performance and Safety Section?

DR MATTHEWS: That's correct.

5 MAJ CHAPMAN: What is the reference in your report to "A9"? If you could just explain that to the Chair and the Air Vice-Marshal.

DR MATTHEWS: Sure. Within the command stream there are designations numbered A1 through to, I think it's A11, for different streams
10 of work. And A9 captures safety and airworthiness within Air Force Air Command.

MAJ CHAPMAN: How long has your entity, or your company, held the contract with the RAAF – this particular one?

15 DR MATTHEWS: I signed the first contract in December 2021.

MAJ CHAPMAN: The team that you lead, I think it's a team of three.

20 DR MATTHEWS: Correct.

MAJ CHAPMAN: Each of those, they also contract under your entity to the RAAF?

25 DR MATTHEWS: Not all of them. Two members are part of my company, and the last member has their own consultant company.

MAJ CHAPMAN: I understand.

30 DR MATTHEWS: And they each hold contracts to Air Force.

MAJ CHAPMAN: Just to your formal qualifications, they include Bachelors Degrees in Science, Psychology, and you note that you are not medically trained per se. That's in Psychology, where you received a – you
35 were conferred, rather, a PhD specialising in the field of sleep and fatigue research.

DR MATTHEWS: That's correct.

40 MAJ CHAPMAN: Your particular research thesis focussed on performance impairment in driving - - -

DR MATTHEWS: Yes.

45 MAJ CHAPMAN: - - - arising from sleep loss, long hours of awake time,

and internal body clocks.

DR MATTHEWS: That's correct.

5 MAJ CHAPMAN: And that you have since completed several post-doctoral placements at universities overseas. And, as one example of your work, you have investigated the performance – I'll get this right – of on-call night working positions at Sweden's largest hospital.

10 DR MATTHEWS: Yes, that's right.

MAJ CHAPMAN: Is it fair to say your field of specialisation is very much directed to how fatigue across a wide range of working context can, and does, impact adversely on cognitive and physical performances?

15 DR MATTHEWS: Yes, that's my specialisation.

MAJ CHAPMAN: We see from your report that you have a particular interest and specialisation in aviation.

20 DR MATTHEWS: Yes.

MAJ CHAPMAN: And is that partly by reason of your prior service with the Navy? And could you just explain that, please?

25 DR MATTHEWS: Yes. I previously was an officer in the Royal Australian Navy, and I undertook training as an Observer. It was a relatively short career, but long enough to understand military culture. And I think that's probably where my passion for this work comes from.

30 MAJ CHAPMAN: When was that service, just so we know? Long ago?

DR MATTHEWS: I left in, I think it was 2005. And I was in for – it was a very short career – maybe three – not quite three years, I undertook, yes.

35 MAJ CHAPMAN: When you say you were "an Observer", that's a role in an aircraft; is that correct?

40 DR MATTHEWS: Yes, so that was the equivalent of, at the time, you know, Air Force Tactical Navigator type role.

MAJ CHAPMAN: So you've had direct experience, both during your time in the Navy and since, as a contractor at times with the RAAF, observing fatigue as an issue in the ADF context for some time now.

45

DR MATTHEWS: Yes.

5 MAJ CHAPMAN: We're going to come to some examples. If I may, just turning to your report now. You outline at page 3 the work that you do for the RAAF involves leading the Fatigue and Alertness Optimisation Team.

DR MATTHEWS: Yes.

10 MAJ CHAPMAN: Which you say is a small team of world-leading experts which deals with fatigue management, fatigue itself, sleep, and chronobiology – and I might just pause there. Can you just explain in basic terms what chronobiology refers to?

15 DR MATTHEWS: Chronobiology, sure. It's essentially the science of the timekeeping systems within the body, which sits separately to the sleep and fatigue – sorry, the wake and sleep behaviours that we might undertake.

MAJ CHAPMAN: Is this a reference to the biological rhythms within the body, such as the circadian rhythms?

20

DR MATTHEWS: Exactly, yes.

MAJ CHAPMAN: And you and your team have been tasked under your contract with the RAAF to, you say, build aviators, to identify their impairments in the present, and forecast their performance in the future. So I take it this is aimed, is it not, to equipping aviators - - -

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DR MATTHEWS: That's right.

30 MAJ CHAPMAN: - - - with the skills to optimise their own performance. Would that be a fair summary?

DR MATTHEWS: Correct.

35 MAJ CHAPMAN: The emphasis is being placed on the aviators themselves managing their own fatigue because I think you make the point they're best placed to identify and manage their own fatigue.

40 DR MATTHEWS: The work is definitely broader than that, but that's one of the big aspects of the work.

MAJ CHAPMAN: I'll return to the topic of an individual's ability to recognise their own fatigue a bit later. Can I just draw your attention to your response to question 3, where you describe that part of your work at

the moment is being engaged assisting the WHS Branch of Defence. And do I take it that's the Work Health and Safety Branch of Defence?

5 DR MATTHEWS: Correct, yes.

MAJ CHAPMAN: In that role – or as part of that role, you are conducting with others an ADF-wide fatigue review.

10 DR MATTHEWS: That's correct.

MAJ CHAPMAN: And that's a review which you say has emerged from the IGADF's Afghanistan report; is that right?

15 DR MATTHEWS: I believe so, yes.

MAJ CHAPMAN: Being an ADF-wide review, I take it that involves both Army and Army Aviation?

20 DR MATTHEWS: Correct.

MAJ CHAPMAN: And it no doubt goes well beyond fatigue in aviation.

25 DR MATTHEWS: The focus is fatigue, but fatigue is a very broad term, and it's related to many other factors. So in order to unpack fatigue per se, yes, we've needed to look at a fairly broad scope.

MAJ CHAPMAN: But it encompasses fatigue also arising in the aviation context.

30 DR MATTHEWS: Correct.

35 MAJ CHAPMAN: Could you, if you can, broadly describe what the Terms of Reference – or give the Chair and the Air Vice-Marshal a sense of the Terms of Reference of that particular working group, or how you were tasked?

DR MATTHEWS: Do you mean the body of work?

40 MAJ CHAPMAN: What you were asked to do by the review.

45 DR MATTHEWS: Right. The review, it's evolved slightly from the initial work. The initial work was, evaluate whether an enterprise framework was needed across ADF to address the fatigue issues, and then very quickly that evolved into, well, first of all, can we get some understanding about what this issue is, fatigue generally across the ADF; articulate what it looks like,

5 what it encompasses, the risks associated with it. So there's an understanding piece: to understand what it is, what it looks like, and how severe the risks are. And then a follow-up piece, which is really about building out a framework; that if we wanted to address it in a different way, what that would look like.

So it's been a fairly broad piece of work with two aspects, which is understanding, and then what a solution would look like.

10 MAJ CHAPMAN: I note from your report that you say the final review will be delivered in December of this year.

DR MATTHEWS: The report, yes.

15 MAJ CHAPMAN: Sorry, the report. So, by this stage, you're a good way through – you and your colleagues are a good way through your research.

DR MATTHEWS: Yes.

20 MAJ CHAPMAN: And that research has included talking to members, ADF members, about their own lived experience with fatigue - - -

DR MATTHEWS: It has, yes.

25 MAJ CHAPMAN: - - - in the context of focus groups and individual interviews.

DR MATTHEWS: Interviews, yes, that's right.

30 MAJ CHAPMAN: And have you participated, yourself, in those interviews where fatigue has been raised as a - - -

DR MATTHEWS: Yes, I've participated in all of the focus groups and interviews.

35 MAJ CHAPMAN: In all of them. Okay. So just before I return to the focus groups and the outcome of those, can I just ask you some questions about the ADF's own understanding of how fatigue impacts the workforce, with a particular focus on Aviation units?

40 DR MATTHEWS: Sure.

MAJ CHAPMAN: Can you just give the Chair and the Air Vice-Marshal some sense, based on your own experience to date, including that of the

working group, of how well or sophisticated you would say the ADF presently understands the impact of fatigue?

5 DR MATTHEWS: It's a very complicated concept to grapple, and it's wide-reaching. There is a lack of understanding across the ADF, and definitely a need for better management of the risk that it presents.

10 MAJ CHAPMAN: And that was directed, that question, to ADF-wide. But with that same question, in the context of aviation, would your answer be essentially the same, or would it be different?

15 DR MATTHEWS: Yes. We have a – it's very clear from the review that we have a very different level of resources and management of fatigue. And generally – and this is even true of the civilian setting – aviation is held to a higher standard, and there are some better practices. However, even
20 looking within our aviation context in the military, the job that is being done, it's not comparable to the civilian spaces, as I'm sure you're all aware. And I think we need to do more to manage what is being done in that space. So even though there is more resources related to Military Aviation in the Defence Force than there is other workplaces, there is still a need to do more.

25 MAJ CHAPMAN: Did you just mention in that response that the civilian standards are held to a higher standard than the ADF?

DR MATTHEWS: No. No.

MAJ CHAPMAN: No?

30 DR MATTHEWS: No, I don't think so. But we are engaging in activities of higher risk.

35 MAJ CHAPMAN: Thank you. So at question 5 of your report, which appears on – or in your response to question 5 of the report, on page 3, you were asked to discuss your experiences identifying stress factors for pilots. Do you see that?

DR MATTHEWS: Yes, I do.

40 MAJ CHAPMAN: And in your response you said, among other things, that where possible, you seek to gain an understanding by shadowing crew going about their daily tasks. Is that right?

45 DR MATTHEWS: Yes. Yes, I've done that quite a bit.

MAJ CHAPMAN: And by that, do you mean, just to be clear, you essentially follow aircrew around during a working day?

5 DR MATTHEWS: That's right. And sometimes I'm assigned to an aircraft as aircrew and so I'm just part of the aircrew that are on that aircraft. This includes, you know, sitting in the jump seat between the two pilots, watching everything that's going on. I'm staying wherever they're staying, whatever hotel. I'm undertaking whatever, wherever that aircraft goes for that period. So I get a very good understanding of what's happening.

10 MAJ CHAPMAN: So you're privy to going on – you're going on flights as well, and - - -

15 DR MATTHEWS: Yes, that's right.

MAJ CHAPMAN: - - - pre-planning/post-activities?

DR MATTHEWS: Yes.

20 MAJ CHAPMAN: And I take it that you've asked to do that in order to gain a real sense of how fatigue is impacting on the day-to-day work?

25 DR MATTHEWS: Yes. But also, in order to develop interventions that are going to be useful for that crew, we need to, you know, understand all the aspects in terms of, you know, whether there's inflight recovery happening and all those sorts of things. So in order to create things that will work, you need to understand the space.

30 MAJ CHAPMAN: Yes.

MS McMURDO: So when you do that – you know, we know a lot of these pilots are young, they have young families – would you shadow them at home, like on nights with young children and that sort of thing?

35 DR MATTHEWS: No, ma'am. But I get a very good sense of what's happening in those circumstances. And people are very willing to – once you ask, you know, a couple of questions, you can unpack very well what their homelife looks like.

40 To give you an example, I attended – you know, at one unit, I made sure I was around right when a shift change was happening, and I noted one junior engineer walking in with a couple of bloodshot eyes and some signs of fatigue which I was very aware of. So I honed in on that individual and I asked them what was going on, and very quickly worked out that he had
45 twin babies at home and was not sleeping, had had about four hours' sleep

that day, and was on the first night shift of three or four nights in a row; an immediate situation that had to be rectified, and we did so. It's very easy to get a sense of what that home space looks like.

5 MAJ CHAPMAN: And, Dr Matthews, would you agree that one purpose served by this shadowing, it not only gives you a special perspective or a first-hand perspective, but you're able to identify, as a professional, indicators or manifestations of fatigue which an individual might not, themselves see?

10 DR MATTHEWS: Absolutely. Absolutely. Sometimes I will provide a fatigue scale to an aircrew member, you know, at the end of a flight or during a flight, and they will give me their opinion on how they're tracking, and then I can have a conversation with them about what signs and
15 symptoms I'm realising that I'm seeing from them, and that will be a better indicator of what they've gone through and where their performance is at.

MAJ CHAPMAN: And flowing from that, themselves not being necessarily aware of some indicators as someone in your role would be, they might not include, if asked, an indicator of fatigue if it was put in a questionnaire, for example?

DR MATTHEWS: Yes. Yes, I think that's fair enough to say.

25 MAJ CHAPMAN: And you list in your report a number of observations that you have made yourself with respect to aircrew going about their duties, and these include – listed from Alpha to Echo – first, “Inability to focus on relevant information”, as an indicator of fatigue.

30 DR MATTHEWS: Yes. So one of the things that I've observed, as an example, I would unpack as impaired decision-making. And what I've given there is some examples of what impaired decision-making looks like as observations within those flights.

35 MAJ CHAPMAN: The second one, “Less likely to disregard non-essential information”, could you just describe what you mean by that?

DR MATTHEWS: Right. So, either in flight or in planning elements, you can actively see various bits of information being provided to people and,
40 under conditions of fatigue, those people will then sometimes find it hard to work out what the important piece of information is that they need to be working out in order to drive their decision-making.

MAJ CHAPMAN: And taking one further example, the last one,
45 “Difficulty adjusting to a change in plan”?

DR MATTHEWS: Yes.

5 MAJ CHAPMAN: So this can have a fatiguing effect if a plan – either in flight, prior to, or some time before the flight?

10 DR MATTHEWS: Right. Plans frequently change; that is part of the nature of the work. When we have individuals that are quite fatigued, for example, in operations or exercises, what we then start to see is individuals that will go with a set plan that has been made even if they have information that that plan's not a great plan. So it's almost like a narrow-minded approach. And that's a classical symptom of fatigue. We've seen that in many laboratory studies, and I've been observing that once we start building up extreme levels of fatigue in our individuals.

15 AVM HARLAND: You also talk about difficulty in dealing with unexpected events. Could you describe the impact of fatigue on that, on a crew?

20 DR MATTHEWS: Quite simply, if you've got some very well-rested people, unexpected events is part of the job and they'll deal with them quite well. As soon as fatigue starts increasing, it takes them a little bit longer to make the decisions they need to be making, or sometimes they won't reach the right decision that they need to be making. Fortunately, we have lots of systems in place in aviation, which I'm sure you're aware, sir, that – where, as a group, we tend to get to the right answer. But you tend to see that inability, to get to those decisions quite quickly, in fatigued persons.

30 AVM HARLAND: Have you done any work or research on reaction time and effectiveness of unusual attitude recovery for fatigued people?

35 DR MATTHEWS: I've done extensive research on reaction time. Specifically in that aviation environment, no. But I am aware of a lot of research that has been done in that space.

AVM HARLAND: And what does that research tell us about reaction time, say, if you're in an unusual attitude, in terms of recognising it and correcting it?

40 DR MATTHEWS: All right. So I think we're talking about two things, sir, there. Situational awareness is the first thing that needs to be understood, and then also reaction time, which is a very basic cognitive process. Now, with fatigue, reaction time is very sensitive to fatigue. And we can create fatigue in many different ways, whether it be time of day, or lack of sleep, or long work hours, or high task load. And a very sensitive measure will

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be reduced reaction time. That's probably the most sensitive measure that we could use in the field of sleep/fatigue research.

5 Situational awareness is impairment that we see quite frequently with fatigue, and it is in fact one of the major causes of accidents where fatigue plays a role. I'll give you an example – I think I mention it here in my report – for example, in rail, we won't necessarily see a lot of performance impairment in a train driver, but they will say, "I wasn't where I thought I was, so I didn't go at the correct speed to go around that corner". That's
10 what caused the accident, a loss in situational awareness.

In an aviation environment, as I know you're aware, sir, it's a very complicated environment – much more complicated than driving a car or driving a train – there's indicators from lots of information sources. There
15 is the risk, under fatigue, that an operator will lose situational awareness that leads them to make a poor judgment about what state the aircraft is in, therefore they conduct probably not the best actions for that aircraft.

AVM HARLAND: And in addition to that, their reaction time being
20 reduced?

DR MATTHEWS: That's right. That's right. And we know that the reaction time will be severely reduced relative to how much fatigue they're under.
25

AVM HARLAND: Okay, thank you.

MAJ CHAPMAN: Thanks.

30 Dr Matthews, just going back to those four or five indicators which you refer to, how common, in your experience of observing crews you've been embedded with, have you seen any of these indicators arise?

DR MATTHEWS: Yes, it's very common. Watching aircrew do their job,
35 the first thing that you notice is how good they are at doing that job. They're incredibly capable, incredibly smart individuals. I find it less likely that they're going to dial in the wrong flight heading or say the wrong thing on a radio call, but what they are far more likely to do is make a poor judgment-call in a situation that they hadn't planned to be in.

40 MAJ CHAPMAN: In terms of how wide a sample you've been dealing with, can you give some indication of over the years of your experience, how many aircrew you've been embedded with, just as a sample?

DR MATTHEWS: Well, I can say I think I've worked with almost every single unit in Air Force now. That doesn't always include observational work and work with the aircrews, but certainly contact and understanding of all the job roles and the issues and challenges we have across Air Force.
5 And, of course, there's been some work in the other Services as well.

MAJ CHAPMAN: You've given, in response to a question from the Air Vice-Marshal, an example from rail context. Can you give us a practical illustration of where some of these, or perhaps a more concerning indicator, has arisen, as you've seen it?
10

DR MATTHEWS: Indicator of fatigue?

MAJ CHAPMAN: Yes, an indicator of fatigue.
15

DR MATTHEWS: You know, there's examples across all the domains of work. Is there something – can you ask me again, a little bit more specifically, what you're after?

