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**TRANSCRIPT OF PROCEEDINGS
TRANSCRIPT-IN-CONFIDENCE**

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

PUBLIC INQUIRY

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AVM G HARLAND AM CSC DSM**

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LTCOL D HEALEY, representing BRIG J Fenwick
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LEUT R CLUTTERBUCK, representing D147
MR G O'MAHONEY, representing Airbus
MS K MUSGROVE, representing the Commonwealth**

1000, FRIDAY, 4 APRIL 2025

DAY 48

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	07/05/25	(Transcription)

.MRH-90 Inquiry 04/04/25

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MS McMURDO: It looks like we haven't got a Counsel Assisting.

MS MUSGROVE: I'm happy to stand at the podium, for politeness, if that assists.

5

MS McMURDO: That's very nice of you, Ms Musgrove, but there's no need. Thank you. I was told everything was ready, but something went astray, obviously. Well, it's nice to see you all.

10 LTCOL HEALEY: Madam Chair, I've got that document I was going to tender in relation to the Standardisation Manual for BRIG Fenwick. I don't know when you want me to do that. If that's something that can be done later.

15 MS McMURDO: Yes, was that the extracts from the Standardisation Manual? And did you liaise with Counsel Assisting to try and get all the relevant bits and pieces in?

LTCOL HEALEY: I might wait.

20

MS McMURDO: Yes, it'd probably be useful to do that, so we could have it all in one exhibit. I think it would be more useful that way, rather than bits and pieces.

25 LTCOL HEALEY: Because there's only so much I could get. Thank you, Madam Chair.

30 MAJ CHAPMAN: Apologies for that, Chair. The first witness will be Dr Joiner, who's just conferring with him for a moment. I anticipate Senior Counsel will be in very shortly. It was my proposal to tender the statement of GPCAPT Young as the first order of business. Fortunately, that statement's on the way. I should just indicate, that has been served on Counsel representing with an indication that it's proposed to be tendered, without it being necessary for GPCAPT Young to appear. We haven't
35 received anything to the contrary.

I can just give some context about, while it's on its way, GPCAPT Young's statement. You will recall the evidence of GPCAPT Davison, the DoSA-FT Navy, to whom the application for the
40 Military Permit to Fly was made by MAJ Lamb. I indicated, I think during CAPT Davison's evidence, that we would be receiving, and had received, a statement from GPCAPT Young, who is the DoSA-FT of the Air Warfare Centre who had been deployed at the relevant time, which is why CAPT Davison signed off on the Military Permit to Fly.

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5 So his evidence is of short compass and really just addresses the
circumstances in which he was in the position of the DoSA-FT of the Air
Warfare Centre for Army Aviation and the Royal Australian Air Force,
though at the time was not available, which is why, it explains, it went to
CAPT Davison of the Navy though. That's on its way. And I see Senior
Counsel is now here.

MS McMURDO: Yes.

10 MAJ CHAPMAN: So I don't have the tender copy of GPCAPT Young
yet, though I'll raise that when it arrives.

MS McMURDO: Thank you.

15 COL STREIT: Good morning, Ms McMurdo and Air Vice-Marshal.
Apologies for that. I was just conferencing with the two witnesses who
appeared here this morning. Can I call GPCAPT Keith Joiner, please?

MS McMURDO: Yes, thank you.

20

<GPCAPT KEITH FRANCIS JOINER, Sworn

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

MS McMURDO: GPCAPT Joiner, let me know if you need a break at
any time. Yes, COL Streit.

30

COL STREIT: Thank you.

GPCAPT Joiner, can I just ask you some preliminary questions first? Can
you just please state your full name and rank?

35

GPCAPT JOINER: GPCAPT Keith Joiner, Francis.

COL STREIT: You are a member of the Royal Australian Air Force
Reserve; is that right?

40

GPCAPT JOINER: That's correct.

COL STREIT: Where are you presently posted?

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GPCAPT JOINER: Currently posted into the Joint Capability Group, working for the Joint Test Organisation. So that is Space and Cyber predominantly.

5 COL STREIT: In terms of your civilian professional occupation, what is that?

GPCAPT JOINER: So I've been a lecturer, senior lecturer at the University of New South Wales in Test and Evaluation and Aircraft Design for the last 10 years.

COL STREIT: Group Captain, please feel free to pour yourself a glass of water. What I'll do now is provide, through the Inquiry Assistant, a document for you to review. Can I ask you first, in relation to the preparation of a witness statement and your appearance here today, did you receive a section 23 Notice from the Inquiry?

GPCAPT JOINER: I did.

20 COL STREIT: Did that section 23 Notice require you to answer certain questions in the form of a witness statement? Is that right?

GPCAPT JOINER: It did.

25 COL STREIT: The document that's before you at the moment, if you just take a moment to peruse it to satisfy yourself that it is your witness statement, before I ask you any further questions?

GPCAPT JOINER: Yes, that's my witness statement.

30 COL STREIT: Thank you. So as part of the section 23 Notice, did you also receive a Frequently Asked Questions Guide for Witnesses?

GPCAPT JOINER: I did.

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

GPCAPT JOINER: I did, thank you.

40 COL STREIT: An Instrument of Appointment from an Assistant IGADF?

GPCAPT JOINER: I did, thank you.

COL STREIT: Now, in terms of your statement, can you just confirm with me that it comprises 53 pages?

5 GPCAPT JOINER: That's correct.

COL STREIT: Pages 1 to 36 comprise your statement inclusive of 42 paragraphs; is that correct?

10 GPCAPT JOINER: That's correct.

COL STREIT: You have digitally signed the statement on 16 February 2025; is that right?

15 GPCAPT JOINER: That's correct.

COL STREIT: You have enclosed with your statement one enclosure, which is an article headed, "Joiner, K – 2024, Australia's Pentagon Wars Moment, ITEA Journal of Test and Evaluation". And then you give an address for a website; is that correct?

20 GPCAPT JOINER: That's correct.

COL STREIT: The journal article is attached to your statement, unnumbered by page numbers; is that right?

25 GPCAPT JOINER: That's correct.

COL STREIT: Are you satisfied that the enclosure is the entirety of the journal article?

30 GPCAPT JOINER: That's correct, yes, it is.

COL STREIT: Are there any amendments or additions you wish to make to your statement?

35 GPCAPT JOINER: None.

COL STREIT: Thank you. Ms McMurdo, I tender the statement of GPCAPT Dr Keith Joiner of 16 February 2025.

40 MS McMURDO: 193.

45 **#EXHIBIT 193 - STATEMENT OF GPCAPT JOINER**

COL STREIT: Group Captain, what I'm going to do now is just frame the context of your statement in a particular way. So is it the case that you were contacted by the Inquiry representative after you had published your article which is at enclosure 1?

GPCAPT JOINER: That's correct.

COL STREIT: As a result of that contact, you were asked a series of questions in a section 23 Notice which you have set out in the body of your statement; is that correct?

GPCAPT JOINER: That's correct.

COL STREIT: The capacity in which you have expressed the matters in your statement, including your opinions, is on the basis of your own background and qualifications; is that right?

GPCAPT JOINER: That's correct.

COL STREIT: And on the basis of your positions, both in the Royal Australian Air Force and as a lecturer in Test and Evaluation; is that correct?

GPCAPT JOINER: That's correct.

COL STREIT: Where you have indicated information that's either at the "Official" level Defence or "Unofficial" level, you have indicated, as you've set out in paragraph 3 of your statement, the letter O for "Official" or UO for "Unofficial". Is that correct?

GPCAPT JOINER: That's correct.

COL STREIT: You have set out at paragraph 4 the subject headings for the seven parts of your statement to the Inquiry; is that right?

GPCAPT JOINER: That's correct.

COL STREIT: Can I turn, Group Captain, to matters concerning your background and qualifications on page 2? So in terms of briefly outlining those matters, you were a Royal Australian Air Force Aeronautical Engineer, Project Manager and Teacher for 30 years before joining the University of New South Wales in 2015 to teach and research test and evaluation. That's correct?

GPCAPT JOINER: That's correct.

5 COL STREIT: As the Director-General of Test and Evaluation for four years in 2015, I take it that was within the Australian Defence Force, was it?

GPCAPT JOINER: Correct.

10 COL STREIT: You were responsible for ensuring all new government submissions had test plans for conducting trials on all proposed new Air, Maritime, Land and Space capabilities and for operational field evaluations for all new Land and Joint capabilities. That's right?

15 GPCAPT JOINER: That's correct. It was part of the Australian Defence Test and Evaluation Organisation, which no longer exists. But at the time it was a tri-service organisation trying to fuse together the test and evaluation for the three services and provide advice to government on all new capabilities regarding what were sound T&E plans.

20 At the time we also did the operational test for Army's major systems. So an Air Force Officer found himself doing artillery guns and drones and new lightweight tactical vehicles and the like. But at my retirement and shortly thereafter, the Force Structure Review disbanded the Australian Defence Test and Evaluation Office and created, again, a dedicated Army
25 Test and Evaluation Organisation, which is important to this Inquiry.

COL STREIT: And we'll certainly return to that point as we move through the history of the matters you have raised in your statement. In previous roles, you were a Design Engineer for aircraft and missiles, a
30 Project Engineering Manager, a Chief Engineer for aircraft types and a Base Commander for airfield and domestic infrastructure. Is that correct?

GPCAPT JOINER: That's correct. Of particular relevance to here is time as Chief Engineer of three training aircraft, looking after
35 modifications to Primary Flight Displays for the B300 aircraft on the civil register and also making modifications to the PC-9 primary flight instruments, and also as a Air-to-Air Missile Project Engineer integrating the short range air-to-air missile into the Joint Helmet-Mounted Cueing System so that pilots could see what the advanced missile was doing as
40 and when they fly.

So I have some experiences in areas as both an engineer and as a tester.

45 COL STREIT: You were awarded a Conspicuous Service Cross in 2014 for your role as Director-General Test and Evaluation, and you were

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awarded a US Meritorious Service Medal for doing draw-down plans for the Multi-National Force in Iraq 2008-2009. Is that right?

5 GPCAPT JOINER: That's correct.

COL STREIT: You've also, as you outline in your statement, received two commendations, first in 2011 by the Chief of Air Force for Project Engineering Management of Air-to-Air Missiles, and in 2023 as a Reservist by the Vice Chief for Test and Evaluation Governance. You're
10 presently a certified practising Engineer and certified practising Project Director.

Since joining University of New South Wales a decade ago, you have taught Test and Evaluation Courses to 1200 master level students, and
15 Aircraft Systems and Design to all the university's undergraduate aviation students. Your academic research has graduated four doctoral students, three under current examination and nine in progress. You've published over 100 research articles on assuring engineering systems. Is everything I said correct?

20 GPCAPT JOINER: Correct. Thank you.

COL STREIT: You're presently the elected Board and Chief Editor for the International Test and Evaluation Association, which is a
25 not-for-profit volunteer organisation advancing education in test and evaluation. Is that right?

GPCAPT JOINER: That's correct. It's an organisation primarily in the United States which specialises in educating T&E, test and evaluation.

30 COL STREIT: In terms of your tertiary qualifications, you have four academic degrees above Diploma level: a Bachelor of Aeronautical Engineering from RMIT in 1999; a Master of Science in Aerospace Systems Engineering; Distinction from Loughborough University, Royal
35 Air Force Cranwell in the United Kingdom; a Doctor of Philosophy from Curtin University; and a Master of Management Defence Studies, University of Canberra, in the Australian Command and Staff College. Is that all correct?

40 GPCAPT JOINER: That's correct.

COL STREIT: Group Captain, your witness statement contains a number of matters that you wish to draw to the attention of the Inquiry, and perhaps it would assist by just addressing this issue now. In
45 responding to the questions in the section 23 Notice in particular parts,

you give evidence in relation to a matter that ultimately culminates in recommendations which you have set out in the body of your report in different areas. Is that correct?