MAJ CHAPMAN: So with respect to flight crew, in particular, that you've been embedded with and have been observing, can you give us an example of where you have seen an indicator of fatigue which has been of concern to you, if you have one?
20

DR MATTHEWS: Right. There's quite a few to choose from. Let me give you an example of – I'm just trying to think which way to go. We've had cases of aircrew conducting operations under very little amounts of sleep and high amounts of time awake, to the point where – I'll give you an exact number. It was July last year we've had an aircraft land and no one on that crew had had any more than maybe three hours' sleep in the last 30 hours. Most of the crew hadn't slept in 28 hours. So long amounts of prior awake, very little amounts of sleep.
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Those sorts of cases, they happen from time to time. They're written up as a safety report. You know, sometimes I'm not always brought in to talk about that or understand that and I'll find out about it from the Squadron. This is very concerning amounts of fatigue across the organisation.
35

Even at an individual level, I've spent times shadowing them, some of our best and brightest aircraft pilots flying our best aircraft. And we'll watch a night activity, and they'll debrief at 1, 2 o'clock in the morning and then walk to the car. As that young pilot's walking out to the car, I'll give them a fatigue scale that I've written in the back of my notepad and I'll just say his name, "How are you tracking?" And he'll say, "Oh, I'm about alert. I'm on that scale". I'll say to him, "Look, your eyes are red. You're talking
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45

slowly. You're hunched over. You're dragging yourself to your car, more or less. How can you say you haven't got at least some signs of fatigue?"

5 It's this drive to get the job done, that they'll push on. It won't be then uncommon to follow that young pilot off of base in their car and then watch them drive through a red light or something on the way home. And then you just know that they're under an extreme amount of fatigue that they are not necessarily willing to acknowledge.

10 MAJ CHAPMAN: Drawing on that example you've just given, it's a fair statement, is it not, that a lot of your work is seeking to improve awareness of fatigue because at least at one level we have a group of highly professional and skilled aviators who really do lack, themselves, the skills to identify signs of fatigue?

15 DR MATTHEWS: We haven't embedded it across the entire organisation, from joining at initial military training and then along the routes of then equipping people with the skills to do their job at initial employment training, the skills to understand what they should be doing to drive their own physiology in these spaces. Even in a non-aviation environment, you know, our shiftworking community, we haven't given them the skills and knowledge even where to place sleep around the shifts that we're getting them to do.

25 Sometimes we have very junior people rocking up to work and they won't have slept in 24 hours for no other reason than they didn't realise they could have planned that out. Some of these ideas are kind of basic in nature, but we haven't done the work that we need to do to get people to run themselves as well as they can, given that we put people in pretty extreme environments around fatigue.

30 MAJ CHAPMAN: Not only is it a problem with self-assessments of fatigue, there's also work to be done in terms of enabling people to identify fatigue indicated in others, and their colleagues, for example.

35 DR MATTHEWS: That's right. That's getting better as we enhance the culture, but certainly we need to do more work there.

40 AVM HARLAND: Could I just ask a follow-on question about your example with the car and driving home and the like?

DR MATTHEWS: Sure.

45 AVM HARLAND: I'm personally aware of a number of cases where that's happened, people have fallen asleep at the traffic lights. But in your

consideration of fatigue, would transiting to your place of rest constitute duty in your kind of considerations?

5 DR MATTHEWS: Well, it's technical on exactly how we're going to use
duty limits, and either way would be fine. But if we had clear ideas on
whether that was included or not included, I think that's what aircrew need
to know. Now, in a location I've certainly seen that a Captain of aircraft
will make the call that the duty limit doesn't start until we reach the hotel,
which is a sensible way of dealing with it. But I've also seen examples
10 where people have said, "We've landed. The duty limit has started from
here". So there seems to be some ambiguity on how people will treat when
duty periods end and start.

15 Towards your question about driving, certainly from an organisational point
of view, if we are aware of the work that people have undertaken, then the
organisation is responsible to make sure that that person has, well,
potentially not gotten into a car, or got themselves where they need to be in
order to rest and recover.

20 AVM HARLAND: Thank you. Perhaps that's something we can explore
with the chain of command in the future.

MAJ CHAPMAN: Yes. Thank you, sir.

25 Now, in response also to question 5, you refer to having developed a battery
of questions that can be delivered on the Defence intranet in the survey
referred to as WARSAFE.

30 DR MATTHEWS: Right.

MAJ CHAPMAN: That stands for Work And Rest, Sleep And Fatigue
Evaluation?

35 DR MATTHEWS: Correct.

MAJ CHAPMAN: Do I take it that at least one purpose of the questionnaire
is to identify actual levels of fatigue in the ADF workforce and to collect
data?

40 DR MATTHEWS: Yes. And it's important that you use the scientifically
validated tools so that we can benchmark what this level of fatigue is against
other examples. So are we talking about a small amount of fatigue, or
something that in other industries would be considered extreme.

MAJ CHAPMAN: When you say you've developed it, is that a product which is available now, or what's the status of that?

5 DR MATTHEWS: Yes, we've been using it.

MAJ CHAPMAN: When was it introduced?

10 DR MATTHEWS: We've had it ready to go since probably November last year, and we've been using it in some units.

MAJ CHAPMAN: So it hasn't been rolled out ADF-wide?

DR MATTHEWS: No.

15 MAJ CHAPMAN: It's just limited to the RAAF units that you're dealing with at the moment?

20 DR MATTHEWS: That's correct. And that's really because of the way that we have the ethics systems within Defence that we need approvals in order to collect data like this, and so it limits the approach that we can use it.

25 MAJ CHAPMAN: You also say in response to question 5 that, at an enterprise level, you and your team are unpacking the phenomenon of fatigue as it concerns members.

DR MATTHEWS: Correct.

30 MAJ CHAPMAN: Can I just ask, are any of the focus groups that you've attended drawn from Aviation units across the Services?

DR MATTHEWS: Yes.

35 MAJ CHAPMAN: What about from Army Aviation?

DR MATTHEWS: No, unfortunately, we weren't able to draw members from Army Aviation.

40 MAJ CHAPMAN: So when you say you weren't able to, did you approach Army Aviation about that?

45 DR MATTHEWS: No, we didn't plan a focus group with Army Aviation. The scope of the project – Defence is quite large and we had to make some decisions as to where we could run focus groups. And also, we did have some challenges getting focus groups with Army. And I felt it was

important, given that we were able to get focus groups with Air Force Aviation, that the context of work would be similar in Army Aviation. However, at that point, we hadn't drawn very many focus groups from Army. There was some reluctance there.

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MAJ CHAPMAN: There was some reluctance from Army Aviation or with - - -

DR MATTHEWS: Army in general, yes.

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MAJ CHAPMAN: Army in general?

DR MATTHEWS: Yes.

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MAJ CHAPMAN: Headquarters Army?

DR MATTHEWS: Yes.

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MAJ CHAPMAN: Do you plan to make another approach while this work is ongoing?

DR MATTHEWS: To Army Aviation?

MAJ CHAPMAN: To Army Aviation.

25

DR MATTHEWS: Unsure at this stage.

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MAJ CHAPMAN: Now, at question 8, which appears – or your response to question 8, which appears on page 4, you were asked to outline the physical and psychological stressors that you might expect to see in a pilot operating in complex circumstances. Do you recall that?

DR MATTHEWS: Yes, I do.

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MAJ CHAPMAN: And one of the scenarios that was put to you was to identify stressors where operating at night, overwater, and in a degraded visual condition. Correct?

DR MATTHEWS: Yes.

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MS McMURDO: Using NVDs.

MAJ CHAPMAN: NVDs.

45

DR MATTHEWS: Yes.

MAJ CHAPMAN: Thank you, ma'am. And, in your response, you have used the analogy – and I think you've referred to this earlier in your evidence – of driving a car at night, as a means of explaining the issue.

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DR MATTHEWS: Right.

MAJ CHAPMAN: So is that to suggest that there are, at least on some level, elements of operating a car at night and an aircraft that, you know, are similar? And can you just explain that in a bit more detail?

10

DR MATTHEWS: Right. And I use the example there of a simpler context of work to explain that, you know, an activity that we all engage in, which is driving at night, we can appreciate that that task is quite different to driving during the daytime, and to some degree harder. Then once we level it up to a far more complex environment, flying an aircraft, we can easily understand that the job becomes – well, the task is quite a different task than engaged at night. And exactly as you're saying, ma'am, with night-vision technologies, that means that it is not the same task. Why that's important is it leaves us open to different types of errors.

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For example, as I spoke about situational awareness loss, it's far more likely to have an environment that is very different to the usual daytime environment. And then you compound that with other complexities such as flying at night, which is reduced visual points. And then obviously bad weather and anything else will make it far more complex.

25

MAJ CHAPMAN: And you make the point in your response that where a task is made considerably more complex, as you just referred to, it's made more complex by reason, among other factors, of the availability of visual cues?

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DR MATTHEWS: Right. Correct.

MAJ CHAPMAN: And by "visual cues", you're talking about the sorts of things that are observable to the outside eye in daylight - - -

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DR MATTHEWS: Correct.

MAJ CHAPMAN: - - - and at night, when there's sufficient lighting.

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DR MATTHEWS: Correct.

MAJ CHAPMAN: And that in those situations of low cue environments, cognitive performance degrades rapidly, or more rapidly.

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DR MATTHEWS: Yes. Well, essentially, if you create a harder task, which creates more of a cognitive load, which then leads to increased fatigue.

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MAJ CHAPMAN: And is that phenomena you're talking about, the cognitive decline, is that the time of task effect?

DR MATTHEWS: It can be, yes. Yes, exactly.

10

MAJ CHAPMAN: And just to put all of that into present context. Does that reflect the common sense, I suppose, position that flying a helicopter at night in complex conditions will degrade the cognitive performance of an individual more rapidly than flying at day, during the day?

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DR MATTHEWS: Yes. Certainly, the words that we would use in the field is we would say it would unmask any latent fatigue. So, for example, if we had someone that was under a small amount of fatigue during the daytime, we might not see an effect of that fatigue. But, under those conditions, we would see fatigue to unmask. We would see all of the effects of whatever fatigue that individual is suffering from.

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MAJ CHAPMAN: And part of the issue – or related to why fatigue accrues more rapidly in low visual cue environments is because – and feel free to disagree with me about this – you have pilots constantly making calculations and judgments about where they are in space and time, where if it was by day, it would be observable to the eye?

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DR MATTHEWS: Yes. I mean, that's a fair statement.

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MAJ CHAPMAN: So would you say also that then, by any measure, in the same way that driving the car in the dark is more tiring, the same principle really applies for flying at night?

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DR MATTHEWS: Yes.

MAJ CHAPMAN: And part of that issue not only is looking out to see the low cue environment but you also have to deal with the multitude and array of systems and monitoring those systems, which itself is fatiguing?

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DR MATTHEWS: That's correct.

MAJ CHAPMAN: And you refer, in your response to question 8 – and we're on page 4 – while describing these stressors, to having yourself observed very experienced pilots in moments of difficulty arising from

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events prior to flight?

5 DR MATTHEWS: Yes. So not just the environment that they're in. But, you know, we're talking about humans, and sometimes those humans will be bringing some stuff with them into the aircraft from the ground environment. Obviously, good, trained individuals will do their best to manage their mental states. But I've observed that sometimes we put people in a difficult situation and I wouldn't be surprised if that is related to some lack of sleep and fatigue and stress that is happening in the external environment.

10 MAJ CHAPMAN: And the external environment could be - - -

15 DR MATTHEWS: Outside of the aircraft.

MAJ CHAPMAN: - - - home/work-related sort of - - -

20 DR MATTHEWS: Well, I mean anything external to the aircraft, at that point.

MAJ CHAPMAN: I just want to now turn to some questions about Fatigue Management training in the ADF. So you addressed this in your response to question 9 on page 5. And so, having the benefit of experience yourself in the ADF with this study, managing fatigue, are you aware of any specific Fatigue Management training undertaken by Army pilots?

25 DR MATTHEWS: Army pilots will undertake the Institute of Aviation Medicine's Fatigue training as part of their initial training.

30 MAJ CHAPMAN: So that's the one – I think it's a one-hour - - -

DR MATTHEWS: That's correct.

35 MAJ CHAPMAN: And that's delivered – when you say initial – and I think in your report – is that delivered to ab initio pilots?

DR MATTHEWS: Correct.

40 MAJ CHAPMAN: And that's across all Services? It's not just - - -

DR MATTHEWS: That's correct.

45 MAJ CHAPMAN: There's nothing specifically tailored to Army, to fit the Army context and how Army flies; is that right?

DR MATTHEWS: Not that I'm aware of.

MAJ CHAPMAN: Are you aware, working closely as you do with the RAAF, and having been in the Navy, of any specific fatigue management instruction they've given beyond that one-hour course.

DR MATTHEWS: Related to aviation?

MAJ CHAPMAN: Yes.

DR MATTHEWS: No.

MAJ CHAPMAN: Now, you've made the comment that you consider the one-hour fatigue course – that it might be enough for a civilian shiftworker, but it's not enough to address fatigue risk in the ADF.

DR MATTHEWS: Yes. Yes, it's a good quality course, but we're putting people under extreme circumstances and we need to be doing a little bit more.

MAJ CHAPMAN: Because it doesn't equip them in the one hour – which is possibly unsurprising – of the skills they need to manage the operational demands.

DR MATTHEWS: Yes, I think we need to rethink the philosophy of how to build these skills within individuals.

MAJ CHAPMAN: And you refer to “civilian shiftwork” there. Could you just expand, if you can, on the sort of fatigue management issues that ADF aviators may encounter which distinguishes them from civilian shiftworkers, for example?

DR MATTHEWS: Okay. I think the most-simplest distinction that we can make is that in any other industry we can very clearly write, if you like, a line in the sand around policy about what we will let people do and what we won't. And one of the difficult things in Defence is that – and we have this written into all of the policy – is that a line about when we step outside of whatever that policy line is, who is the person that will authorise that? And so it becomes less about limiting what gets done and more about what level will someone authorise something to happen.

MAJ CHAPMAN: You refer to, in question 9, your response to the current Army Aviation policy you identify as SI (AVN) OPS 1-501.

DR MATTHEWS: Yes.

MAJ CHAPMAN: Being Standing Instruction (Aviation) Operations, and that it requires aircrew to complete Defence Awareness Training and NTS courses. Now, to your knowledge, is the Defence Fatigue Awareness training that one-hour course that you're referring to, or is it different?
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DR MATTHEWS: No, that's the mandatory training across Defence. It's an online course.

MAJ CHAPMAN: What about the second part of that, the NTS courses? What's that? Can you just describe that?
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DR MATTHEWS: Non-Technical Skills training. Again, another mandatory online course.
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MAJ CHAPMAN: What's your understanding of what's involved in the NTS courses and how frequently they're required to do them?

DR MATTHEWS: Well, both those courses are very general in nature. They're aimed at ADF-wide, not Aviation-specific. So they don't equip our aviators with additional skills that they need to have in order to do their jobs.
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MAJ CHAPMAN: So we're back to the view you expressed earlier, that they might be appropriate to civilian context, but they're not really good enough for the context in which we - - -
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DR MATTHEWS: Exactly. I think anything in the military context needs to be unpacked for that member, for the specific work they're doing, so that they're aware of how to drive their behaviour within that context of work.
30

MAJ CHAPMAN: Understand. You go on, in that context, to identify, really, two deficiencies in these courses. The first is that they don't instruct when sleep should take place. Right?
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DR MATTHEWS: Correct.

MAJ CHAPMAN: And then the second aspect is how to achieve sleep in adverse conditions.
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DR MATTHEWS: Exactly. I think in order to do this well – and when I have done this with units, you take the exact examples of things that they have done and then you show them how they might have slept under those circumstances. And a lot of the times they'll say, "Oh, yeah, that's what I did". And then you say, "Right. Here's other ways to do this", and you
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walk people through how they could have planned when to take sleep and what measures they could have undertaken in order to get better sleep.

5 As an example, a split sleep routine is something that a lot of our members won't have considered or been aware of, and that is breaking their sleep up into two four-hour chunks which, in a lot of interesting operational-type duties, is a better way of trying to get the sleep that's needed, rather than trying to block it off into one period which may fall at a time of day where it's very difficult to get sleep anyway.

10 So what I mean is, you need to literally walk people through creative solutions to enable them to come up with these themselves in these circumstances. So that's not a generic information session, it's something tailored towards them and their work and how to build those skills themselves.

15 Then, of course, if you can follow that up with some work during exercises and training, either measuring what people are doing or being on hand to give advice, then you start creating skillsets within those individuals to run themselves very differently. And I've been doing that work and seen the benefits of doing that.

20 MAJ CHAPMAN: You're promoting, are you, a more scientifically-based approach.

25 DR MATTHEWS: That's right. Relative to all the practices we know about chronobiology and all the fatigue science that we've been building over the years.

30 AVM HARLAND: If I could just ask a question. You've acknowledged that the ADF in many ways is unlike civilian operations, so the context is really important. In your work, do you delineate, when you're talking about fatigue and Fatigue Risk Management, between an operational setting – i.e. a warlike setting – and a training setting? And I'd propose that within
35 the ADF, they may be more inclined to take more risk in an operational setting than they would in a training setting.

40 DR MATTHEWS: Well, that's more related to approvals and – at the Command level. I think they're more at the individual level. At the individual level, what we need to build is the skills and abilities to do the work. Choices about whether something happens or doesn't happen usually falls to Commanders and it's up to them to make the call on what level of risk is appropriate for what duty is being undertaken.

AVM HARLAND: Okay, thank you. That makes good sense. And just a follow on with that, can you train to operate in a fatigue state by repeating training while fatigued?