5 GPCAPT JOINER: That's correct.

COL STREIT: So I take it that those recommendations that you make are drawn from your Military experience and civilian experience in test and evaluation?

10

GPCAPT JOINER: That's correct.

COL STREIT: And they're matters that you wish the Inquiry to consider, having regard to your testimony and the contents of your statement; is that right?

15

GPCAPT JOINER: That's correct. In reviewing what the testimony had been given here regarding testing, it was obvious that a number of areas could do with some more pointed questions. So the recommendations were simply a series of questions directed at key positions around what could or should have perhaps occurred.

20

COL STREIT: In relation to the contents of your journal – which I don't propose to take you to today in my questions because the journal article is there for the Inquiry to read, but I think it's important to note, in terms of the context of your evidence – in your journal article you have set out various aspects of evidence produced in this Inquiry and you have expressed opinions in relation to some aspects of that evidence. Is that right?

25

30

GPCAPT JOINER: So predominantly what the article set out to do was to draw attention to the fact that the United States has had testers experience difficulty getting their results attended to and that has led to a different governance arrangement – hence the expression “Pentagon Wars” – over 40 years ago. And there's been periods throughout the last 40 years where Australia has been encouraged by the Australian National Audit Organisation and others to pursue a similar regulation over test and evaluation.

35

So what it was pointing out was not so much opinions, but rather that governance over testing can be different to the current arrangement and that clearly this Inquiry has had some testers give evidence of conflict where their test results were either challenged or ignored. And that's what it's seeking to do. So it's not really saying any opinions about whether they were right or wrong, rather that the environment in which we grow

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testers and value their independent assessments is important to set up and that there are other ways than the way we do it in Australia.

5 COL STREIT: Thank you. The purpose for asking these questions is really just to indicate to the Inquiry that you are coming here to give evidence as a person who has been following the Inquiry in certain respects; is that correct?

10 GPCAPT JOINER: That's correct.

COL STREIT: As a consequence of following the Inquiry, you drafted and issued – in your capacity within the International Test and Evaluation Association, you have drafted and issued a journal article which you have published and in that journal article you have set out various matters
15 which has been drawn from the Inquiry's evidence. That's correct?

GPCAPT JOINER: That's correct.

20 COL STREIT: The purpose for which you prepared the journal article, was it, was to raise awareness to issues concerning test and evaluation within the ADF?

GPCAPT JOINER: That's correct.

25 COL STREIT: The basis upon which you're giving evidence here today is as a consequence of that journal article and that the Inquiry should appreciate, as it considers your evidence, also the matters that you've set out in your journal article.

30 GPCAPT JOINER: Yes. Thank you.

COL STREIT: Group Captain, can I ask you this? The first part of your statement sets out – and in response to some of the questions you were asked – sets out quite technical information, can I suggest, concerning test
35 and evaluation, its history, background and the distinctions between different types of test and evaluation. Would that be fair?

GPCAPT JOINER: That's correct.

40 COL STREIT: So what I propose to do, because you are the subject matter expert in this field, is just take you to particular parts of your statement to set the foundation background of the opinions you later express and if you could, as best you can in lay terms, explain in short compass the matters you've set out in detail in your statement. That
45 would be of assistance.

GPCAPT JOINER: Sure.

5 COL STREIT: So just in relation to your current role within Defence and academia, can you just explain in short compass, by reference to academia and Defence, your present roles and where they overlap?

10 GPCAPT JOINER: So within Defence, at the time of the accident, I was working in the Vice Chief Defence Force area helping with Test and Evaluation Policy as a senior adviser for T&E Policy. So getting the Defence T&E Manual issued, which was really important. Post the Force Structure Review, it was important that we had a centralising policy on T&E.

15 Last year I moved across to the Joint Capability Group because some of the policy work that's needed on Space and Cyber Security needs, I guess, an appreciation of those technologies as well as some background in test and evaluation. So I moved across to help with that policy work.

20 In terms of academia, as you've already pointed out, I'm teaching the Masters of Systems Engineering students, mostly Defence. About 75 per cent of all of our students, about 100 a year, do the Test and Evaluation core subjects: How To Have a Test And Evaluation Master Plan, and How To Do Test Design As My Role.

25 I also do research on assurance of new systems. So that is artificial intelligence, cyber security against malicious hacks and the like, research in how to assure new systems against those new threats.

30 COL STREIT: Turning now to Part 2 of your statement, which is on page 5, you were asked and you've set it out, a very long summation of a series of questions concerning a number of issues and you've sought to break those matters down in the paragraphs following the question forming Part 2. Can I just turn and ask you about some of those matters now?

35

Looking at paragraph 11, you were asked to:

40 *Explain the role of test and evaluation and the distinction between developmental and operational testing within the ADF.*

So by reference to that particular aspect and what you say at paragraph 11 onwards, can you just in short compass and in lay terms, just explain the distinctions that you've set out?

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GPCAPT JOINER: Yes. So testing isn't done for the sake of testing, testing is done to inform decision-making. So when a test is there, it's to inform a specific decision. So what testing informs what decision, right? That's primarily why test and evaluation exists. It's not a checklist process. It's a process to inform decision-making and its depth needs to be accordingly.

In terms of developmental test, I did a test of the ADFA graduates in the Ethics class before coming here. I asked the question, "What's the most important thing that an engineer signs?" And I got the right response, "A Design Acceptance Certificate". And I said, "Follow-up question: what does a Design Acceptance Certificate do? What does it certify?" And the answer was, "That it's safe and it's effective". "And what's the basis on which you formed that?" "The best basis is always testing. And not testing is not knowing."

So in a nutshell, developmental test supports the Chief Engineer in the Design Acceptance Certificate. Operational test is for operational effectiveness and suitability. Safety is supposed to always already have been established through the developmental test process. The operational testing is to inform tactics, sufficient training of the people, appropriate spares and how to fight effectively in a Military context with that capability for sustained periods at scale. And that's the purpose of operational testing in a nutshell.