5 DR MATTHEWS: Yes, you can train, and I wouldn't repeat training when
fatigued in order to train that. The way I would do that is build a knowledge
base on what practices that I need to create in myself in order to be able to
push into extreme spaces. As a simple example, even sometimes
conversations with aircrew around alcohol on an operational trip. For
10 example – and the culture in Defence is getting much better around this, but
occasionally you'll still see an aircrew on the first night away or the first
night – yes, away together, they'll stop off at the bar and have a few drinks
to relax. And pointing out to them, “Well, that's wiping out the recovery
value of sleep that night, before you go and start the really important work
15 that you need to do”.

It also might be conversations around coffee intake. Especially when we
see sometimes pilots having 12 or more coffees a day and then they've
really lost the ability to use that as a fatigue countermeasure. Or on a flight,
20 opening two cans of an energy drink, and sculling that is a huge amount of
caffeine to be taking and it's not really serving the purpose that it could be
doing. Once you walk through with aircrew that, “Well, this is more or less
a performance-enhancing drug that I can self-administer in different
conditions”, well then you've created an environment that you've given
25 someone another tool.

So I've seen aircrew come up to me, you know, a few months after working
with them and saying, “Ray, I'm down to just one coffee a day, and that
means that when I've got that night operation, I get a real performance boost
30 from having some coffee there”. So what I'm describing there is there's all
these skills and behaviours that individuals can build in themselves,
knowing that they engage in very extreme fatigue work. And I think that's
the way to build some of that stuff.

35 AVM HARLAND: So if I'm to interpret that correctly, the best way to
operate in high tempo, potentially warlike operations, where you really need
to push, is to have a good understanding of protocols to be able to manage
fatigue so that the crews are in the best situation possible to be able to adapt
to that environment, rather than going through training evolutions of just
40 operating in a fatigued state over and over again.

DR MATTHEWS: Correct, sir. Sometimes I think what we do is exactly
what we are trained to do, “You people fight the way you're trained to
fight”. And their experience is, “Well, I've always been fatigued in these
45 circumstances. So the first thing I do, in an operation training environment,

is fatigue myself. And that feels natural because I've always been fatigued when we've done this, because that's the way we do it".

5 And that's why I think it's starts at recruit training. Teaching people, "This is what fatigue is. This is what the signs look like". And then, "What ability do I have to sleep in adverse environments? What do I do to create a skillset that I can get more sleep under very harsh conditions, therefore I'm better at doing that job?"

10 AVM HARLAND: That's great. That's very clear, thank you.

MAJ CHAPMAN: Thank you, sir.

15 And just really picking up on what the Air Vice-Marshal has said, where you refer to "scientifically proven strategies to achieve sleep in adverse conditions", does that include both medicated strategies and non-medicated strategies?

20 DR MATTHEWS: It does. I think we're fortunate in the ADF that we have another tool, which is hypnotics, sleeping tablets that pilots can use at times. The unfortunate side effect of that is it means that in some individuals they haven't done the hard work to build skills and abilities around sleep. So that should be the first line of defence: "Do I know how to sleep in adverse conditions?" And then when my plan hasn't played out and the aircraft has
25 changed, what's needed from me has changed, and all of a sudden I've realised, "Oh my God, I need to get to sleep now and I haven't done – you know, this wasn't part of my plan. Okay, now I have a tool that I can fall back on, which is hypnotics, sleeping tablets". There's more work we need to do in the behavioural space first.

30 MAJ CHAPMAN: So there are strategies that you have been – you have experience instructing other units to manage that before you have to resort to hypnotics?

35 DR MATTHEWS: Correct. It's not uncommon in the work that I'm doing that someone will say, "There's an important thing happening tonight at this unit", and I'll look at my watch, see what time it is and say, "Okay, I'm going back to the hotel to get an hour of sleep". And then sometimes the people I'm with will chuckle and say, "But you haven't planned for it", and
40 I'll say, "No, I've got very good sleep practices. I can get back to my hotel and sleep now, and I'll be switched on tonight. I've good behavioural practices around sleep hygiene and training my body that I can get sleep right now if I need to, to operate well tonight".

MAJ CHAPMAN: Just on the issue of sleeping in adverse conditions, the Inquiry has received some evidence that aircrews were sleeping in tents adjacent to an active aerodrome. I have two questions about that for you. First, I take it that you'd agree, as it would be obvious, that sleeping next to an active aerodrome would meet a description of an adverse condition in this context?

DR MATTHEWS: Absolutely.

MAJ CHAPMAN: And are you aware of any scientific-based training strategies which are directed specifically to making sleep possible in those conditions?

DR MATTHEWS: And I've certainly observed this myself. Sometimes we will create a situation where it becomes almost impossible for anyone to get sleep and we'll then expect aircrew and other members to sleep in those conditions, which at times is just unreasonable. There was no way that sleep was going to be achieved in some of the conditions that we create. The fortunate thing is I've also seen Commanders that have very quickly then, when been made aware of that, can simply create a different environment. Sometimes it just requires a bit of someone to flag it, to describe why this is important, whether this is going to limit what happens next for that individual.

So to answer your question: absolutely, yes, that's a very harsh environment.

MAJ CHAPMAN: I'm still on page 5, and you've referred in your report, in response to question 9, about halfway down the page, to being part of the review of Defence Force Workforce Fatigue Management that you've requested information from every ADF group regarding issues of fatigue. My question is, are you aware of any response from Army Aviation Command to your group to date?

DR MATTHEWS: So that was a request for training, any training initiatives. And, no, we didn't receive any response.

MAJ CHAPMAN: Your evidence earlier is that the training that's been provided, at least the specific one, is inadequate to address the challenges facing aircrew more broadly.

DR MATTHEWS: Correct. And the only caveat that I'll say there is that there very well may be some additional training in Army that I haven't been made aware of yet.

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MAJ CHAPMAN: And that, if you were to design some future training, you would be looking at leaning more into, as I mentioned, the scientific-based model and looking at behaviours, and preferably training tailored to Army-specific.

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DR MATTHEWS: Yes. It would need to be applied and practical in order for the members to take that on and use those skills.

MAJ CHAPMAN: Just going back to, briefly, the training that you've delivered to the RAAF units. Could you just describe generally what that is, or give some examples of it again?

DR MATTHEWS: Yes. Exactly as we've been talking about, the first piece of the puzzle is understanding exactly what that job entails, what it includes; whether it's including shiftwork, long hours of work, stressful work. So really mapping out what the risks are that we're trying to protect from, what is creating the fatigue in those spaces, and then working out what individuals are doing about that already, then filling the gaps; whether it be some behavioural interventions or some additional countermeasures specifically related to the context of work. So, yes, that's what I call tailored approaches.

MAJ CHAPMAN: Just reflecting the effectiveness of that tailored approach, I note from, I think it's an annexure to your report, that you have a testimonial - - -

DR MATTHEWS: Sure.

MAJ CHAPMAN: - - - from a Flight Sergeant in No. 3 Control and Reporting Unit, which says this: that he identifies that it's been very helpful training, and that the fatigue and burnout are major issues facing every Squadron and unit, with major consequences if not managed properly. And he thanks you for your work.

DR MATTHEWS: That was a very low-level example of a unit that reached out. I understood what the work was. I couldn't get to that unit to talk to them specifically, but was able to put a presentation together for them at fairly short notice to direct some of the issues that they're having. So there is certainly some low hanging fruit in terms of supporting our members.

MAJ CHAPMAN: Thank you. Ma'am, I'm about to move to another topic, but I note the time.

MS McMURDO: Yes, all right then. It's lunchtime, so we'll adjourn then till 1245.

MAJ CHAPMAN: Thank you, ma'am.

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HEARING ADJOURNED

HEARING RESUMED

5 MS McMURDO: Yes, MAJ Chapman?

MAJ CHAPMAN: Thank you, ma'am.

10 Dr Matthews, before the luncheon adjournment, and indeed sometime earlier in your evidence, you recall giving some evidence concerning what you described as, I think, a reluctance on the part of Army to engage with your work with the working group?

DR MATTHEWS: Right.

15 MAJ CHAPMAN: Is that a fair summary?

DR MATTHEWS: Yes.

20 MAJ CHAPMAN: I wanted to just ask you some questions about that. How did that reluctance manifest itself?

25 DR MATTHEWS: I think some of what we observed there was probably fair enough, in that you've got Commanders that are trying to protect their workforce when you've got an overworked workforce, a workforce that is showing symptoms of fatigue, and there is what appears to be a never-ending barrage of extra things thrown at them. So when one other extra thing is thrown at them, the Commanders then feel that they are responsible to protect their people by, you know, putting another impost on their time.

30 Some of, you know, what was said was sort of along the lines of, "Look, our people are too overworked and too fatigued for something like this". And then we responded with, "They're too fatigued to talk about fatigue?" So it took a little bit of a champion in that space that could then understand what it was that we were trying to achieve to make it worthwhile.

40 Now, I do want to point out that that wasn't everyone in the organisation. More recently, we've also been tasked to look at Special Forces as a specific area, and we've had a lot of, you know, doors opened quite easily once people understand what it is that we're trying to do. There's also been other places across Defence where people have had a similar approach where, "Is this an important other thing that's being thrown at my overworked workforce?" That's some of the context there.

MAJ CHAPMAN: Thank you. Just in terms of going back to process and how this was approached.

DR MATTHEWS: Sure.

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MAJ CHAPMAN: There was a request made, was there, through your working group, to all units across the ADF for the kinds of information which you've given evidence about? How did Army Aviation, in particular, actually respond to it?

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DR MATTHEWS: I don't think Army Aviation was specifically asked. It would've gone specifically to the Service Group Safety Coordinator, and then they would've informed us on important areas across Army to get a good cross-section of some of the issues that we're seeing related to fatigue to unpack that lived experience. It wasn't a choice of us all to include or exclude Army Aviation.

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And it may have just been an individual's perspective, at that time, that there were other areas, that there was greater perceived risk that needed to be investigated.

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MAJ CHAPMAN: So if I understand it correctly, the request was made in a general sense through Army, and then within Army there was something of a filter applied to who might respond to this request?

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DR MATTHEWS: I think so.

MAJ CHAPMAN: Your evidence, I think, just given was that you didn't have any direct engagement on this matter with Army Aviation?

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DR MATTHEWS: No, that's right.

MAJ CHAPMAN: Can I just cover some clarifying questions in relation to a number of other topics before I return to where I was? So the next one being are you familiar with Sentinel as a system?

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DR MATTHEWS: Yes, I am.

MAJ CHAPMAN: What do you understand that to be?

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DR MATTHEWS: It's a safety reporting system that's used both in aviation and non-aviation environments.

MAJ CHAPMAN: So where there's a safety incident – small/large – it is supposed to be, in accordance with ADF policy, reported on Sentinel. Is that right?

5 DR MATTHEWS: Correct.

MAJ CHAPMAN: Are you aware if fatigue reports themselves are a type of report that can be filed on Sentinel?

10 DR MATTHEWS: Within Aviation, it is.

MAJ CHAPMAN: Sorry, within Aviation?

15 DR MATTHEWS: Yes, only within Aviation. Outside of Aviation, there isn't the ability to report fatigue.

MAJ CHAPMAN: I see, all right. So where your working group is looking at fatigue across the entire organisation, you wouldn't expect to see any reports about fatigue because it's only within Aviation?

20 DR MATTHEWS: That's correct.

MAJ CHAPMAN: Do you have access to the fatigue reports within Aviation for the purposes of your study?

25 DR MATTHEWS: No, I don't have access to Sentinel.

MAJ CHAPMAN: So you don't have access to Sentinel?

30 DR MATTHEWS: No.

MAJ CHAPMAN: Who in it, just from your general understanding of Sentinel, sees the fatigue reports where they're made? Do you have an understanding of that?

35 DR MATTHEWS: Exactly where the reports go?

MAJ CHAPMAN: Yes.

40 DR MATTHEWS: So these are within unit safety network, and then that feeds up to the organisational safety network. For example, I'm aware that, you know, our Risk cell in HPS – Human Performance and Safety – plays a role reporting to Air Commander Australia on Sentinel reports. There is a broader network as well, but I'm not 100 per cent over all of the
45 procedures that follow the Sentinel reports.

MAJ CHAPMAN: So there is a Risk cell within a particular Service for RAAF, and you expect to see Risk cells within each of the other Services?

5 DR MATTHEWS: I expect so, yes.

MAJ CHAPMAN: Are you aware of snapshot surveys, in the context of - - -

10 DR MATTHEWS: Yes, I am.

MAJ CHAPMAN: You are. Do you have access to those?

15 DR MATTHEWS: No, I don't have access to those. I've put in many requests to get access specifically related to fatigue, and that has not been granted.

MAJ CHAPMAN: So when you say you've "put in many requests", where have you directed those requests?

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DR MATTHEWS: So snapshot is run by DFSB. And the way the ethics for that data collection is run, it is the unit Commanders that hold the ownership of that data. And unit Commanders have given me, or directed me – either given me permission or directed me to look at their snapshot data; however, we haven't had any success with DFSB releasing that data to us to investigate.

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MAJ CHAPMAN: So just to be clear, you've been directed by some unit Commanders to look at their snapshot surveys, but you haven't been granted access by DFSB, who holds that authorisation?

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DR MATTHEWS: That's correct.

MAJ CHAPMAN: How many requests have you made, and when?

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DR MATTHEWS: Several requests, spanning a year and a half to two years.

MAJ CHAPMAN: Have these requests been reduced to writing?

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DR MATTHEWS: Yes.

MAJ CHAPMAN: They all are in writing?

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DR MATTHEWS: I believe so, yes.

MAJ CHAPMAN: What about the responses from DFSB?

DR MATTHEWS: We have email responses from DFSB.

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MAJ CHAPMAN: To the effect that you're not going to be authorised to look at this?

10 DR MATTHEWS: That's correct. The responses are if you've got questions, they'll have a look at the data and they'll tell us what we're trying to find out. However, you know, I have a team of data experts, you know? I myself lectured on advanced data analysis. There's a lot of things that I would like to unpack within that dataset to get to the root causes of what it's telling us. So we haven't worked out that relationship and how we can
15 unpack that data in a meaningful way yet.

MAJ CHAPMAN: This is in the context of your work, doing training for the RAAF, or is it more for the workforce review that you - - -

20 DR MATTHEWS: Well, specifically for the Air Force work. You know, to implement effective countermeasures or tools, you've got to understand what the problem is, and the scale of the problem, and where the problem is, and specifically who needs that, which we know we could get out of some of that snapshot data.

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MAJ CHAPMAN: And presumably, you've made clear, haven't you, in your correspondence with the DFSB, the purpose for which you're seeking this and you want access to the data?

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DR MATTHEWS: Yes.

MAJ CHAPMAN: You are a group of trained professionals who can digest data and you need it for the purposes of your study?

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DR MATTHEWS: Absolutely, yes.

MAJ CHAPMAN: Notwithstanding that explanation, you're still being met with resistance. No?

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DR MATTHEWS: That's correct.

AVM HARLAND: Is there a reason given as to why that wasn't able to be shared with you?

DR MATTHEWS: There has been some reasons given. I think there's a lot of different reluctancies that somehow we're going to go in a direction that isn't aligned with the communication that they drive on that data. One of the comments was, "We don't want a different report going to some COs". And we were trying to explain, "Well, this isn't really about communicating back to the units, it's for us to understand what the issues are, and also for us to then measure whether our interventions are having an effect". Essentially, if we think that what we're doing is useful, then we should be able to see a movement in the snapshot data from one year to the next.

I'm sure, as you're aware, sir, it's a reporting tool that goes up to very senior Commanders. I think there's some reluctance that we're going to create some sort of trouble in that reporting process. But also, at the same time – and I've said this on many occasions, that reporting unit averages is not useful across – in other organisations, we wouldn't be looking at average fatigue levels, we'd be looking at the most fatigued 30 per cent or the most 10 per cent. That's where the true risk with an organisation sits.

So there's a lot more that could be done, and we're trying to work out a relationship to work with that organisation to help them in the way that they're reporting it. But it would certainly be quicker and simpler if we could work with them with the actual data and pull out what is the useful things within it.

MAJ CHAPMAN: And you're saying some Commanders have approached you and shared their survey with you.

DR MATTHEWS: Some Commanders have shared the summary reports that they receive from DFSB with me. I've got instances where every CO within a FEG has given me approval, and the previous COs have given me approval, to go pull out their specific data to unpack what it looks like. And even from an ethics point of view, I think that's all that we require. We haven't been granted access.

MAJ CHAPMAN: Thank you.

MS McMURDO: And from an ethics point of view, it's all de-identified in any case, isn't it?

DR MATTHEWS: Absolutely. And we're very experienced data scientists. We could make any assurances to an ethics committee that we're very competent with dealing with sensitive data.

MAJ CHAPMAN: What organisation or who commissioned your working group study to start with?

5 DR MATTHEWS: From the WHS branch level?

MAJ CHAPMAN: WHS branch - - -

10 DR MATTHEWS: So as we've already talked about, so that came from the Afghanistan Inquiry. Exactly who commissioned it, I'm not sure broader than that.

MAJ CHAPMAN: Have you been able to – or have you indeed raised this issue of access to the data? Have you sought to elevate that?

15 DR MATTHEWS: Yes, we've taken every step we possibly can, and I think we've pursued every avenue that we can think of.

20 MS McMURDO: So when you say it “came from the Afghanistan Inquiry”, it was one of the recommendations?

DR MATTHEWS: That's right. That's right, ma'am, yes.

25 MAJ CHAPMAN: What other fatigue-related material that you're aware the ADF generates have you sought access to for your study, which hasn't been granted – you haven't been given access to?

DR MATTHEWS: I'm aware of a PULSE survey that's undertaken in Army.

30 MAJ CHAPMAN: Sorry, was that a “PULSE” - - -

DR MATTHEWS: PULSE. I think it's called PULSE survey.

35 MAJ CHAPMAN: Do you know what that – is that an acronym?

40 DR MATTHEWS: I think it is. I think it's very similar to the snapshot survey that is run. Again, this is something that we were aware that might be taking place, but we haven't been able to get any specific data from any other, you know, surveys that are taking place.

MAJ CHAPMAN: Is that an Aviation survey?

DR MATTHEWS: No, I think that – I believe that's Army-wide.

MAJ CHAPMAN: And to your understanding, who owns the data in respect of this?

5 DR MATTHEWS: I'm not sure on that one.

MAJ CHAPMAN: But you've asked for that data and that's also been denied?

10 DR MATTHEWS: It wasn't specifically denied; the request went out and we haven't heard anything back yet.

MAJ CHAPMAN: Where did you send the request, do you recall?

15 DR MATTHEWS: So we would request to the branch, and then they would then chase it up for us. As contractors, we're not requesting that specifically. It goes to the working group and it's their responsibility to try and get us the resources that we need to do the job.

20 MS McMURDO: But you understand that relates to fatigue.

DR MATTHEWS: My understanding is that there is some fatigue-related questions within that dataset that could be useful.

25 MS McMURDO: And do you know when you asked for that material?

DR MATTHEWS: That was in the first phase of the projects that would have been early last year.

30 MAJ CHAPMAN: So you've mentioned in some evidence just now that there's been challenges interacting with DFSB with respect to the data that they hold. What other interactions have you had with DFSB specifically in relation to your study, beyond requesting - - -

35 DR MATTHEWS: Very little interactions. But, broadly, we're dealing with an organisation that's pretty competent at running a Flight Safety Organisation. You know, when I've spoken to other cells, such as the Training cell, to find out a bit more about other specific training that they're delivering, I've been met with no resistance. They're very happy to send us the training packages that they've got. So I think, broadly, the
40 organisation is open and willing to work with just one sticking point around snapshot data.

45 MAJ CHAPMAN: You gave evidence before the luncheon adjournment earlier in your evidence to certain factors impacting on fatigue, and these were inability to focus – sorry, the result of fatigue, including inability to

focus on relevant information, higher likelihood of taking impulsive risks, and the Air Vice-Marshal asked you some questions about that. Just dealing with those last two and returning to them briefly. So difficulty dealing with unexpected events, and difficulty adjusting to a change of plans, can I just ask you, in your research, how would, for example, a change in plans impact on a civilian, like a non-aviation person, in terms of fatigue?

DR MATTHEWS: How would it impact on the – I think the way we would think about it is the other way around, that fatigue impacts on their ability to change strategies, if you like. Is that specifically what you're asking there?

MAJ CHAPMAN: And, really, with respect to pilots, in your experience does changes in planning or changes in something that's been set in stone have a material impact on their fatigue, from your experience, as opposed to the general public?

DR MATTHEWS: It will impact their fatigue, but what we see is that if we have a fatigued individual and we put them in a situation where the plans change or that they're required to change strategy, they're far more likely to hold to their existing plan. It's far more difficult for them to adjust their mindset around the situation. They'll stick with the original plan even if there was a better plan that they could put in place. If they were under less fatigue, they might come up with a more creative solution.

MAJ CHAPMAN: And I've been reminded of the acronym for PULSE. Just for the record, it's the Profile of Unit Leadership, Satisfaction and Effectiveness.

MS McMURDO: I'm glad you told us because I don't think we'd ever have guessed that one.

MAJ CHAPMAN: So just returning to where we left off before the luncheon adjournment, I want to ask you some – now turn to some questions concerning the governance framework for fatigue management. You were asked to respond to a question – and this is question 11 in the report – to outline your understanding of the governance framework specifically concerning aircrew. Do you recall that?

DR MATTHEWS: Yes.

MAJ CHAPMAN: And you've indicated in your response, which you'll see at page 6 of your report, that Army Aviation governance framework is aligned to Defence Aviation Safety Regulations, and those are what are referred to as DASRs.

DR MATTHEWS: Yes.

5 MAJ CHAPMAN: So in terms of how these regulations work in practice – and I think there’s been some other evidence given about this, but the DASR really sit on top, set the expectation.

DR MATTHEWS: Correct.

10 MAJ CHAPMAN: And then from there, each of the Services - Army, RAAF, and the Navy - promulgate their own Service-specific policies.

DR MATTHEWS: Correct.

15 MAJ CHAPMAN: They must be aligned with the DASR policy.

DR MATTHEWS: Correct.

20 MAJ CHAPMAN: And you’ve said in your report that it’s a core principle of the DASRs that Commanding Officers are ultimately accountable for managing fatigue risk across the spectrum of operations.

DR MATTHEWS: That’s my understanding.

25 MAJ CHAPMAN: And that individuals also have a responsibility for managing their own rest and sleep, and reporting fatigue.

DR MATTHEWS: Correct.

30 MAJ CHAPMAN: And that goes back to your evidence earlier about equipping members to understand fatigue to then put in place strategies for dealing with that.

DR MATTHEWS: That’s right.

35 MAJ CHAPMAN: Just in terms of Army’s management and Army Aviation’s management of fatigue risk, you then refer to – and there’s also been evidence given about this – the SFI – Special Flying Instruction – 12/2023 titled Aviation Fatigue Management.

40

DR MATTHEWS: Yes.

45 MAJ CHAPMAN: Now, I’ll just remind you, that is a document which is marked “Official: Sensitive”, so if any substantive evidence is going to be given about it, it might need to be done in private session.

DR MATTHEWS: I understand.

5 MAJ CHAPMAN: But I don't anticipate that's the case. Without going into any detail on the policy, that's, as you understand it, a policy with respect to managing fatigue in Army Aviation.

DR MATTHEWS: Correct.

10 MAJ CHAPMAN: And it's a policy that was released on about 15 December 2023.

DR MATTHEWS: That was the updated version. Yes.

15 MAJ CHAPMAN: Do you know when the earlier version was - - -

DR MATTHEWS: No, I don't.

20 MAJ CHAPMAN: No, but the updated version came some six months or so post the accident?

DR MATTHEWS: I understand, yes.

25 MAJ CHAPMAN: Just turning to another issue, are you aware that at least one – if I can put it like this – traditional way of Services managing fatigue in the case of Army has been work/rest tables?

DR MATTHEWS: Yes.

30 MAJ CHAPMAN: That not being specific to Army Aviation, but in the broader Army.

DR MATTHEWS: Correct.

35 MAJ CHAPMAN: Those tables essentially set out the hours that one would be expected to work, and then mandatory time for rest.

DR MATTHEWS: Correct.

40 MAJ CHAPMAN: If there's an equivalent to be drawn in the Aviation context, they are referred to as duty limits.

DR MATTHEWS: Correct.

MAJ CHAPMAN: And there again, essentially mandated maximum times a pilot can fly and, equally, when they need to rest.

DR MATTHEWS: Absolutely, yes.

5

MAJ CHAPMAN: You've referred in your report to those being duty limit rules.

DR MATTHEWS: Yes, that's right.

10

MAJ CHAPMAN: You've included in your evidence, your expert opinion, an excerpt from the preliminary report of your Workforce Fatigue Management Group where you refer to the need for organisations to, as you put it, mature past crew duty limits. Do you - - -

15

DR MATTHEWS: Yes, that wasn't my words, but that was the finding of the team that I was part of, that compiled that initial report.

MAJ CHAPMAN: Then, to your understanding, could you just develop, if you can, the reasoning of the team for making a statement about maturing past duty limits?

20

DR MATTHEWS: Right. It's a fairly blunt tool in some circumstances, and to put it simply - - -

25

MAJ CHAPMAN: Sorry to pause - that is the duty limit rules?

DR MATTHEWS: The duty limits. Duty limit rules can be a fairly blunt tool. The idea behind them is that, you know, from - and this came from a scientific point of view, that you could predict how much sleep an individual would get under certain amounts of time between shifts. So that's a probability curve. And so, for example, in lots of industries a 10-hour minimum duty between shifts is enforced.

30

And I know that data specifically because on that probability curve, once you get down to about 10 hours you can predict that half the workforce will return to work for the next shift having had less than six hours of sleep. And then from that, you can then model a risk profile. And once you're pretty confident that half the workforce is impaired, then the likelihood of workplace accidents increases. So that's specifically why a 10-hour minimum duty limit was chosen in a lot of industries.

35

40

Being a blunt tool, there was also data that showed that there was a very large time of shift effect on this. So, for example, if you were given 10 hours off following a night shift, it wasn't 50 per cent of the workforce. It

45

was more like 90 per cent of the workforce would return having less than six hours of sleep. So it was always meant to be linked to some additional information, but – you know, and this was work that was done years ago now – but in a lot of industries that got held onto as the important thing.

5

And I make this point to units in Air Force quite regularly: “It doesn’t matter how much time we’ve given you off between your duties. If you haven’t rested, you haven’t slept, and you haven’t recovered, then that policy is not going to keep you safe”. So that’s why I call it a blunt tool, and that adherence to just that rule isn’t enough to keep people safe.

10

MAJ CHAPMAN: So it’s a blunt tool in the sense also that it’s somewhat inflexible in how it’s presented. You have, you know, work on/work off, but it doesn’t take into account a whole variety of other considerations, such as quality.

15

DR MATTHEWS: Correct.

MAJ CHAPMAN: Are you suggesting also that it’s a blunt tool because it reflects the fact that, you know, the prevailing research in this field has moved well beyond the orthodoxy of that position?

20

DR MATTHEWS: Yes.

MAJ CHAPMAN: That would be a fair way to describe it?

25

DR MATTHEWS: It’s not to say they’re not useful, but we need a framework that’s more complex than a simple rule.

MAJ CHAPMAN: There are more dynamic ways to approach this.

30

DR MATTHEWS: Correct.

MAJ CHAPMAN: Is this at the centre, this reference to a better way of approaching fatigue, where you refer to the need to develop fatigue agility?

35

DR MATTHEWS: Yes. So that’s what we’ve been talking about. The behavioural skills and practices in order to really move past management of fatigue, which is really about limiting fatigue in a workforce, but have a workforce that’s very good at working with fatigue. That is, I have awareness of how fatigued I am, and I can make choices about what we do engage in, what we cancel, what we change, how we work as a group to get the job done, and then within us we have the ability to turn things off if we have to, to keep people safe, or decide to take additional risk where it’s appropriate to do so.

40

45

So it's a whole foundation of we're good at working with fatigue rather than just the organisation trying to limit it and not have it as a risk.

5 MAJ CHAPMAN: I understand. Part of fatigue agility could also be implementing strategies which improve performance. So as you say, not just limiting what one can do and cutting off their work at a particular time, but you can improve outcomes.

10 DR MATTHEWS: Well, that's important for Defence because we'll create scenarios where we only have the people that we have within this environment to do the job, and the job is important and it will need to happen, so the individuals in those scenarios will only have whatever performance they can bring to the table to get the job done. That's why
15 optimising those individuals makes a lot of sense.

MAJ CHAPMAN: In this context you referred, I think at page 7, to the work of Professor Drew Dawson, who you identify as an internationally recognised fatigue expert, who writes in an extract you've included in your
20 report that:

There needs to be a shift away from the singular reliance on working time arrangements as the primary risk control.

25 DR MATTHEWS: Correct.

MAJ CHAPMAN: I understand. I just want to move now to the next topic, which is going to be a reference to cycles. At question 12, your response to question 12 on page 8, you were asked some questions concerning the
30 impact on safety of changes to cycles.

DR MATTHEWS: Correct.

MAJ CHAPMAN: And you understand, do you, that changing cycles in
35 this context means changing between night and day flying operations and schedules?

DR MATTHEWS: Correct, yes.

40 MAJ CHAPMAN: These are referred to as cycles because they refer to the circadian cycles, or is there some other – is that not necessarily the case?

DR MATTHEWS: I'm not sure why that term is used. That is just the language that is used in Defence to talk about these operations.
45

MAJ CHAPMAN: So they're very much underpinned by the circadian rhythms.

DR MATTHEWS: They are, yes.

5

MAJ CHAPMAN: Is a simple illustration of how these cycles would work, because they refer – sorry, you might be required to work, for example, at night and sleep in the day?

10 DR MATTHEWS: Yes.

MAJ CHAPMAN: So to act in a way which is, in effect, the opposite to what the body is naturally inclined to be doing.

15 DR MATTHEWS: Yes.

MAJ CHAPMAN: And the converse would be you'd be active – which is to be active during the day and sleep during the evening.

20 DR MATTHEWS: Correct.

MAJ CHAPMAN: As you say, this is all relevant to fatigue in that when this is not appropriately managed – these cycles – you make the comment that, "It can create a cocktail of impairment factors".

25

DR MATTHEWS: Yes.

MAJ CHAPMAN: "Increasing safety risk."

30 DR MATTHEWS: Yes.

MAJ CHAPMAN: Explain what developed that reasoning, please.

DR MATTHEWS: Right. What we're talking about here is a number of
35 complicated interactions. So there's a whole host of things that come into play once we're moving people from day to night. Just speaking about the biological rhythm specifically, will have a drive for sleepiness or impairment during the night-time when people need to be operating, and will have a reverse drive for alertness during the daytime when they need
40 to be sleeping. That's one aspect.

Another aspect is that it is also just difficult to sleep during the daytime, irrespective of the body's drive for that, and it is difficult to operate at night-time as well. So it also goes hand-in-hand with creating extended
45 periods of wakefulness. Now, being awake for a long time comes with

impairment, and then, as we've been talking about, it goes hand-in-hand with not getting enough sleep.

5 Not getting enough sleep creates performance impairment itself. But not getting enough sleep also magnifies the effect of the body's circadian rhythm, so you end up with a rhythm that's far broader. So that means the effect of trying to do something overnight is more impaired. This is why I used the word "cocktail" in this context. We're talking about multiple systems interacting in ways that are going to impair someone.

10 And that is why, you know, individuals find it then very hard, because under one circumstance they'll say, "Well, I was awake for 16 hours, sometimes I'm fine. Other times I'm awake for 16 hours and I'm not fine". It's because it's a complicated interaction between various different systems which then will bring about incredibly large amounts of performance impairment that we wouldn't normally see under any other condition.

15 MAJ CHAPMAN: Thank you. And you refer also to having an understanding of a number of strategies that you're aware of which are used among civilian shiftworkers, and even elite sports people - - -

DR MATTHEWS: Yes.

20 MAJ CHAPMAN: - - - where they use these strategies to improve fatigue outcomes. Can you just describe a few of those?

DR MATTHEWS: Yes. So when we're talking about moving from day to night, we're talking about - well, one way we can think about that is shifting the body clock, right. So shifting the biological cycle so that it's now aligned to night and day operations rather than day and night. And this is effectively the same thing that you would do for jetlag, where you're moving the biological clock.

30 And there's lots of examples from different industries that are very good at moving biological clocks. As an example, I talk about elite athletes where we will remove jetlag completely from that individual before they attend, for example, an Olympic event. And that is done through light therapy and the use of Melatonin, or synthetic Melatonin. So we have people landing in another country perfectly aligned - their body clock is aligned to the local time in that county so they're not suffering from any impairments related to their circadian phase.

40 We can absolutely do that for our shiftworking night workforce. We can very quickly and rapidly adjust them to be aligned to night operations. Which is a different strategy to what we're currently doing, which is trying

to limit the number of nights that someone does in a row because we know that they're going to be misaligned with their circadian clock.

5 MAJ CHAPMAN: And when you've referred here to shiftworkers using forward rotating rosters, can you just explain what they are?

10 DR MATTHEWS: Sure. Well, essentially, you could move your biological clock in one direction or you could move it in the other direction – advance it or delay it. It's much easier to stay up later than it is to go to bed earlier. So that's the description about forward or backwards rotation. So it's easier to move your clock in one direction as it is to move in the other direction.

15 MAJ CHAPMAN: Have you seen a forward rotating roster implemented anywhere in the ADF in terms of trying to address fatigue as a strategy?

20 DR MATTHEWS: Yes. We've seen rotations in both directions, and occasionally workforces are reluctant to move the rotation direction of their schedule. They might like it for personal reasons, or whatever else. Usually, when you can show people a better roster and get them to trial it, they'll then understand that it actually just works better. So the science is pretty clear on what's easier to manage than others. And sometimes there's reluctance from individuals to take that on board.

25 MAJ CHAPMAN: So you've seen it but you also then go on to say that none of these strategies are widely used in the ADF.

30 DR MATTHEWS: Right. So there are a lot of strategies that we're not using that we could be, and then that would become a capability in and of itself, to have a workforce that is well adapted to 24-hour operations.

MAJ CHAPMAN: And this forward rotating strategy is just one of a host, is it, of strategies which are available?

35 DR MATTHEWS: Absolutely.

MAJ CHAPMAN: And could be implemented if needed.

40 DR MATTHEWS: Now, I will mention that I am using light glasses at some units. We're trying to get Melatonin available. Complicated, you know, organisational limitations. To use a drug, we need to make sure we've got Joint Health Command approval. We need to make sure that it's available through pharmacies. We need to make sure that the AVMOs – the Aviation Medical Officers – in units are able to prescribe it. So there's
45 a whole host of things that need to be in place before we can start using this,

which is unfortunate because we have a big clunky organisation. Sometimes these things take time.

5 I would like to have seen those rolled out already. The same with caffeine gum, it's a very simple fatigue countermeasure that, you know, we're not using yet due to the same sort of reasons. However, individuals could buy their own and use it without any issues.

10 So, yes, I think we should create a greater drive to implement things that we know are going to work right now to help our people.

MAJ CHAPMAN: Now, is the caffeine gum, the use of the light glasses, I think you - - -

15 DR MATTHEWS: Yes, light glasses.

MAJ CHAPMAN: These other strategies, are they being implemented or looked at, at least, in the RAAF more so than other Services?