COL STREIT: On page 9, subparagraph 13(e) you describe specialist test and evaluation. How does that fit within the scheme of developmental and operational testing?

GPCAPT JOINER: So specialist test and evaluation is a subset of developmental testing. It's usually where there is an agency with special skills that have to be grown over time, and normally they are NATA accredited, National Association for Test Agencies, and there are many areas. Flight test is always considered also to be specialist T&E. But it's not the only specialist T&E. Electromagnetic Interference or Compatibility, there's chambers all across Australia to look at EMI and its effects. And that is another specialist T&E category.

It's the role of the Chief Engineer to organise a support network for any new capability or any major modification to a capability, that includes the necessary specialist test to inform him completely of the safety and effectiveness of a capability or its modification.

COL STREIT: And Flight Test and Evaluation, as you've set out in paragraph 13(c) is:

Flight Test and Evaluation: The Director-General Defence Aviation Safety Authority is responsible for Defence Aviation Safety Regulations on behalf of the Chief of Air Force.

5

The Director-General DASA, how are they involved in Flight Test and Evaluation, from your understanding?

10 GPCAPT JOINER: So getting to, I guess, the crux of the sorts of modifications that are being investigated by the Inquiry, Primary Flight Displays, for example. If you modify a Primary Flight Display, you need to go through a major certification process as opposed to minor. DAFS would then review both the technical and operational recommendations for any major modification, which includes Primary Flight Displays, new
15 engines, new propellers, that sort of thing. That is a fairly exacting process, and it becomes the regulatory baseline.

20 Once you've established what the process is for certifying something, if you then make a modification to it, you have to follow the regulatory baseline or alert the appropriate reviewers and authorities that you are deviating from the regulatory baseline. Is that what you were after?

25 COL STREIT: Yes, thank you. You've set out in paragraph 15 the distinction between "development test" and "operational test". And at paragraph 16 the distinction between "development test" and "operational test" concerning Aviation.

30 At paragraph 17, "Test and evaluation of major versus minor design changes in Aviation". Can I just take you to paragraph 17, please? In the body of paragraph 17 you say, "The need to amend an AMTC" – I just pause there. What does "AMTC" stand for?

35 GPCAPT JOINER: Australian Military Type Certificate. So that is the authority with which a type of aircraft flies. It's the same terminology that you will see in CASA, the Civil Aviation Safety Authority.

COL STREIT: You say:

40 *The need to amend an AMTC due to major technical change follows from the same airworthiness process.*

You set out the relevant Defence Instruction (Air Force). You say:

45 *Put another way, if a change is major, there is a need to formally amend the AMTC with technical and operational*

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submissions. Whereas if it is minor, that process is abbreviated to the Chief Engineer and the Operational Authority representative at the Control Configuration Board.

5 *What constitutes major compared to minor can require analysis, but from my experience and the airworthiness guidance, any change to primary flight instrumentation (i.e. attitude change) always should be major. A major change should receive a developmental flight test – that is, a qualified organisation for test*
10 *– pilot and Flight Test Engineer assessment.*

You go on to say:

15 *In my assessment and experience, it would be negligent not to do so.*

What I've just read out, is that correct?

20 GPCAPT JOINER: That's absolutely correct.

COL STREIT: Just coming to the top of the page, at paragraph 16(a), you talk about:

25 *Impact of systems from the change being TopOwl site and the Primary Flight Display, re image of attitude, pitch and roll.*

What did you mean by saying those things?

30 GPCAPT JOINER: So if you are flying with heads-up, using a Heads-Up Display, then your primary flight instruments are replicated on that display so that you can maintain your vision outside of the cockpit. We do that for Hornet aircraft fighters, so that you can have full situational awareness.

35 In that case of the incident here, flying in formation, again, you don't want to put your heads down, you want to keep your heads up. So the replication of Primary Flight Display instruments – "What pitch am I at? What attitude have I got on my aircraft? What speed am I flying?" – all of those things are being replicated. If you change that, it's a change to
40 the Primary Flight Display, obviously, because you are relying on it through flight. That's what I meant.

COL STREIT: So in that circumstance, is it important in relation to test and evaluation, that test and evaluation is undertaken to ensure that

information that might be displayed in a HMSD for an aircraft accurately represents what the primary flight instruments of the aircraft are saying?

5 GPCAPT JOINER: Absolutely. Now, where would you do that? You could do it in a HUD, wearing the loop facility, where elements of the system under test are real. You could do it in a software information laboratory, where they are modelled or simulated. But predominantly the reason you set that up is to do lots and lots of tests on the simulator and a few in the air.

10 It is really important that the real aircraft actually gets tested to make sure that the replication of the Primary Flight Displays is correct and that the aircrew, the flight test aircrew, are involved in both the ground simulation facility work as well as the real aircraft. Because they are relying on that
15 ground-based simulation covering the entire envelope, and only doing representative testing at certain key points in the air, and so you need those two facilities to be working closely together.

20 AVM HARLAND: Would your opinion and approach change if the TopOwl was not certified for use as a Primary Flight Display, or is there any distinction in that? Because you talked about the Primary Flight Display being displayed on the TopOwl, or replicated on the TopOwl, but what if TopOwl was not being used as a Primary Flight Display, or not permitted to be used as Primary Flight Display?

25 GPCAPT JOINER: Sir, it doesn't make sense as to how you would – if you rely on it, and you're not looking back at your primary flight instruments at any time, then it is the Primary Flight Display, in my view.

30 AVM HARLAND: But this is what I'm trying to get to an understanding of, because I still don't have a clear understanding of the notion of a set of primary flight instruments which are in the traditional instrument panel of the aircraft. They are replicated on the TopOwl, but by our understanding from previous witnesses, the TopOwl is not certified or authorised for use
35 as a Primary Flight Display, and it's effectively situational awareness only. So what I'm trying to get to is an understanding of whether that would change your test approach?

40 GPCAPT JOINER: Yes, it would change the test approach. And this is where the Flight Test Engineer would need to structure that testing to make sure that the situational awareness complemented the primary flight instruments.

45 AVM HARLAND: And how is that achieved?

GPCAPT JOINER: Again, really important to have them in the ground-based simulation testing, present during that construction of the functional tests so that they are part of that process. Handing them a modified sight and saying, "Now go fly this", is too late. And, 5 unfortunately, we're increasingly seeing that in some of our systems where the reliance on the contractor means that the systems are handed to us with all of the funding for modification and all of the schedule for modification already being expensed, and hence the pressure then to accept that when you haven't been involved in the process.

10 It needs to be cooperative. So, yes, a good example here is the way we acquire Navy ships, right? For 80 years it involved the crew during the harbour and sea acceptance testing, but for a period of 10 to 15 years we experimented with contracting out all acceptance testing of ships, and now 15 we have gone back to crews being posted to the harbour and sea acceptance testing as a specific policy in order to get that representative crew input to critical testing.

20 You see that in various elements within the Aviation community as well, where some areas will involve the flight test community through modifications, and others will try to contract that out. And that's how I would deal with that nuance, is that what one person's situational awareness is depends on the flight regime, right? If you can't spend time looking down at the primary flight instruments because you must keep 25 your head up for other reasons, then the extent to which that becomes your Primary Flight Display has become critical.

30 Do you see my distinction? It depends. If you're at high altitude and you've got lots of time to look down at your instruments, then they would be complementary and there would be less reliance on the TopOwl. But once you're at high speed, in the dark, focussing on a helicopter over there at an angle, then to my mind that has become your primary flight instrument because you are not taking your eyes off.

35 And this is where a Flight Test Pilot or Flight Test Engineer is critical in that test process, is to understand where the risk has changed, in that it's not a straight – it's not certified, in my view.

40 AVM HARLAND: So if I'm to understand what you're saying there, is that regardless of whether or not it was certified, and you tell the crews that it's not a Primary Flight Display, that the effect of flying with it in particular situations would mean that it's going to be used as a Primary Flight Display anyway.

45 GPCAPT JOINER: That's correct, sir.

AVM HARLAND: Okay. Thank you.

5 COL STREIT: So the effect of that is akin to what you said at the beginning of your evidence about in terms of before you worry about doing tests and evaluation of an item you first need to establish the extent to which – what’s the purpose for which the item is going to be used.

10 GPCAPT JOINER: That’s correct. I mean, in this particular instance, if you go back to the ANAO report of around 2012/2013 on the MRH-90 – and that’s publicly available – it was primarily answering the question, “Why has this aircraft taken 10 years to certify to final operating capability?” And the tension there was the fact that it was chosen by the German military, and it is certified to FAR 29, which is a US civil
15 transport helicopter capability.

And Australia spent a lot of its resources in flight test to cover the delta that is missing from that FAR 29 civil transport regulation. Things like night-vision goggles, right, and flying in circumstances that no civil
20 transport helicopter would entertain.

And so the Aircraft Research and Development Unit, and its flight test pilots, spent a lot of time going through those extra missions with regard to, “When am I critically relying on the sight, or not?”, and came to that.
25 So that becomes part of the regulatory baseline, okay?

So once you give an Australian Military Type Certificate, if you’ve involved flight test in Australia to critically certify certain missions, then if you make a modification at a later change, you are obliged through
30 precedents to follow that regulatory baseline and revisit the testing that you used to certify it in the first place. And in this case, that includes Australian Defence Force Flight Test Organisations in developmental test.

35 COL STREIT: We’ll come back to this particular issue a little later in your evidence where you address matters touching on that evidence you’ve just given. Can I just take you to paragraph 18, please, where you have a heading, “Independence of Developmental Tests and Operational Testing Decision-Making”? Can you just explain by reference to what you mean about “independence of developmental and operational
40 testing”?

GPCAPT JOINER: So they inform two different decisions. Until I was a Chief Engineer, I didn’t fully understand that fusing together. There is, of course, a fusing because it has to be operationally released, but the
45 developmental test informs the Chief Engineer and, staying with major

modifications, informs the Chief Engineer that it is safe, and it is effective, and the Chief Engineer writes up their recommendations.

5 The Operational Authority does operational testing to ensure that it's
suitable and effective, and they write up their recommendations, and they
both go for review. In my day, that was to the Director-General of
Technical Airworthiness, and then it went to the Deputy Chief of the
Air Force for sign-off for any modification to an AMTC. So they are
independent because they inform two different decision-makers and there
10 is a process of review to that decision-making, or should be.

COL STREIT: At paragraph 19 you talk about conflating developmental
testing and operational testing in decision-making, and you set out some
matters there. You then list at 19(a), (b) and (c), you say:

15 *In my experience, flight tests and some other specialist tests get
confused with operational tests in Australia for three main
reasons. First, (a) they explore and set safe operational limits,
hence operators notice, and are an important input; or, in the
20 case of flight test, test pilots are drawn from and return to an
operational gene pool. This creates a sense of "We own you", or
worse still, "traitors".*

What do you mean by that, "'We own you', or worse still, 'traitors'"?

25 GPCAPT JOINER: You often see in the flight test community where
you're drawn from a very small gene pool, particularly within fighters, but
even in other – once you become specialist on a type, and you become a
pilot to fly a particular type, there aren't many pilots in that community,
30 and then you are selected to become a flight test pilot. And you go away,
you do your flight test training for an entire year. It's a huge investment.
And then you come back, and you start testing amongst your peers, and
that's where the risk that, that sense of the distinction between
developmental and operational test may become blurred.

35 It was much easier in areas like weapons clearances. I was an Aircraft
Stores Design Engineer, so my very first job as a Flight Lieutenant was to
set limits for release of weapons – you know, laser-guided bombs, and
dumb bombs – from F1-11s, and that was very much part of the
40 Chief Engineer's responsibility, was to set those operational limits.