20 DR MATTHEWS: Yes. Well, at the moment we only have the ability to effect change within the RAAF, so that's where we're doing it. And, yes, like last week an aircrew got in contact with us where we've got some light glasses at that unit. They were travelling to the US and they said, "How are we going to use them?" We gave them some quick advice, turned it around within a day. And my understanding is on Friday last week they used them prior to a trip to the US to adjust their biological clocks.

MAJ CHAPMAN: That was a RAAF unit, was it?

30 DR MATTHEWS: It was, yes. So, as part of concept, we're rolling it out and it's working. We just don't have the funds to roll them out everywhere yet.

35 MS McMURDO: So could you tell us how these light glasses work, please?

DR MATTHEWS: Right. So the biological clock takes in a lot of environmental cues from the world around it in order to adjust where it needs to sit. Light is one of the main cues that our body uses to adjust its internal clock. We can create procedures for telling someone when to expose themselves to light to create different shifts in their clock. However, there might not always be the right environment to have light right at that time.

45 What the glasses do – and I almost brought a pair with me, but I wasn't sure if we were going to talk about them – what they do is, they're a pair of, if

you like, bigger glasses that will sit over the top of a pair of glasses like this and they'll shine light into your eyes. And we know that, you know, 45 minutes of light shining into your eyes at the right time of day will create at least an hour shift in your circadian cycle.

5

The science in this is pretty solid. That's basically their function. We also have - - -

10 MS McMURDO: It's the same way as the advice with jetlag is to get into the sunshine.

DR MATTHEWS: Exactly.

15 MS McMURDO: As you've come to, yes.

DR MATTHEWS: The great thing with this is, we don't need people to remove themselves from their workplace in order to do it. They can just pop these glasses on while they're working and in most cases it's not going to interfere with people's work. It sounds like having light in your face would be uncomfortable, but it feels very dim.

20

25 To be honest, most people that wear them put them on and then forget that there's even light in their eyes because it's not shining right into your eyes, it's sort of on an angle – very comfortable. We also use the reverse light blocking glasses which are like a filtered glasses that someone can wear that just filter out some blue light, which on the reverse side of the cycle, then creates an almost dark pulse for that rhythm to move into.

25

30 So it's systems by which we can very quickly and easily give people what they need without having them to do a lot of effort within their environment.

30

MS McMURDO: Okay.

35 DR MATTHEWS: Very important, I might mention as well, a lot of our workforce is moving towards operating in windowless rooms with not necessarily lighting that's appropriate. So it's becoming a more useful tool as our workforce changes the dynamics of their workplaces.

35

40 MAJ CHAPMAN: But going back to the glasses as an example, there's no reason why, in principle, that you could think of as to why these things could not be rolled out in the ADF more broadly, it just comes down to arbitrary considerations?

40

45 DR MATTHEWS: Some resources, yes, absolutely.

MAJ CHAPMAN: But at the moment, the RAAF appear to be leading the charge, as it were, in relation to this?

5 DR MATTHEWS: I managed to get approval to spend a little bit of money to get some to show why it's important to use, and I'm hoping we can then leverage that into a bigger program of work.

10 MAJ CHAPMAN: Thank you. I want to now deal with the topic of sleeping conditions. So you've assessed in your report that the optimal sleeping conditions – or conditions for sleep, rather, are to be cool, dark, quiet and calm conditions.

DR MATTHEWS: Correct.

15 MAJ CHAPMAN: And, conversely, the suboptimal sleeping conditions include those which are too hot, too light, too loud, unsafe, busy, and where other people are awake. Right?

DR MATTHEWS: Yes.

20 MAJ CHAPMAN: Now, you may be aware that this Inquiry has received a substantial body of evidence that the MRH crews on this particular exercise, TS '23, were sleeping at times by day, and in large tents which were, themselves, proximate to a working aerodrome.

25 DR MATTHEWS: Yes.

MAJ CHAPMAN: And that was a working aerodrome at night and during the day.

30 DR MATTHEWS: Yes.

MAJ CHAPMAN: Now, we can take it, can we, that this sort of environment, proximate as it was to an aerodrome operating 24 hours, essentially falls squarely within the suboptimal category of sleeping condition?

DR MATTHEWS: Correct.

40 MAJ CHAPMAN: And a suboptimal condition in that environment militates against rest at all and certainly against good quality rest.

45 DR MATTHEWS: Yes. There's also some other context within there as well. Questions I would ask if I was looking at an environment like that is, you know, what did the individuals do as well? You know, for example,

“Did you have earplugs available?” You know, and it sounds like and obvious thing, a lot of times aircrew don’t even think about it. “Do you have earplugs and have you developed some behaviour sleeping with earplugs?”

5

It is acceptable that – or, you know, at times, being aircrew, you’ll have to sleep in an environment that’s not always as quiet as you need it to be. So having some experience and behavioural strategies around being able to sleep with earplugs could be quite useful.

10

So all I’m just saying is that, yes, the environment is sometimes an issue, but then also have we done everything that we can to change the environment and prepare people to sleep within those environments?

15 MAJ CHAPMAN: And you next describe the impact that suboptimal sleeping conditions can have on performance?

DR MATTHEWS: Yes.

20 MAJ CHAPMAN: And an important point I think that you make is that even the crew duty limit policies are only as effective, in terms of being a risk control, to the extent they’re complied with?

DR MATTHEWS: Yes.

25

MAJ CHAPMAN: And that crew duty limits really proceed – and we’ve had some evidence about this – on an assumption that time off between duty periods will result in sleep.

30 DR MATTHEWS: Correct, yes.

MAJ CHAPMAN: And that’s often – well, not often, but it can – it may not be the case in some places?

35 DR MATTHEWS: That’s correct.

MAJ CHAPMAN: And that there’s a host of factors which go against – or militate against quality rest and recovery, and these include the environmental factors/weather that you’ve referred to. So you mention, towards the top of page 9 of the report, that you have, yourself, observed some alarming scenarios where a crew have reported not having slept during rest periods?

45

DR MATTHEWS: Yes.

MAJ CHAPMAN: By reason of the crew limit – or, sorry, by reason of being within crew limits, they have continued to operate. Does that include going flying?

5 DR MATTHEWS: Yes.

MAJ CHAPMAN: Do you have any other examples which come to mind where this has happened?

10 DR MATTHEWS: Well, they're the most extreme examples when we knew that – and people were completely aware that their rest and sleep was impacted but, irrespective of that, the operation continued.

15 MAJ CHAPMAN: And one of the issues that you raise is that you've seen individuals clearly impacted by fatigue making decisions as to whether or not to fly because they haven't had sufficient sleep?

DR MATTHEWS: Correct.

20 MAJ CHAPMAN: And is this another way of saying that you can have a situation where an individual who is carrying the effects of cumulative sleep deprivation is again unable themselves to make an accurate assessment of their own level of fatigue in terms of go or no to flying?

25 DR MATTHEWS: Correct. I think, under those circumstances, what we would do is rely on objective measures that that individual can consider within themselves. If you like, consider another person that's under these conditions, that have been awake for this long, under these sleep conditions, would that person be able to fly? You know, and so we have tools and
30 practices that could help that individual come to a better conclusion about whether they're – well, what performance impairment they're going to be under.

35 MAJ CHAPMAN: So you'd agree you could have a scenario where a pilot, acting entirely in good faith, believes themselves to be okay to fly, but reality is that they - - -

DR MATTHEWS: Yes. And I've seen that on many occasions, yes.

40 MAJ CHAPMAN: In your response to question 17, which is at page 11, you were asked to comment on the – referred to as the “FACE out procedure”, and we've had some evidence that is an acronym: Fatigue, Attitude, Complacency, and External factors. And you've said in your evidence you were not previously aware of that.
45

DR MATTHEWS: Correct.

5 MAJ CHAPMAN: Do you understand that now to be an Army procedure where a pilot can effectively declare themselves TMUFF? And do you know what I'm referring to with TMUFF?

DR MATTHEWS: Yes, I do.

10 MAJ CHAPMAN: Can you just describe what that acronym is?

DR MATTHEWS: It's Temporarily Medically Unfit to Fly. It's the general term – I think I've got that correct? It's the general term that an aircrew will say that, "I'm not able to – I'm not fit to fly. I'm not able to go do the job".

15 MAJ CHAPMAN: And a consequence of, you know, one declaring themselves TMUFF, is that they might leave a crew for a sortie and a replacement called up, or the sortie could even be cancelled?

20 DR MATTHEWS: Correct.

MAJ CHAPMAN: And you're aware of this – there is an equivalent "FACE out procedure" that exists in the RAAF, but you probably refer to it more as just "TMUFF"? Is that right?

25 DR MATTHEWS: I think so. Yes.

MAJ CHAPMAN: Okay. And would you agree that this procedure, as it's available across the Services, represents some form of risk control?

30 DR MATTHEWS: Yes. Any time that someone takes a moment to assess their fatigue level prior to engaging in an activity would be a risk control.

35 MAJ CHAPMAN: The trouble with it is, again, you'd agree, that, at least on one level, the efficacy of that as a procedure again turns on whether the individual themselves is aware of their own fatigue and the extent of it?

DR MATTHEWS: I'm not familiar enough with what that procedure includes to answer that one.

40 MAJ CHAPMAN: Well, put it in the context of TMUFF. It depends on whether or not that individual can identify the signals as to whether or not they're fatigued enough to exit the sortie?

DR MATTHEWS: Yes – but, if that process was to include the other tool which we have, which is the Fatigue Risk Awareness Tool, then I would say that that tool would allow a person to note whether they are fatigued or not, because that’s objectively based.

5

MAJ CHAPMAN: I’m glad you’ve gone on to that because I’m just about to reach the tool. But, before I do, can I just ask you two questions?

DR MATTHEWS: Sure.

10

MAJ CHAPMAN: Were you aware of a fatigue study that 6 Avn started in 2022?

DR MATTHEWS: No, I wasn’t.

15

MAJ CHAPMAN: Okay.

AVN HARLAND: Just on the FACE out or FACEing out procedure there, if that procedure didn’t involve any objective measures and it was just purely subjective, how would you characterise that as a control?

20

DR MATTHEWS: It’s not a very effective control because your ability to rate your own performance can be greatly impaired by fatigue itself.

25

AVN HARLAND: Okay. Thank you.

MAJ CHAPMAN: So I’m going to move to the Fatigue Risk Awareness Tool, and you refer to that as “the FRAT”. Is that right?

30

DR MATTHEWS: Sure. Yes.

MAJ CHAPMAN: It can be referred to as “the FRAT”? I believe that’s Exhibit 37?

35

MS McMURDO: Yes.

MAJ CHAPMAN: Do you have a copy of that there? I can provide - - -

MS McMURDO: We can show you - - -

40

DR MATTHEWS: Yes, it’s in the back here. I’ve got it in Appendix – I had it here as Appendix - - -

MS McMURDO: Well, let’s show him Exhibit 37. It’s a nice big copy.

45

DR MATTHEWS: Thank you.

MAJ CHAPMAN: So that's the document you're familiar with as the FRAT?

5

DR MATTHEWS: Yes.

MAJ CHAPMAN: Do you know when the FRAT was introduced into Service?

10

DR MATTHEWS: I know it appeared in the DFSB's Aviation Management Guidebook, and it may have existed prior to that. But that guidebook was published, I believe, in 2021, and I did look it up for my report here.

15

MAJ CHAPMAN: And if you go to the bottom – I'm reminded, the bottom right-hand corner of that document, you see, "Version 1, 10 November 2022"?

20

DR MATTHEWS: 2022, yes.

MAJ CHAPMAN: So we can take it that - - -

UNIDENTIFIED SPEAKER: 2020.

25

DR MATTHEWS: 2020.

MAJ CHAPMAN: Sorry.

30

DR MATTHEWS: Yes.

MAJ CHAPMAN: Correction, 2020. We can take it that was the first iteration of this tool. And is it a tool which you also find in the Fatigue Aviation Management Guidebook?

35

DR MATTHEWS: Yes, it is.

MAJ CHAPMAN: And it appears, I think, at around - - -

40

DR MATTHEWS: Page 35.

MAJ CHAPMAN: - - - page 35.

DR MATTHEWS: Correct.

45

DR MATTHEWS: Do you have a copy of that Fatigue Management Guidebook there?

5 DR MATTHEWS: Not in front of me, but I've seen it many times.

MAJ CHAPMAN: I might hand you a copy. I don't think this is an exhibit.

DR MATTHEWS: Thank you.

10 MAJ CHAPMAN: Do you recognise that as the guidebook you're familiar with?

DR MATTHEWS: Yes, it is.

15 MAJ CHAPMAN: I tender that guidebook, ma'am.

MS McMURDO: Yes. That will be 39.

20 **#EXHIBIT 39 – AVIATION FATIGUE MANAGEMENT GUIDEBOOK**

25 MAJ CHAPMAN: So to the extent that prior to the introduction of the FRAT, which we know is in 2020, we were – is it the case that we were operating on a system which essentially relied on self-assessments as to fatigue?

30 DR MATTHEWS: I can't comment on that; I don't know.

MAJ CHAPMAN: If this is a tool which has existed, to your understanding, from only November 2020, before that, you assume that it was real – the focus was about members self-assessing their own fatigue?

35 DR MATTHEWS: I can assume that that would be the case.

MAJ CHAPMAN: And that would've been without any objective measure. It's a subjective exercise?

40 DR MATTHEWS: Yes. But I'm unable to confirm that.

45 MAJ CHAPMAN: And to the extent that a self-assessment involves, in the broad, a subjective exercise, there's, as you've identified in your evidence, inherent risk in that approach?

DR MATTHEWS: Yes.

5 MAJ CHAPMAN: And just going back to your own experiences, have you seen examples of aircrew deciding to go ahead with a sortie for capability reasons? And I must just explain that. In other words, they proceed because they don't want to pull out from the mission because it would impact on capability.

10 DR MATTHEWS: Yes, I've seen, on many occasions, aircrew undertake sorties irrespective of what this tool would suggest they should do.

MAJ CHAPMAN: Irrespective of it?

15 DR MATTHEWS: Yes.

MAJ CHAPMAN: So even where you'd be confident that in those cases they'd come up with perhaps an orange or a caution?

20 DR MATTHEWS: Yes, and for clarity, I'm sure there's a lot of occasions where flights are engaged and no one has looked up this tool or considered it. I know of cases where aircrew have raised concerns about driving to the base because they're fatigued, but then they've continued with the sortie that they're going to do, which might have been like a 12-hour sortie or something.

25 MAJ CHAPMAN: Are you reasonably familiar with how this operates?

DR MATTHEWS: Yes, I am.

30 MAJ CHAPMAN: Would you mind explaining to the Chair and to the Air Vice-Marshal, and to everyone, how it works step by step within your expertise?

35 DR MATTHEWS: Sure. A lot of it is based off of previous work that was conducted by Drew Dawson around 2005, which we call in the field a prior sleep/wake model which really looks at how long you've been awake and how long you've been asleep in the lead up to what you're engaging with, and this is an extension of that idea. So you've got a number of rules that you're trying to see whether you are within or not within. So the first one
40 is how much sleep you've had in the past 24 hours.

In the original prior sleep/wake rule, we would just say, "Anything five or less, we will put the threshold here". So this one, it does that, less than six, but it also gives you an amber at six to seven, and then a green at more than

seven hours of sleep in the prior 24 hours. So that could be one large block or several blocks of sleep.

5 The next question is, “How much sleep have you had in the past 48 hours?”, and here the cut-off is 12, which is the same as the prior sleep/wake model, and there’s an amber at 12 to 14 hours, and a green in addition to 14 hours.

10 The next one is, “How long you’ve been awake?”, so how many hours you’ve been awake at the end of the planned duty. Here we cut it off at 18 hours, which is an amount of prior awake which we know in laboratory conditions starts creating fairly large amounts of impairment. We have an amber at 16-18 hours, and a green in addition to 16 – less than 16, sorry.

15 Where the original prior sleep/wake model fell down was that it didn’t capture well time of day. So that’s been included in this model and so it asks the questions, “When will you be forming safety-critical tasks?” The dangerous window is 2 to 6 o’clock in the morning, which in aviation terms we call the window of circadian low. And if you are engaged at that time, that gives you a caution, a red. The other periods are 6 to 7.30, and 20 10 o’clock at night through to 2 o’clock in the morning is the amber, and the remaining period is green.

25 The last question is that subjective question, which is an important aspect of this as well, “How alert are you feeling?”, with the caution in when someone is feeling extremely tired, or very difficult to concentrate, or completely exhausted, unable to function relatively and effectively. All of these here are taken from, I believe, one of our fatigue scales. I think it might be the Karolinska Sleepiness Scale, or the Epworth Sleepiness Scale, but they’re scientifically valid descriptors.

30 How this works is that different SIs will say what’s the threshold that you should be communicating risk. Usually, it could be, like, three ambers or one red, or two reds. And I’ve seen some differences on exactly where that threshold is. But there’s advice given on the other side of the page as to 35 where that threshold could be.

40 MAJ CHAPMAN: Thank you. The overall intent of this document is obviously to equip pilots and aircrew with the ability to have some objective measure of their own fatigue?

DR MATTHEWS: Correct. Correct.

45 MAJ CHAPMAN: Can I return briefly to sleeping conditions. You said on page 9, at the second paragraph, that you’ve seen examples where Commanders have actively intervened – and I think you’ve given some

evidence about this – but in situations to improve what they perceive as poor sleeping conditions.

DR MATTHEWS: Yes.

5

MAJ CHAPMAN: Do you have some examples you can share with us of that in practical terms?

DR MATTHEWS: Yes, without talking about specific examples. Generally, there's been a number of cases where a CO has identified that the unit is about to go through a period of surge and they've put some thought into where the individuals are going to sleep, or how are we going to move individuals from a sleeping accommodation to the operations area. Those scenarios have shown us that it's not always costly, it's not always very difficult, but it does require an extra element of planning that COs need to undertake.