You find that there is that – a little bit of conflating when you come from
the same gene pool, particularly in Australia, because we have fewer of
each specialist type of pilot than perhaps you might have in the United
45 States or elsewhere, which probably means we should do more review of

5 such decisions, particularly where they are expressing a view that is perhaps not popular with the rest of the community that should receive attention from somebody. Like, in my day, the Deputy Chief of the Air Force reviewed all the amendments for major modifications for AMTC.

10 COL STREIT: So ensuring a level of independence for a Flight Test Organisation is necessary and important for overall safety of an Aviation Safety Management System.

GPCAPT JOINER: Absolutely. It even extends to allocating aircraft. You know, going back 40 years ago, there would be specialist aircraft given, from the date of purchase of those aircraft, to the Flight Test Organisation. As we got more and more pressure to have less aircraft, 15 increasingly test aircraft are allocated from the pool, just as test pilots are allocated from the pool. But a formal handover of that test aircraft to the Flight Test Organisation is an important part of the process of allowing them the resources to conduct sufficient testing to make sure they are satisfied with a modification and/or new aircraft.

20 COL STREIT: You talk at paragraph 20 about the primary responsibility to delineate between developmental testing and operational testing. So, in your view, who has that primary responsibility in the ADF?

25 GPCAPT JOINER: So that would be the Chief Engineers, and that's where I went right back at the start and said I can ask a first year ADFA engineering student what's the most important document they sign and, as an engineer, and get the answer, and why do they sign it, I can get the answer. So that's why you have an engineering pool, is to make those 30 decisions independently from those that would operate it.

COL STREIT: Can I take you to paragraph 23 of your statement, please? You talk about industry behaviours on specifications and regulatory standards. You say this:

35 *In my experience, commercial pressures mean Aviation contractors can seek to cheapen the design change process inappropriately by using a function or specification for design change as a lever to limit regulatory oversight.*

40 You say:

45 *Put simply, in the case of the TopOwl sight, to test the functions without having authority of test pilots and Flight Test Engineers present to assure regulatory consistency to the baseline, if the*

Commonwealth Chief Engineer and Project Officers are not aligned, the change contract will be such that the design change is fully paid for before informed testing occurs, adding pressure to, "Take it, regardless".

5

In fairness to contractors and the Commonwealth Project Officers, getting access to precious Commonwealth flight testers, and even Chief Engineers, can be difficult, but is entirely necessary if ground testing is to remove as much flight risk as possible.

10

Moreover, it is financially irresponsible to pay for a complete design change in an Aviation regulatory environment without such expertise being part of such ground testing.

15

Is what I have read out correct?

GPCAPT JOINER: That's correct.

20

AVM HARLAND: What would be your thoughts on "with mutual recognition"? So where a piece of kit has been certified by a foreign military with which we have an understanding, and should a particular design change be certified by another Military Airworthiness Authority which we have an agreement, which is a basis of trust, I guess, how does that go with the idea that you have expressed in para 23? Would you see that as being different because it's already had a certification basis established?

25

GPCAPT JOINER: Sir, that's a question we've often grappled with, particularly as there's a lot of Defence off-the-shelf acquisition that occurs nowadays. In the drafting of the original Airworthiness Regulations, there is still nationally recognised appropriate agencies, right, that are acceptable. And so usually the US military is accepted as having sufficient test standards that we will recognise it.

30

35

But it always comes back to the CRE – Configuration, Role and Environment. And in the case of the MRH-90, my understanding is that we have unique missions that we only have certified, and so that means that irrespective of recognition of perhaps a French acceptance, you would need to do some work to establish the Delta between their missions and our missions, and also configuration. You know, unique software for the Australian variant to enable C4 or ISR communication within our environment means that you would need to enter hardware in the loop centre to establish that configurational differences don't affect that general recognition of their prior certification. Yes.

40

45

AVM HARLAND: What I'm trying to establish here is so if a change, a design change, has been certified by another Military Airworthiness Authority, and we recognise that, then to go back to a previous part of the conversation you had about DT&E, then that is considered to be a safe design. Is that a correct interpretation?

GPCAPT JOINER: It would be a mistake not to break it down to configuration, role and environment.

AVM HARLAND: And I was going to get to that, but I'm talking about the safe design, yes, on its face. And then the next piece is that you then have to consider your role and environment, and whether that would impact on it. Where does that live on the OT&E versus DT&E scale?

GPCAPT JOINER: Definitely it - - -

MS McMURDO: See, this is what happened with the version 5.1. It received the initial certification of safety and so forth on the basis that it had been designed and approved by the German MAA, and then it went to AATES for operational testing.

GPCAPT JOINER: Yes, the missions are not analogous. Even the configuration is not entirely analysis. I mean, the aircraft has different configurations in it. That would be a mistake, in my mind.

AVM HARLAND: An analysis would need to be done to determine how much weight you would put on the German MAA, in this case certification, and from that analysis you would determine what testing you would need to do, which would include what type of testing, by who, and to determine what things.

GPCAPT JOINER: Yes, and normally that would occur, sir, in a Test and Evaluation Master Plan, which is supposed to be maintained as a living reference for all aircraft types.

AVM HARLAND: So we go to the point where version 5.1, the design is accepted, by my understanding of previous witness testimony, and then it comes across into the Army testing realm. AATES do some initial testing on it to look at suitability for configuration, role and environment. In their test plan, they talk about having stop points. They reach a stop point because they find that there's some issues with the way that the attitude information is presented in the TopOwl symbology for version 5.10, and at that point the conversation goes to, "Okay, how are we going to move ahead with this?" And that's how the OPEVAL was -

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the result was the OPEVAL to do further testing. How does that sound to you as a process?

5 GPCAPT JOINER: So as a Chief Engineer, if I had that “unacceptable”
report saying that there was disorientation of pitch and roll, and quite
clearly not proceeding to night-time flying at all, that is an appeal to
understand why the disorientation has occurred. And the simplest answer
would be to put the Design Engineers and the Flight Test Engineers in a
10 hardware in the loop simulation, and explain what it’s doing, and why it’s
doing, and have their concerns raised and addressed in cooperative testing.

And at the end of that testing, then give them the opportunity to set some
appropriate limits for the use of that site. So it’s an appeal for further
testing. It’s not a, “Please, someone else test it for me”. You deem
15 something unacceptable so that it gets a modification and comes back to
you. You don’t deem it unacceptable because you don’t want to deal with
it.

20 AVM HARLAND: So it’s not a stop sign per se. It’s a, “We need to do
something more about it”. But it’s an important indicator of satisfaction
being very low, or there’s a problem with the kit.

GPCAPT JOINER: Yes. And the effort to create a Special Flight Permit
to enable some operational testing to commence, we often see that across
25 all three services where operational testing was meant to commence on
this date. We would like to proceed. Specific limits will be put on it to
crawl through what you can do. A good example is go do your day
testing, right, because you know, clearly - but stay above a certain altitude
and get that done. So the Special Flight Permit was to enable them to go
30 and do some operational testing whilst the issue is resolved, is my
understanding of their testimony.

AVM HARLAND: Could I just confirm that your terminology of
“Special Flight Permit” would be the equivalent of a Military Permit to
35 Fly?

GPCAPT JOINER: Yes, sir.

40 AVM HARLAND: So in the new regulatory speak.

GPCAPT JOINER: Yes.

AVM HARLAND: That’s all. Thank you.

5 MS McMURDO: Then what happened is a number of pilots found that they didn't find the problem with the off-axis display an issue in the flight testing that they did. They reported on that, and then AATES maintained its belief, or its opinion, that despite that, this off-axis display still made the version 5.1 unacceptable for Service Release. So in that scenario, would you expect that it would be developed further into Service Release without more testing?

10 GPCAPT JOINER: Ma'am, my understanding is that when you do the Special Flight Permit you've put some limits on, which means you've reserved certain parts of the flight envelope and certain missions that the operational testing is not allowed to do.

15 MS McMURDO: Correct.

GPCAPT JOINER: Which means at the end of the operational testing, unless they've exceeded their licence, right, or their permit, there are still untested areas to be governed, or decided upon.

20 MS McMURDO: Correct.

GPCAPT JOINER: So I don't understand at the end of the operational testing how full certification could occur.

25 MS McMURDO: Yes, thank you.

30 GPCAPT JOINER: Because parts of the envelope have not yet been tested. You know, the disorientation at the most crucial point clearly was not part of the operational testing because they were restricted from doing that. So there's questions not only of the Chief Engineer, but of the operational tester. Have they stayed in their lane, and complied with the objectives that were set out in the Special Flight Permit?

35 AVM HARLAND: Would that include flying in formation as part of the testing at night?

GPCAPT JOINER: Yes, sir.

40 AVM HARLAND: To check the other aircraft lighting, the effect of that on the displays.

45 GPCAPT JOINER: Yes, it's exactly the role that, you know, we turned to the Flight Test Organisation in order to be able to do - that is different in roles from, you know, the way the German military would be using it, and so you need to go back to that organisation, otherwise you have

changed your regulatory basis, and also you haven't addressed a part of the envelope that needs to be tested, the most critical part as well.

5 AVM HARLAND: In terms of, like, academics of flight test, if you're going to test a particular piece of kit – let's call it TopOwl version 5.1 – and you don't look at those points where you may be exposed to disorientation, for example – so in this case, on the left and right of the display where the attitude ambiguity as characterised occurs – if you haven't tested that, and you haven't tested things like formation, would that normally go forward as a restriction on Service Release?

15 And even if the pilots who participated in the test said, "Well, I didn't feel that I had an issue. I didn't feel that there was an issue with the display. You know, I didn't sense any disorientation or anything like that", is it valid to then move forward to a Service Release that has no restrictions?

20 GPCAPT JOINER: So if I was the Chief Engineer, I would be sitting there saying, "Okay. Thank you for your operational test. You may now have Service Release to the conditions that were in the SFP, and only that".

25 AVM HARLAND: Unless some of those conditions were specific to the test piece. But if it was a general operational restriction, you would expect that to be carried forward into the Service Release.

30 GPCAPT JOINER: Because you have untested areas that you just haven't addressed, so it's appropriate that you put those caveats on, and that's the responsibility of the Chief Engineer. You know, not testing is not knowing, and when you don't know, you restrict that area from use until such time as you can get that testing done. So if they say they're out of money and they're out of time, you go, "Fine. You can fly it" – in the extreme, "You fly it in day only, and no formation". And that negotiation, as a Lieutenant Colonel, would be very, very difficult, but that's why Primary Flight Display major modification, there should be an element of review.

40 AVM HARLAND: Now, we've heard from other witnesses in the flight test community that have talked about the fact that when you do a test you can never test all points, but you would test representative points, and then you in often cases have to extrapolate and expect that okay, we can now move forward without limitation. Just because we didn't go to that particular part of the envelope, or that particular condition, it doesn't mean that we have to be restricted by that. What do you say about that?

45 GPCAPT JOINER: Yes. So representative sampling, you have to

carefully make sure that all of the key factors are what we call orthogonal, which means that the test points have coverage to predict between them for all of the key factors. In the case of – you do that mathematically, but you also do it with regard to the risk. So the most dangerous, and the greatest risky areas where you are potentially relying on the sights for primary flight instrument, you would want to make sure that, irrespective of the maths of the test design, that you have coverage in those areas, or you have a greater density of coverage in the high risk areas. That's how you would deal with that.

It's also important that the people that do the testing not in the real aircraft, so in a simulator, that the flight test people also have confidence and trust in the simulator. So they need to be part of that testing. Perhaps not all of it, but at least witness it, and have confidence in the facility and its representativeness in order to fill in what they haven't got time to test for.

AVM HARLAND: Is it normal that a simulator would be used if you're introducing a new item, or does the simulator configuration sometimes follow the aircraft?

GPCAPT JOINER: So 30 years ago the simulator tended to be built for training purposes after the event. Today they are part of the development of the system, and often they lead the development. So you'll build a model, and you'll build a simulation before you build the actual system. You might not have even assigned a particular manufacturer to a particular system, but you'll have a model and a simulation of that nonetheless that aircrew can go fly.