I think also in units, you know, you can talk to more senior people at a unit and they will talk about a time in the past when there was bunks at a unit or sleeping areas within a Squadron, and nowadays with the new buildings that are being used, we don't have those facilities any more. So I think previously at times we've lacked an impetus to do something about this and very slowly we're seeing some examples where COs will take charge and create some environments that are better for people to sleep in.

20
25

And in some of these examples, there's other units working in the spaces that then haven't taken on these strategies and will openly say that they had a very rough time on that surge operation, compared to their colleagues who had a much better environment that facilitated sleep.

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MAJ CHAPMAN: Just picking up on that historical reference you made, you said you've heard anecdotally that there have been bunk beds essentially in units where aircrew presumably, if they've got some night sortie, instead of going home, they could have some rest at the Squadron or something to that effect.

35

DR MATTHEWS: Yes, I think going back 20, 30 years that was more of a normal set-up that existed in some units. That isn't the current practice.

MAJ CHAPMAN: Then in terms of – you said it would involve certain small adjustments to planning, but they can have improved outcomes in terms of the positioning of sleeping quarters in a particular exercise, for example.

DR MATTHEWS: Yes.

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5 MAJ CHAPMAN: Can I turn to the next topic, and we've had some evidence about this with sleep-inducing medications. You refer to this in your response to question 14 on paragraph 9, and you refer to these medications as countermeasures. You say that, in your experience in Defence, you have observed in some units an over-reliance on hypnotics?

DR MATTHEWS: Yes, I think that's fair to say.

10 MAJ CHAPMAN: So can you just explain that?

15 DR MATTHEWS: I think certainly in the past there was training that directed people to say that this was the countermeasure of choice and so for aircrew of different eras, they would have gone to this and said, "Well, this is how I get sleep in environments that will limit how much sleep I can get". So there's been some behaviour around it being used probably more than it should be used, and I've observed some of that, yes.

20 MAJ CHAPMAN: So if there was some sort of a culture or a practice of using it in an over-reliant way, has that changed, in your experience, over the years that you've been in this field?

25 DR MATTHEWS: I think, broadly, what I would characterise is there's a lot of different uses at different units. So while some units may rely on it heavily, other units don't rely on it, and some units can't get access when they probably should, or the process to get access is a little bit more difficult. So what I would describe is a very mixed bag approach to how it's used. I think we've got a lot of very good Aviation medical personnel that do their best to make sure that aircrew are using it well and have it available when they need it.

35 MAJ CHAPMAN: Just based on a response in your report, is it fair to say you don't necessarily consider that the use of hypnotics should be a recommended strategy for dealing with fatigue?

40 DR MATTHEWS: No, I do recommend it, but it should be one of multiple tools available and I've had a lot of conversation with IEM, who are the body that drives a lot of this work, and that we are in complete agreeance that if we could develop other practices then it would take the reliance on a sleeping tablet – it would remove the reliance of sleeping tablets.

45 MAJ CHAPMAN: Part of the reason why you might not want to rely on induced sleep, is that because it has a lower recovery value than naturally-initiated sleep?

DR MATTHEWS: That's right. Naturally-initiated sleep is ideal, and also there are risks associated with using sleeping tablets.

5 MAJ CHAPMAN: When you refer to "recovery value", you mean recovery benefit, the restorative benefit of sleep.

DR MATTHEWS: That's right. Correct.

10 MAJ CHAPMAN: In other words, the research demonstrates, does it, that the fact that sleep has been initiated by a hypnotic in fact reduces the quality of that sleep?

DR MATTHEWS: In some cases, we have some evidence that that may be the case.

15 MAJ CHAPMAN: But against that, of course, you make the important point that while sleep induced by a hypnotic might not be ideal, it's still preferable to no sleep at all.

20 DR MATTHEWS: Any sleep is better than no sleep.

MAJ CHAPMAN: I just want to return briefly, if I may, to the topic of ADF doctrine with respect to matters of fatigue. In your statement in response to question 15 at page 10, you've referred to your FAO team drafting an update to the chapter of the Air Force Safety Manual on fatigue.

25 DR MATTHEWS: Correct.

MAJ CHAPMAN: You also say this is not an Aviation-specific update, though to your knowledge – sorry, pausing there. This is not an Aviation-specific - - -

35 DR MATTHEWS: No, that's right. So this is the document that is a safety document that sits Air Force-wide, not Aviation-specific document.

MAJ CHAPMAN: Are you aware of a cognate document with respect to Army, or a similar - - -

40 DR MATTHEWS: An Army safety document?

MAJ CHAPMAN: Correct.

45 DR MATTHEWS: Yes, I haven't looked at it, but for each Service there is a safety manual that sits at Service level. Army will absolutely have one, and within that I would expect to see a fatigue chapter.

MAJ CHAPMAN: So though you haven't seen it, you would expect to see one?

5 DR MATTHEWS: Yes, that would be consistent with the model that I've seen across the ADF.

MAJ CHAPMAN: You've referred to the Army Guidebook, which is titled, "Fatigue Management During Operations, A Commander's Guide".

10 DR MATTHEWS: Yes.

MAJ CHAPMAN: Prepared by LTCOL Murphy in 2002. Is that, to your understanding, a guidebook directed to Army generally, or is that an Aviation-specific guidebook?

DR MATTHEWS: That is absolutely Army generally, yes.

MAJ CHAPMAN: But based on your understanding of fatigue management publications insofar as Army are concerned, it appears that the most recent Army-specific publication is – do you have a date of when that was - - -

DR MATTHEWS: Are you talking about a guidebook or policy?

MAJ CHAPMAN: Well, an Army-specific fatigue management publication, so far as you are aware of one.

DR MATTHEWS: In terms of guidebook, the Commander's Guide that I mentioned there is the only guidebook I'm aware of. And in terms of policy, there is the policy that we've previously talked about.

MAJ CHAPMAN: But that's a guidebook going back to 2002 and hasn't - - -

DR MATTHEWS: It's quite old, yes.

MAJ CHAPMAN: You're not aware of it having been updated since?

DR MATTHEWS: No, no one refers to any other document. That is the document that people refer to when talking about fatigue in an Army context, as far as I'm concerned – as far as I'm aware.

MAJ CHAPMAN: That's a 2002 document.

45

DR MATTHEWS: Correct.

MAJ CHAPMAN: Does it have, as far as you're aware, an Aviation component to it?

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DR MATTHEWS: I'm not sure; I'd have to have another look. The purpose of the book was general Army, though.

MAJ CHAPMAN: I've just been reminded of something. The Inquiry has heard some evidence that a female pilot was reluctant to take sleeping pills on exercise in a communal tent because of an adverse incident in the past in Defence. Have you heard of any anecdotal evidence of members being reluctant to take hypnotics for various reasons?

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15 DR MATTHEWS: No, not that I'm aware of.

MAJ CHAPMAN: In your capacity as part of the team conducting this wide-ranging review, you'd expect if there was any update to that 2002 publication, that you would have seen it.

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DR MATTHEWS: Absolutely.

MAJ CHAPMAN: Then you note also that the closest Aviation-related fatigue publication is the DFSB Aviation Fatigue Management Guidebook.

25

DR MATTHEWS: Yes.

MAJ CHAPMAN: Which has been tendered. Just putting to one side ADF fatigue publications, I just want to address you about your knowledge of fatigue studies undertaken within aviation. You say in response to this question, which is question 16 on page 10, that your team has undertaken significant work with the RAAF Squadrons and units, and have an ongoing, as you put it, deep dive into Air Combat Group.

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35 DR MATTHEWS: Yes.

MAJ CHAPMAN: Surveillance and Response Group.

DR MATTHEWS: Yes.

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MAJ CHAPMAN: And Combat Support Group, just to name a few.

DR MATTHEWS: Yes, and the other one would be AMG, Air Mobility Group.

45

MAJ CHAPMAN: The Air Mobility Group. I was going to ask you about that. Could you just describe to the Chair and the Air Vice-Marshal, in the broad, the nature of the work that you've been tasked to perform with respect to those deep dives?

5

DR MATTHEWS: Sure. Different works at different – we call them FEGs, Force Element Groups. So different bodies of work within each FEG directed relative to the risk that is being presented at each of those FEGs through evidence related to the snapshot data. So there's decision at Air Command level on where those relative FEGs sit relative to each other with fatigue, and then resourcing towards those FEGs relative to where they sit.

10

So that would describe Air Mobility Group as having the greatest risk, so there's been more resources applied there, which has been a large body of work of engaging with each of the Squadrons, working out what the fatigue levels are, what is driving those fatigue levels, and what we can do about addressing those levels of fatigue.

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MAJ CHAPMAN: Does that involve members of your team being embedded in the way that you've described within those units?

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DR MATTHEWS: Working very closely with those units, yes, with onsite observations, lots of interviews with people, being around the Squadron, getting a good sense of what the operational tempo looks like. Yes, absolutely. You know, sitting in the Ops Room and seeing things play out as they're happening, all that sort of work.

25

MAJ CHAPMAN: No doubt you've observed some differences between specific units in terms of the management of fatigue. Would you say that it often depends on how much of a priority the unit Commander wants to put on the issue?

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DR MATTHEWS: I think that's fair, and I think it's also along those lines, so different aircraft will have different taskings, and so that will drive the workload within those units, which will then relate to risk presented within those units as well.

35

MAJ CHAPMAN: You've given some evidence, including reference to these glasses that you referred to, about how RAAF are, in particular, taking active steps to address fatigue and fatigue-related issues. Do you have any further insights on how they are dealing with it that might be of use to the Inquiry?

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DR MATTHEWS: Specifically related to what?

45

MAJ CHAPMAN: How the RAAF are addressing the fatigue related in their organisation, that would be useful.

5 DR MATTHEWS: I think, yes, there's lots of aspects of that work that are very useful. Sometimes it's looking at the prioritisation of tasking, and seeing whether there is scope – whether there is appropriate prioritisation, dependent upon the workforce that is available to do that work. And sometimes that means conversations with the units that then deal with that
10 tasking to make sure that individuals in command positions have a greater awareness of where the individuals are sitting within those organisations, as to what capability we have, which will allow them to make better decisions about what's important taskings and what is less important taskings when there's too much work going on.

15 Careful management or review of the number of personnel that we have in specific places, related to the fact that in some units there is no ability to push back on taskings, the taskings are essential and they need to happen, and there's no ability to say no. So that would become an area of increased
20 priority, to make sure that there is no understaffing in those units so that they can meet the demand that is placed on them.

And then the other work that we talked about, such as making sure that individuals are trained up as well as we can with their behaviour, and then
25 finding the specific solutions to problems that are relative to units, whether that be looking at crew rest facilities on an aircraft or other things. Even, you know, for some aircrew it might be related to the flexibility that we give that group of workers to take recovery during, you know, shifts and that sort of stuff. So wide-ranging approaches.

30 MAJ CHAPMAN: You've made the observation in your report that while your review has identified lots of Defence doctrine and policy with respect to fatigue, they appear to lack detail and are, in some cases, inconsistent with modern Fatigue Risk Management systems. That's your comment.
35 Could you just elaborate on what you mean where you say they're inconsistent. You mean they're out of date, out of step?

DR MATTHEWS: So you're referring to the phase 1 review that was done?
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MAJ CHAPMAN: Yes.

DR MATTHEWS: And the inconsistencies, was that the inconsistencies of resources that we said there?
45

MAJ CHAPMAN: You said that the policy – “They lack detail and are inconsistent with modern Fatigue Risk Management systems”.

5 DR MATTHEWS: Right, yes. Not my words, but the words of the report. I think what’s being touched on there is that across the organisation there’s different rules for different people, depending on where they sit within the organisation and what job they’re doing. And I think that’s being talked about in that section.

10 MAJ CHAPMAN: Yes. Just to return to the focus groups that you’ve assembled as part of your working group. You gathered insights which included concerning the intrusion of non-operational work, among other factors, contributing to an error and an increased safety risk. What is it that you mean by the “non-operational work” – or your report means by the
15 “non-operational work”?

DR MATTHEWS: I think what’s being referred to there is increased tasking and a poor prioritisation of the available resources. So, yes, I think that’s it.

20 MAJ CHAPMAN: Are you aware of the expression – I mean, it’s not necessarily a RAAF expression – but “secondary duties”?

DR MATTHEWS: Yes.

25 MAJ CHAPMAN: And what do you understand is meant by that?

DR MATTHEWS: Additional roles that an individual will have to conduct in addition to their primary work.

30 MAJ CHAPMAN: So if you’re a pilot, it could be to have some other appointment within the - - -

DR MATTHEWS: That’s right.

35 MAJ CHAPMAN: So might secondary duties come within what you mean by non-operational work?

DR MATTHEWS: Yes, that is definitely some of the non-operational work that is required of an individual.

MAJ CHAPMAN: To what extent, in your experience, are you aware of these secondary duties causing increased stress and workload on people’s primary roles?

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DR MATTHEWS: When we have a person that is over-tasked, conducting – they’re at their limit of what they can do, secondary duties creates additional burden for someone that is already stressed and pushed to the limit. That’s my experience.

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MAJ CHAPMAN: Is the risk arising from that building on – it’s a cumulative stress effect, where it has the potential to culminate in poor decision-making?

10 DR MATTHEWS: Yes. I’ve spoken to lots of aircrew specifically that have then talked about the burden of secondary duties. Sometimes these are so extensive that they might become almost a primary duty for that individual and then they’re required to also maintain flying currencies and trainings and other things. So they’ll talk about stories about not being as
15 prepared or equipped to do their primary job, whether that be doing less flight planning than they would like to do, or do less training than they would like to do for various qualifications and courses that they see as their primary role.

20 MAJ CHAPMAN: I see, again from your work with the focus groups, that the word “constant” was used repeatedly when describing fatigue.

DR MATTHEWS: Yes.

25 MAJ CHAPMAN: Including emotional exhaustion was also present with many of the respondents.

DR MATTHEWS: Yes. I think when we’ve asked people to describe their relationship with fatigue to get a sense of – you know, when we’re trying
30 to get them to unpack their lived experience, the word “constant” we heard time and time and time again. It seems to be it is just part of the job, is fatigue is going to be there.

35 AVM HARLAND: If you were to look back over time, is the reporting of fatigue and excessive workload consistent over time, or has it become more increased in recent times?

DR MATTHEWS: You mean the output?

40 AVM HARLAND: No, just the existence of fatigue in the workplace and high workloads, has that become more reported over time or has it been a constant over time since you’ve been looking at it?

45 DR MATTHEWS: I would say it’s been an ongoing constant. I think I haven’t really looked too far prior to COVID-type times. I think a lot of

5 people would ascribe that as a point where workloads increased dramatically, then there was a rolling series of engagement to do with floods and bushfires and emergency procedures, as well as ongoing operational work. Then that then rolled on to an increased tempo of work related to DSR requirements. So what we've had is just, for quite a long time, a high load on the Defence Force, and that's what members will talk about.

10 AVM HARLAND: Just reflecting the conversations we've had today, do you think the ADF is well-equipped to respond to fatigue and increasing work pressures?

DR MATTHEWS: I think we have a lot of work to do to be well-equipped.

15 AVM HARLAND: Thank you. Actually, one more question, just a follow-on. The impact of distraction, so noting secondary duties and other administrative tasks and the overheads with that, if you're in a fatigued state, how would you characterise your ability to be able to deal with these distractions and what impact might that have in a high consequence environment such as Aviation?

20 DR MATTHEWS: Yes, as you become fatigued, your ability to do multiple tasks just starts decreasing. So you'll have less motivation and you'll also have less resources, just both in terms of cognitive load and also time to get all the things done appropriately. So that requires the individual to either be pushed between/pulled between tasks, or to try and prioritise as best they can.

30 Ultimately, what that results in is individuals doing far in excess of the appropriate number of hours of work, taking work into home environments, which is now possible with the online systems that we have in Defence, and so cutting into their recovery spaces with just increased work, or riding whatever consequences will come from not keeping up with the work. And that's some of what we've seen.

35 AVM HARLAND: Yes, that makes sense. Actually, one more question while we're talking about recovery space. If you're on a period of leave and you also had to hold standby to react at short notice, how would that impact your recovery?

40 DR MATTHEWS: We've done lots of research on this what we call on-call or standby-type practices, and we know very clearly that that will impact sleep and recovery. The degree that it impacts is dependent upon the likelihood that you'll be getting a call. So if you're on standby but you know that you're never going to get called, then it will have a small impact on your recovery. If you're on standby and there's a reasonable assumption

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that you will get called to do something, then the impact on recovery is far greater.

5 AVM HARLAND: So, effectively, if you're needed more, you're likely to be less prepared.

DR MATTHEWS: Yes, absolutely. I also think that – and I'll draw on my colleague's work, Dr Tom Patrick, in Human Performance and Safety and Human Performance Optimisation Team. He's been doing a lot of work in
10 the recovery space, and that is, if I can give you an example, sometimes someone will return to work and they'll be complaining about their whole weekend being taken out. And when you unpack that, they actually just had a single phone call that then, for them, disrupted their whole weekend.

15 So there are some cases where we can improve individuals' recovery habits and improve behaviours around separating work and non-work so that they can get more out of their recovery time. That's part of the work that I think is useful. While we also look at the organisational level and see the burden on the individuals, we're sometimes too much on call periods.

20 AVM HARLAND: Thank you.

MAJ CHAPMAN: Thank you, sir. Dr Matthews, this Inquiry has received evidence of Army Aviation units operating at particularly high tempo for
25 the reasons you've described, including involvement in other DACC tasking and COVID ASSIST and things, where members have felt operating for sustained periods at or possibly beyond their capacity. I take it that this high tempo of operations will result in amassing cumulative fatigue?

30 DR MATTHEWS: Correct.

MAJ CHAPMAN: You've indicated in your response that so far as sleep is concerned, the pressures of a workplace cannot only deprive members of
35 sufficient rest time, it can also have a second-order effect of impacting on them even achieving sleep in their downtime.

DR MATTHEWS: Yes. Yes, and we've seen that.

40 MAJ CHAPMAN: And you point in your report to an example of this being members experiencing racing thoughts.

DR MATTHEWS: Yes.

MAJ CHAPMAN: That, I take it, is a reference to individuals being so overburdened that they're essentially unable to turn off in their rest periods?

DR MATTHEWS: Correct.

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MAJ CHAPMAN: Which is just eating into their recovery time.

DR MATTHEWS: Yes.

10 MAJ CHAPMAN: Earlier we discussed, and I will turn briefly to, the FACE out procedure, and talked about the FRAT tool. This is a tool which was developed by DFSB, I think, as you've said, as an objective method of identifying fatigue.

15 DR MATTHEWS: Yes.

MAJ CHAPMAN: You describe it as being a tool, being sound and scientifically defensible to assess fatigue quickly and easily.

20 DR MATTHEWS: Yes. I think so, yes.

MAJ CHAPMAN: Is this a tool which, as far as you're aware, has actually found its way into policy?

25 DR MATTHEWS: Yes, it is in policy.

MAJ CHAPMAN: Where is that?

30 DR MATTHEWS: Well, in the Army Aviation context, it is found in the policy document which we were talking about earlier, the SFI. It specifically lists this tool, and it includes it as an appendices.

MAJ CHAPMAN: Okay, thank you. Can I just turn finally to the last topic, which is the topic of self-reporting?

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DR MATTHEWS: Sure.

40 MAJ CHAPMAN: Can you just explain – in your experience, can you speak to how common it is for aviators/pilots to self-report fatigue in the ADF?

DR MATTHEWS: Yes, it's definitely not as common as we need it to be, for a number of reasons.

MAJ CHAPMAN: And do you consider that there is some level of reluctance to self-reporting in cases? Is that your sense?

5 DR MATTHEWS: I don't think it's reluctance. And if I can explain it a little bit broader?

MAJ CHAPMAN: Yes.

10 DR MATTHEWS: I think there's a broader context here, and I think it goes back to – I'm going to use the concept, people have a psychological contract with their organisation. Now, in a lot of civilian organisations that will be a transactional relationship, in that I do work and I'm under stress, and what the organisation gives me is money in return. So it would be a financial – so that's what we would call a transactional relationship.

15 In Defence, that's not usually the psychological contracts people hold with the organisation. The psychological contracts that people hold are related to – sorry, I'm just trying to find the right words here. It's an ideology contract, so it's related to a shared mission, or a shared body of work that needs to be done.

20 What this means is that it creates a scenario where an individual will be willing to self-sacrifice, to compensate for perceived failures of the organisation, in order to achieve that body of work. So if an individual sees that we just don't have the manpower, or we're overtasked, or there are other organisational issues, then an individual will take it on themselves to self-sacrifice in order to get the job done, and that is part of the ideological contract that they hold with the organisation.

30 So it's quite a different relationship that Defence people have with the organisation than some other workers would have. So I think you've got to look through that lens to consider why we have this idea that, you know, people will just get the job done, irrespective of the personal cost on them.

35 I don't think it's people being flippant about how fatigued or tired – or flippant about their performance, or performance impairment. I think it's more driven along the lines that they're very highly motivated to get the job done, and they don't want to see the mission fail because they are not able to get the job done.

40 MAJ CHAPMAN: And those considerations may in some cases, in your experience, prevail over self-reporting of actual fatigue?

45 DR MATTHEWS: Correct, yes. The task then is for someone like me to make sure that that individual completely understands what the

impairments are they're dealing with, and then make sure that Command understands the risks that are involved, so that we can adjust the behaviours around what the Defence Force is doing.

5 MAJ CHAPMAN: Thank you. Excuse me for a moment.

AVM HARLAND: I just have a question while Luke is thinking there. From an organisational point of view, having committed people who are very task-focused sounds like it's got some positives.

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DR MATTHEWS: Absolutely.

AVM HARLAND: Can you discuss some of the downsides, and also potentially the responsibilities that Commanders might have in the chain to be able to manage a workforce like that?

15

DR MATTHEWS: It's an incredibly demanding and challenging position to be in. It's not a case that you can put a line in the sand of what work should be done and what work shouldn't be done. And to be honest, sir, I think even at senior Command level, in some cases there is an inability to say to government, "No we can't do this or that piece of work".

20

It's an incredibly challenging issue to deal with, that the reality is that we have an overburdened workforce and we have a workforce that is engaged in more work than it can handle, and it struggles to know what is higher priorities and what is lower priorities. I've seen that from junior levels, right into Joint Operation Command levels, where some of those decisions are made; and then up to more senior levels as well.

25

I think it's going to be difficult for a long time, and I am concerned about some of the relationships that Defence has with the government in terms of the bodies of work that we go out to do. I think we really need the Australian public to support the Defence Force, so that the Defence Force can do the job that it needs to be doing and put secondary tasks to the side, so that members can focus on what is important.

30

35

But for Commanders, it's going to be incredibly difficult. You know, we can talk about exact examples at different levels. And I've seen it, you know. You'll have a Squadron with, say, four lines of aircraft, but they're tasked to do five lines of tasking. And, you know, even a CO, or a Commander, or an ops person will say, "I only have four aircraft", and then the message back from, for example, might be Joint Operation Command, "Yeah, but this needs to happen." "Yeah, but I only have four aircraft." "Yeah, but just find a way."

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45

Then the issue is that the organisation then finds a way and gets it done, and so everyone says, “Oh well, that was fine. So you got it past that one”. And it’s exactly the same, you know, in an Operations Room. I’ve watched the Operations personnel go through the list of pilots to crew an aircraft, and we watched very closely, going, “Oh, there is no way they’re going to crew this flight”. So they’ll run down the list and say, “Well, this person can’t do it because they’re on leave. This person is on training. This person is on standdown. This person is not qual’d. This person is already flying. This person is already flying”. So they’ll run through the entire list of available crew within a Squadron and they won’t be able to crew it.

So I’ll be, like, “Okay, so you can’t do that flight?” “No, no, no, we’ll just go through the list again”. And so they’ll go through and say, “All right, we’ll pull that person off leave. We’ll take that person off training”, or “We’ll get an approval to have that person fly, even though they’re outside of the amount of hours that they’ve had”. I, essentially, said to them, “You’re just going back and removing all the barriers that were in place around workload, and getting approvals to make sure the task happens”, and then the task does happen. Then you can see very clearly from an external observer, that then down the line you see all the consequences of that.

So, you know, in two weeks’ time the person that you know was meant to be on the training course, their qualifications for, I don’t know, refuelling in flight or something lapsed, and now they can’t do that, which means they’re not able to do the next tasking. Or that person that really needed that downtime, well, now they’re at a point of burnout and they’re probably going to exit from the organisation now because they’re spent.

So you see a whole load of kick-on effects of the organisation just working too hard, and not being able to self-manage the tasks at all the levels across the organisation, which is very difficult problems to deal with.

AVM HARLAND: Would it be fair to assume that the senior Headquarters, when they see the task done, says, “Well, it was obvious they could get it done, they just needed pushing”, and it reinforces that behaviour?

DR MATTHEWS: I think even senior Commanders are completely aware of how hard some of those units are being pushed, but they’re not necessarily in a position to not have them push that hard. I think everyone is under a large burden to get a whole heap of jobs done.

MS McMURDO: Is there a time when responsibility-wise, “No, not safe”?

DR MATTHEWS: Yes, and we’ve got to make sure, ma’am, that we’ve created a circumstance by which people are empowered to say “No”, and I

don't think that is the current circumstance. And I don't think that's the organisation's fault either.

5 AVM HARLAND: Yes, thank you. It's a difficult concept to get your head around, but thank you for your time.

DR MATTHEWS: No worries, sir.

10 MS McMURDO: Because you not only need to educate the organisation, you also have to organise the bureaucracy behind it and the decision-making behind it, and the public, about the safety risks of continuing to do this, particularly in an Aviation context.

15 DR MATTHEWS: I think so, ma'am. Agreed, absolutely, ma'am.

MAJ CHAPMAN: Two final issues. The first is that you've given some evidence that you're aware of the DASR Regulations, the Defence Aviation Safety Regulations?

20 DR MATTHEWS: Yes.

MAJ CHAPMAN: Have you examined whether the DASR maintain mandates compliance with Aviation Fatigue Management policy?

25 DR MATTHEWS: Yes, I believe it is absolutely aligned to appropriate policy.

30 MAJ CHAPMAN: So when you use the term now, and previously in your evidence, "align", you take that to mean that it requires compliance with it?

DR MATTHEWS: Yes.

35 MAJ CHAPMAN: Just finally, generally, can fatigue levels be affected by factors such as gender?

DR MATTHEWS: So there has been all sorts of body of works look at gender differences either in sleep and fatigue levels. To summarise that work, while there are interesting biological aspects to it, I think in a Defence context the differences are probably – are insignificant.

40 MAJ CHAPMAN: What about age?

45 DR MATTHEWS: Obviously there's lots of performance changes related to age. There is also different needs for sleep at different ages. For example, younger people require more sleep but then also at the same time,

they have more elasticity or flexibility around what they do with their sleeping time and how much sleep that they can get by under.

5 And as people get older, there's less flexibility around that even though, to some degree, they require less sleep. So there are age-related changes to sleep and it has a kick-on effect to performance.

10 MAJ CHAPMAN: And the last one would be, can fatigue levels – or are they affected by experience and recency in the job, in the role?

DR MATTHEWS: Insofar as experience and training and recency can be another factor that can mask impairment, if you can rely on strategies that'll get the job done, then we will see some less impairment under some circumstances, yes.

15 MAJ CHAPMAN: They're the questions. Thank you.

MS McMURDO: Thanks, MAJ Chapman. Any applications to cross-examine?

20

<CROSS-EXAMINATION BY MS MUSGROVE

25 MS MUSGROVE: Sir, my name is Musgrove and I appear for the Commonwealth. I have a few questions for you. In relation to page 2 on your report, where you were talking about the working group that was put together after the IGADF Afghanistan Inquiry Report, it wasn't your evidence, was it, that Army was not represented on that working group?

30

DR MATTHEWS: Army was represented on that working group.

MS MUSGROVE: And they still are. That's the case, isn't it?

35 DR MATTHEWS: They still are represented on that working group.

MS MUSGROVE: And it's the case, isn't it, that you sent through a request through the WHS Branch to Army to conduct some interviews with the Landworthiness Group? Is that correct?

40

DR MATTHEWS: That's correct.

MS MUSGROVE: And that request hasn't been declined?

45 DR MATTHEWS: No, it hasn't. No, I think that is going ahead.

MS MUSGROVE: And so it's not generally that there is a reluctance for Army to engage with you?

5 DR MATTHEWS: No. And I don't think that is the case, but there was some difficulty to pull off some focus groups, and that's all it was. At different levels of Command, we've had very good input from Army.

MS MUSGROVE: Okay, thank you. I have no further questions.

10 MS McMURDO: Thank you. Any other applications for cross-examination? Yes, COL Gabbedy.

15 <CROSS-EXAMINATION BY COL GABBEDY

COL GABBEDY: Yes, ma'am.

20 Afternoon, Doctor. My name is COL Nigel Gabbedy. I appear for MAJGEN Jobson, the Commander of Army Aviation. You've talked a lot about fatigue today, but I don't think we've had a definition. So if you have a look at the booklet you were given, "Aviation Fatigue", on page 5 there is a definition. I just want to check with you that that's accurate and see if
25 there's anything you'd add to that?

DR MATTHEWS: I think that's an appropriate definition.

COL GABBEDY: Thank you. Can we please perhaps - - -

30 DR MATTHEWS: Sure.

MS McMURDO: We do, yes. I have a copy, but I haven't got it with me this minute. Thank you.

35 DR MATTHEWS: What page was it?

COL GABBEDY: Page 4, sir.

40 MS McMURDO: But perhaps for those watching the live stream it would be useful to have it read out.

COL GABBEDY: Would you like the doctor to read it out, ma'am?

45 MS McMURDO: Yes.

DR MATTHEWS: Sure, no worries. So the definition we have written here is:

5 *A physiological state of reduced alertness or capability to perform mental or physical tasks which may impair the ability of an individual to safely conduct their duties, and is caused by one of the following –*

10 and then it lists –

Individual’s lack of sleep;
 Individual’s extended wakefulness;
 Individual’s circadian phase at any relevant time;
15 *Individual’s workload of mental activities and/or physical activities at any relevant time.*

Then there’s a note:

20 *An individual’s level of fatigue and state of alertness can also be influenced by their health, diet, fitness and overall wellbeing (CASA) –*

as the reference.

25

MS McMURDO: And could I just say, it was “one or more of the following”.

DR MATTHEWS: Sorry, yes. Thank you. “One or more”.

30

COL GABBEDY: Thank you, Doctor. I just want to drill down into some of the things you’ve said in your report, and if I start at page 2.

DR MATTHEWS: Yes.

35

COL GABBEDY: About the fifth paragraph under point 3, you say this:

Shortfalls in the workforce mean that careful fatigue management is needed to provide the maximum capability possible with the resources available.
40

What would that involve in a practical sense?

DR MATTHEWS: Very careful planning and prioritisation of work.

45

COL GABBEDY: Okay.

DR MATTHEWS: Is that specific enough?

5 COL GABBEDY: Is that all it would involve?

DR MATTHEWS: Well, I think that's the crux of it. Understanding that we don't have unlimited resources to get at all the things that are required. So having Command understand very carefully – or very well what
10 resources they have available allows them to prioritise those resources towards different elements of work, while at the same time saying that some parts of work can't be achieved.

COL GABBEDY: I suspect that the same sort of thing is going to come up with a number of my other questions but, going on from that, how do you
15 then factor in short notice or no failed tasks?

DR MATTHEWS: Well, what is needed – if there's an awareness that that is the state of play, then you need to build a workforce that is capable of
20 dealing with that. So if you have short notice tasks or variability in various aspects of tasking, what you would do is create reserve within that workforce, so you have people able to go and respond to tasks which you hadn't already planned for. So, in effect, you're planning for the task that you don't know about yet. That requires additional people and resources,
25 which we don't currently have.

COL GABBEDY: Yes. So I assume that either requires additional people and resources or the ability to say "No"?

30 DR MATTHEWS: Correct.

COL GABBEDY: On page 3 of your report, you talk about some tools you've developed. When would those tools be applied? When would they be effective? How would you use them? And I'm referring to your
35 WARSAFE tool.

DR MATTHEWS: Okay. I think what is needed is experts like myself to have access to these tools that can roll them out when it is appropriate to do
40 so.

COL GABBEDY: So would that be, for want of an example, we've talked a little bit about a PULSE survey.

DR MATTHEWS: Right.
45

COL GABBEDY: Could you do a WARSAFE-type survey, go to a unit and load the tool and see what the fatigue level in the unit is like?

5 DR MATTHEWS: Yes. And that's exactly what we have done at a unit level. We've said, "Okay, we need to deep dive across this unit and we need to have, you know, Commanders' approval or the ability for Commanders to communicate that it's important for the unit to get on board and do it", and, you know, we've certainly done so.

10 COL GABBEDY: And just for my understanding, so that's the way that tool works. It wouldn't be the sort of thing that members of a unit would go through on a daily basis to check fatigue levels?

15 DR MATTHEWS: No, not on a daily basis. But, you know, it doesn't have to be unit levels. Sometimes there's a group within a unit. Like, for example, Maintainers at one specific unit, we might be seeing symptoms there or some issues. So, "Okay, well, just those people, let's unpack some issues there". There's also, if it was something that you were going to repeat on a yearly basis or two-yearly basis or something, there'd be
20 elements of it that you could just cut out to make it a little bit shorter.

It's a very good, broad, shotgun of lots of aspects of fatigue, so it can provide lots of really good information of what to rule in and what to rule out as contributors to fatigue.
25

COL GABBEDY: If I understand you correctly, you could use it on a regular basis – yearly, two yearly – just to see how things were going in case it showed up any risk factors?

30 DR MATTHEWS: Yes. And I'd probably adapt it if it was going to be used on a yearly basis, to shorten it slightly. There'd be some aspects that we wouldn't need to – we'd only need to measure once to know whether that was a risk or not.

35 COL GABBEDY: Or if a Commander had concerns about his unit, he could use this tool and just see if those concerns were realistic?

DR MATTHEWS: Absolutely.

40 COL GABBEDY: Thank you for that. On page 5 of your report, in the first paragraph under question 9, you talk about the one-hour course run by the Institute of Aviation Medicine. You make the comment that:

45 *It's not enough to address the fatigue risk present in ADF Aviation.*

What more would you say is needed?

5 DR MATTHEWS: The integrated approach that starts people – it changes
people’s understanding of fatigue and their relationship with fatigue as soon
as they join the organisation. So from day dot they’ve got some
understanding of this risk that they’re going to be presented with throughout
their entire career, and then there will be elements of training that would be
delivered. I think something specific to aircrew that I would deliver would
still be part of that. But what I’m talking about is a bigger body of work
10 right up to once we get, you know, people promoted at various levels,
there’s things that I would want people to understand as a manager – a
shiftwork manager, for example. Then right up to Command level when
people are going through Staff College.

15 There’s a whole heap of roles and responsibilities that I think those people
should be aware of, yes, which would help them to more appropriately
resource and manage the risks that they are responsible for at those levels.
So I’m talking about a whole of organisational approach that is embedded
within the organisation as part of the way we do business.

20 COL GABBEDY: And are you talking there about an educational piece
from the ground up, with different levels of knowledge, information and
understanding needed at different levels of Command?

25 DR MATTHEWS: Correct, yes.

COL GABBEDY: Right down to the person themselves being better
informed as to how to manage their own fatigue?

30 DR MATTHEWS: Yes.

COL GABBEDY: Okay.

MS McMURDO: A continuing piece of work.

35 DR MATTHEWS: Yes, that’s right, ma’am.

COL GABBEDY: In the same section, at about paragraph 4, you say that:

40 *None of the training courses have explained or demonstrated to
ADF personnel when they should schedule sleep periods prior to
shiftwork and night operations, and how to achieve that sleep in
adverse environments.*

45 What do you say should be done to rectify that deficiency?

DR MATTHEWS: Yes. I think that's an example where we're lacking the applied and practical tools that the members need in order to do the jobs that they're being asked to do. So that specific case where that would fit
5 into the framework we were just talking about is, I think, once you're taking someone and giving them the job skills – so initial employment training – where they're getting the skills to do the job that we're requiring them to do in Defence.

10 We will then know what risks of fatigue they're going to be presented with. For example, if they're engaging in a shiftwork job, then we'd need to tell them how effectively to be a shiftworker. If it's not shiftwork, if it's long hours of work and high stress or high strain, or some other aspects of fatigue risk, then we target those aspects. So it's tailored towards the work people
15 are doing.

COL GABBEDY: So if we use the particular example of the operation that has created this Inquiry, where you've got aircrew at an airfield which is noisy, they're sleeping in tents and to a large extent they're replicating an
20 operational environment. They're training for an environment they may well be deployed in. What specific strategies or what practical strategies could you employ to better manage their fatigue?

DR MATTHEWS: Well, there's lots of things that could be done. But I
25 also think, you know, once we get people to understand and prioritise it, they come up with so many creative solutions that, for example, won't be ones that I've thought of. And I think it's appropriate that, you know, what may have happened in this scenario is earlier on in the scenario someone would have put their hand up and said, "Oh, this is not appropriate for me to get sleep in", and then at that point work was done to improve that
30 environment.

You know, that would be a more ideal situation. And you might say that that's not relevant in a combat situation but I think it is. And I think there's
35 lots of examples where in combat situations people have improved sleeping environments so that they're able to do the job that they're able to do.

Then along the lines of many other things I've talked about in terms of improving behaviour, personal drivers so that people are able to get sleep
40 in environments. So I think there's not just one solution. I think there's the opportunity for lots of alternative scenarios to be played out here that would have been a better outcome.

COL GABBEDY: And that's what I'm looking for. The lots of things – I
45 understand that there may be a variety of things. They may include better

training. People in terms of their sleep habits – because we’ve had some evidence about the fact that there was time for some of these people to sleep but they were excited about being on the exercise.

5 DR MATTHEWS: Okay.

COL GABBEDY: They may well have been up. People could’ve used hearing protection. Are there other practical solutions that you can think of that would’ve assisted in a situation like this?

10

DR MATTHEWS: Yes, behavioural practices. So, you know, people have practised abilities to initiate sleep. But I think the most likely one here is if it had been identified earlier, probably a better sleeping environment could have been achieved.

15

COL GABBEDY: In terms of not being close to the airfield, do you think?

DR MATTHEWS: It may be that. Yes, potentially. I know that there’s - - -

20

COL GABBEDY: If that was an operational requirement though, do you think there are other things that could be used if that’s something that can’t be changed?

25

DR MATTHEWS: This is where I think switched-on operators at Command level, and operators themselves, have – I’ve been surprised at the creative solutions that they can come out with because I’m not always going to be privy to all of the details of a situation. But once you’ve got people motivated correctly, they’ll – you know, I’ll throw some examples at them of what could help them, and then someone else from within the organisation will say, “Oh, this is what we can do”. And I’m, “Oh, that’s brilliant. I couldn’t have come up with that”.

30

So I don’t have enough details about this specific context to know what those solutions would look like. But I’m actually confident that with our bright workforce, that they’re able to come up with better solutions when it’s prioritised to do so.

35

COL GABBEDY: Thank you. If I turn to page 8, just above point 13 you make the comment in that paragraph:

40

ADF aircrew, in my experience, typically make not planned or deliberate attempt to shift their biological circadian rhythm, and have little knowledge of how to do so.

45

What is it that you mean by that?

DR MATTHEWS: Their biological rhythm. To give you an example, you know, if you like, an inexperienced shiftworker, what they will do, typically, is before their first night of shiftwork is they'll just stay awake.
5 So they'll stay awake all day and stay awake all night and they finish their first night of shiftwork with a huge drive for sleep, and then they're able to sleep following that first night of shiftwork. I think we've got data showing probably about 50 per cent of shiftworkers do this. And it's probably the worst strategy with dealing with shiftwork. It builds fatigue really fast and
10 then impairs you really quickly. And then you're basically on the backfoot for the rest of your nightshifts.

You know, I've shown that example to lots of our individuals and they've gone, "Oh, yeah, I, kind of do that". Then you walk through other ways of
15 doing it, which includes understanding where my biological system is sitting and then making choices to move it deliberately. So having control over that biological clock. Sometimes, even without measuring it specifically, we've had a lot of success just giving people morning/evening scales. So they have some idea about where their biological clock sits
20 slightly earlier in the shift or later in the shift.

And once people are aware of it, and aware of how to drive that clock, then they can actively move it to suit the work that they're engaged with, rather than just ignoring that it's something there and drinking lots of coffee or
25 something else.

COL GABBEDY: So better control of the biological clock and other things you talked about, like, light therapy and adjusting your rosters, do you think that there's a need for an ADF-wide initiative in terms of better managing
30 fatigue, better managing sleep?

DR MATTHEWS: I think there's an ADF-wide initiative to promote it and then I think there's resources that need to be directed so that initiatives can be applied to appropriate work environments. The scope of work that ADF
35 engage with is huge. We're not talking – you know, I don't think it's like a civilian airline, or a mining company, or a healthcare company; it's all of those companies combined.

So we're talking about a very large, diverse group of different challenges.
40 So I think the ADF approach would be resourcing it appropriately and then developing appropriate solutions for those different types of work environments.

COL GABBEDY: Again, I suspect that your answer might be that you
45 don't have sufficient information to provide the granular detail, but at the

bottom of page 9 you say that the implementation of other fatigue countermeasures would decrease the reliance on sleeping tablets.

DR MATTHEWS: Sure.

5

COL GABBEDY: I asked you what those countermeasures might be.

DR MATTHEWS: All the stuff we're trying to drive at. You know, if people have the – well, simply, if people have better skills and ability at initiating sleep, then it takes the reliance off sleeping tablets to initiate sleep. I mean, you know, at an individual level there's lots of ways that we can deal with that.

10

COL GABBEDY: Now, on page 10 you talk about some of the FEGs you've been engaged with. And I have a little bit of knowledge about the challenges they've been through, as I understand it, and I'd be happy for you to expand on my knowledge. They've had a heavy operational requirement for quite a protracted period of time supporting government efforts overseas, also prior to the election. They were expressing high degrees of fatigue in the aircrew, and also in the maintainers. What practical steps were used to manage that? Sorry, before I go to that question, they were also reporting no-fail tasks and more tasks than the units could handle.

15

20

DR MATTHEWS: Right.

25

COL GABBEDY: Is that your understanding?

DR MATTHEWS: Yes. Absolutely, yes.

30

COL GABBEDY: So then I go to the question I half-asked, which is what practical steps were you helping them use to deal with those practical problems?

35

DR MATTHEWS: The first thing is the priority is to help the individual members, so make sure that they've got adequate recovery skills. Basically, that's the thing that keeps people standing. That's the thing that stops people walking out the door because they're burnt out. So that's the first thing, is giving individuals the ability to keep going under that rate for as long as you can.

40

45

Then it moves to the organisational level, and you see what areas for optimisation do you have there in terms of what can be achieved with readjusting the demands within that Squadron – which obviously you have to go up to Command level to achieve that – while at the same time looking at specific issues within each of those workplaces and whether you've got

5 a tool available that you can implement that will help some of those issues. For example, some of those Squadrons, jet lag is an ongoing issue for them. Okay, we can manage that. Let's manage that jet lag component. That is one less stressor that that Squadron is dealing with. So it's a pretty broad body of work that starts with the individual and then goes outward from there.

10 COL GABBEDY: Did you have any success in pushing back on the tasking load that some of those units were under?

DR MATTHEWS: Sometimes yes, and sometimes not.

15 COL GABBEDY: And circumstances where you didn't, it was work around basically trying to prop up the individual so that they could complete a fairly heavy task load.

20 DR MATTHEWS: There's some circumstances when I developed a realisation that it was not circumstances that the Squadron, unit or higher up, could say no to. Those choices sat outside of the organisation. Then what needs to be communicated there is that this is an area where you need to fill all the places. You can't have gaps here because there's no opportunity to not do these things. But that's ongoing work that we're currently engaged in.

25 COL GABBEDY: So when you're talking about taskings outside the organisation, are we referring to government tasks?

DR MATTHEWS: Yes, that's an example.

30 COL GABBEDY: Support the Solomon Islands, for example, or to go to PNG when something has happened?

DR MATTHEWS: Yes.

35 COL GABBEDY: If we look at page 11, halfway down under paragraph 17 you say that the Aviation Fatigue Management Guidebook published by DFSB provides sound information identifying fatigue. But from your observations, aircrew do not always follow its guidance. I just wondered what you meant by that?

40 DR MATTHEWS: I think there's some good advice in the guidebook that at times gets overlooked, probably because aircrew were sometimes working above their load and so sometimes they needed to be reminded about some of the good advice that is already available to them, and follow
45 some of those practices.

COL GABBEDY: So does that come back to the education piece in terms of being able to better identify fatigue when they're suffering from it?

5 DR MATTHEWS: Yes. And I think it also comes back to the cultural piece that it is the way of doing business, that we are comfortable working with fatigue and we are quite experienced and we have a lot of expertise and skills in managing fatigue, which is not going away. So that it's a way of doing business rather than working people into the ground to the point
10 where they can't even follow good advice because they're struggling to hold on.

COL GABBEDY: It sort of comes back to that comment you often hear about the ADF punching above its weight, which may, from a fatigue point
15 of view, not be a fantastic thing.

DR MATTHEWS: Yes, I think that's an appropriate term.

COL GABBEDY: Look, just to wind up what I have for you, Doctor, at
20 the bottom of that page you talk about the FRAT.

DR MATTHEWS: Yes.

COL GABBEDY: In the second-last paragraph, you say it aligns well with
25 your research. I take it your opinion is that's a good and useful tool, is it?

DR MATTHEWS: It is. It is good and useful.

COL GABBEDY: Is there anything else that you think that an Aviation
30 Regiment, for example, should be using in addition to the FRAT to better manage fatigue in its members?

DR MATTHEWS: Well, there's lots of other tools that are available. It all
35 comes down to the context or the opportunity to use those tools. For example, SAFTE-FAST is a modelling tool that all Aviation units have. It's not useful when you're out in an aircraft about to conduct a mission. It's useful prior to that as a planning tool to know whether it is reasonable to have those individuals undertake that plan of tasks, if you like.

40 Again, it is nothing more than a tool and it can be very easily misused. You can reverse engineer some of the inputs into it to create some unreasonable outputs, like any modelling tool. But, yes, SAFTE-FAST is an example of another tool that should be used more in planning. And I think having experts like myself and my team on hand to help planners use those tools
45 would be far more efficient than having a Flight Sergeant waste a month

trying to get a model out of a tool that could have been half an hour for me. So I think there are other tools that we can be using well.

COL GABBEDY: Fair enough.

5

MS McMURDO: What was the other tool you mentioned?

DR MATTHEWS: SAFTE-FAST is a modelling tool that DFSB provides to Aviation units. It's basically, if you like, a rostering tool which takes inputs of sleep and work time and provides outputs of high risks, if you like. It's not perfect, but it's a good tool.

10

COL GABBEDY: Would that tool be used at the exec level, so as a planning tool for Command in terms of managing their workforce?

15

DR MATTHEWS: It usually happens at Operations level.

COL GABBEDY: Okay.

20

DR MATTHEWS: It can be used at Flight Commander level of planning tasks. It can be used at multiple levels.

COL GABBEDY: But in terms of tools at an individual level, FRAT appears to be simple, easy to use, quick to use.

25

DR MATTHEWS: Yes.

COL GABBEDY: Is there anything else that you'd suggest in addition to that in terms of managing fatigue at an individual level in an Aviation unit?

30

DR MATTHEWS: In the Aviation unit, I think it's about embedding that into the processes. So, for example, no flight is taking off with a pre-flight brief. I think, depending on the distribution of the crew, some crew are just pilots, others include a Loadmaster, or other roles on that aircraft. I think embedding the use of this in that briefing as the way we do business and a conversation around, "Okay. You haven't had too much sleep. How much sleep have you had?" Then that at least allows the Captain of the aircraft to have an understanding of what performance impairment he's dealing with on that aircraft.

35

40

You know, these sorts of practices appear in US Air Force. They have different practices around that. So I think, yes, use the tool and embed it within the system so that it is part of what we do.

45

COL GABBEDY: Thank you very much. I've got nothing further.

MS McMURDO: Thank you.

5 AVM HARLAND: Just a follow-on question, if I could. Just regarding trying to understand whether a person got good sleep or not, have you used or experimented with wearables?

10 DR MATTHEWS: Yes. Wearables might serve a very useful role in the Defence Force moving forward. I prefer - - -

MS McMURDO: Can you tell us what you're talking about?

15 DR MATTHEWS: Yes, okay. So any sort of device that tracks how much sleep you're getting we'll loosely call "a wearable". I have access to about 50 what we call actiwatches, actigraphs, which is not a publicly available wearable. They're specifically for scientific purposes because they're quite costly. So they're not your usual Fitbit-type device. And that's a very useful auditing tool that we will use across Air Force when we need to find out exactly how much sleep people are getting.

20 It's not good for moment-to-moment decisions. It's good for looking back over a period of work. So, yes, I've got those strapped on to various people throughout the organisation that we need to find out a little bit more about what their sleep habits look like to help them, or groups of people.

25 It's also useful for validating some of our tools. For example, early in my work I identified that our security workforce was a group of shiftworkers that weren't given a lot of shiftwork training, and so we created some measurements of what their sleep looked like, gave them some training, then remeasured their sleep and went, "Okay. Yes, that training worked".
30 They changed their sleep behaviour based off that data that we collected. So that's actigraphs, and that's the role that they play in an organisation.

35 But at an individual level, people will have all sorts of devices already that measure their sleep which can be a useful tool for themselves to track their sleep. However, I prefer individuals to fill out a sleep diary, which is a paper-based diary that just has a 24-hour period across in lines and they can scribble in when they've been sleeping. And the reason I prefer that is it forces me to make some sort of record of how I'm tracking. If I'm engaged
40 in unusual sleep/wake patterns in an operational environment, it's likely that I'll just lose track of when I've slept and how long I've slept for. And so having a 30-second thing that I can scribble out a line after I've woken up in the morning or before I go to sleep, it gives me somewhere to track that. It also shows me visually how much sleep I've been getting and I can

see very clearly, “Well, how much sleep have I had in the last 12 hours, last 48 hours?” and scrolling back.

5 And then it becomes a sign for me to stop and go, “Oh, wow, I’ve really pushed it hard and I have very scattered sleep and maybe that explains some of the impairment that I’m feeling right now”. So I think a low tech tool, like a sleep diary that I just scribble out, where the batteries won’t go flat and I don’t have to worry about security concerns or any of the rest of it, is a really nice solution that I’ve got lots of people in Air Force using from
10 time-to-time. Yes.

AVM HARLAND: Thank you.

15 MS McMURDO: Thank you. Any other applications to cross-examine? MAJ Chapman, no re-examination? No.

Well, thank you very much. Your evidence has been very helpful to the Inquiry. We look forward to reading your report in December and we may need to get you back once we have some firmer facts surrounding the four
20 deceased airmen, to put to you. Thank you. For the moment, you’re free to go.

DR MATTHEWS: Thank you, ma’am and sir.

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<WITNESS WITHDREW

30 MS McMURDO: COL Streit. I think that may be the last witness we have today.

COL STREIT: It is, Ms McMurdo. We did previously have another witness scheduled for today, but we’ve had to move that witness to another
35 day.

MS McMURDO: And then also things were shortened a little by the failure with the video yesterday.

40 COL STREIT: Yes. Tomorrow it will be a full day. We have two witnesses; a second expert in the afternoon. The first witness will also take a number of – will likely take the entire morning session and perhaps push into the afternoon session.

45 MS McMURDO: So when are we doing the video call?

COL STREIT: Sorry, thank you for reminding me. That's right, at 10 o'clock. And that will be tested at 9.30, I can indicate.

MS McMURDO: Yes.

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COL STREIT: At 10 o'clock Detective Inspector Novosel will conclude her evidence. Then we'll commence with LTCOL Reinhardt. He'll push into the afternoon. I'm not confident we'll finish Dr Gavrilescu tomorrow afternoon, so that'll move into Thursday, and then that will have a knock-on effect. But we do have some flexibility for Friday. So a level of comfort – famous last words – perhaps we'll finish on the Friday.

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MS McMURDO: We hope we're still on track to get where we want to get by the end of the week.

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COL STREIT: That's right.

MS McMURDO: Okay. Well, I don't suppose anyone's going to complain about an early finish today. So we'll adjourn now until 10 o'clock tomorrow morning.

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COL STREIT: Thank you.

MS McMURDO: Thank you.

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**PUBLIC INQUIRY ADJOURNED UNTIL
WEDNESDAY, 7 AUGUST 2024 AT 1000**