MS McMURDO: And you can safely test on it.

GPCAPT JOINER: It builds confidence, ma'am, early.

MS McMURDO: You can test on it. Yes, you can test on it early in a way that you wouldn't be prepared to test on in real life because it wouldn't be safe to do those tests.

GPCAPT JOINER: That as well. So there are some things that it may not be safe to do, but you still should have sufficient end-to-end real testing.

MS McMURDO: Sure. I'm not saying it replaces it, but you would expect it to commence the testing there, wouldn't you?

GPCAPT JOINER: Yes, but we have had those arguments. So without naming the system, a particular, weapons system from Europe had the four elements of the system, the weapon tested, but never a full end-to-end firing of the weapon until Australia did it, and it was pointed out that in the US and Non-Nuclear Munitions Safety Standards, that a minimum of eight end-to-end firings would have been expected, had that been a US weapon.

And so we are getting reliance on individual systems testing without an integrated solution, which is particularly dangerous if you move to high-end missions for which that system was never really intended. That's where the danger occurs. So you do need some end-to-end scenarios, full-on operational tests, to have confidence.

MS McMURDO: Sure. I'm not saying it should replace it, but it would be a good start, wouldn't it, to have it on the simulator? I think the evidence here is that there wasn't a version 5.1 on a simulator at the time this testing was done.

GPCAPT JOINER: And that raises questions in my mind about the quality of the manufacturer, because what Defence supplier today hasn't built a model? You can't sell into the US system without having a model first. Literally, it's one of the conditions, is that you come with a model and a simulation up-front, so here's the real system. You can't have a model up-front, it raises questions that perhaps that organisation is not – you know, I would be questioning their software, in particular, because the software would need refreshing through life. The rate of change of software is phenomenal at the moment, and you need to be able to model and simulate, to check updates to your software in particular.

MS McMURDO: Thank you.

GPCAPT JOINER: Thanks, ma'am.

MS McMURDO: Sorry, COL Streit.

COL STREIT: It may well have shortened things, Ms McMurdo. What I propose to do, Group Captain, is some of the matters I was going to address in your statement you've given evidence about, so I'm not going to reinvent the wheel there. I'm just going to take you to particular parts further into your statement now, having regard to the evidence you've just given.

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First is, can I take you to page 23, paragraph 30? You say, “T&E organisation post First Principles Review”. Is that what “FPR” means, First Principles Review?

5 GPCAPT JOINER: That’s correct.

MS McMURDO: I’m sorry to interrupt, COL Streit.

10 COL STREIT: I apologise. Paragraph 30, page - - -

MS McMURDO: Sorry, can I interrupt? I’m told there’s a technical issue that has to be sorted, so we’ll have the mid-morning break now.

15 COL STREIT: Thank you.

HEARING ADJOURNED

20 **HEARING RESUMED**

MS McMURDO: Yes.

25 COL STREIT: Thank you, Ms McMurdo.

Group Captain, can I just take you to page 23, paragraph 30 of your statement? I just want to ask some questions of a clarifying nature, having regard to the evidence you’ve given, and responses to the Inquiry Chair and Deputy Chair. First, at paragraph 30, you say, “Test and Evaluation Organisation post First Principles Review”. That’s “FPR” is First Principles Review?

30 GPCAPT JOINER: Correct.

35 COL STREIT: You say, “In this area of questioning” – sorry, Army Aviation.

40 *In this area of questioning around the formation of Army Aviation T&E Section (AATES) within the Army Aviation Training Centre, I have very little direct experience or research. From T&E planning of Identification Friend or Foe systems across many ADF platforms, I was aware they formed in the post First Principles Review to perform a similar role to AMAFTU.*

45

5 *Much of their function devolved from ARDU, who hitherto performed in the Army Aviation development T&E, and oversaw the Army Aviation operational T&E. The Inquiry should investigate how much AATES operated as a T&E Accountable Unit to the LTEA, and how much they held airworthiness delegations, and oversight from AOSG and ARDU.*

10 First, there's a few acronyms there. Can I just ask you where you say, second-last line, "LTE", what does that stand for?

15 GPCAPT JOINER: So when they recreated Army T&E, they created the Land Test and Evaluation Agency, headed by a Colonel, but reporting directly into a Major General in Army Headquarters, and they put out a policy on how test and evaluation should be conducted in Army consistent with the way the post First Principles Review was set up. Those services could have accountable units that they would audit, that were responsible for doing the testing that they needed to.

20 Army Aviation is a little more complex in that it has to be responsive to both its airworthiness responsibilities as well as in general to test and evaluation within Army. So if an aircraft and a vehicle are being tested together, for example, LTEA, Land Test and Evaluation Army, they would be out there coordinating the two, whereas potentially the aircraft would also be experiencing a flight test at that time, and be headed by AATES, which is an accountable unit to the Land Test and Evaluation Agency.

25 COL STREIT: I see. Thank you. Paragraph 31, you say:

30 *Notwithstanding the need to investigate AATES' governance directly, I can reasonably attest to the risk that at the time of the subject MRH-90 TopOwl sight test and evaluation in 2019, the section was organisationally new, and had a risk of being misunderstood.*

35 What did you mean by "a risk of being misunderstood"?

40 GPCAPT JOINER: So testers need time in an organisation to be taken credibly. If they come from the organisation, that does help. So whether testing should be centralised or it should be disaggregated into various sections, that argument is usually around the closer you are to the decision-making, the more you'll have the necessary influence. In creating AATES, clearly there would be a period in which they would need to gain respect, and deal with the loss of independence, compared to having an Air Force organisation doing the developmental testing. That

would require additional oversight, and there's a risk that perhaps they are misunderstood in that process. That's, you know, your organisation is less than two years old in 2019, it would need bedding in, both as a general T&E contributor, as well as a specific flight test contributor.

5

COL STREIT: You go on to say, in particular:

10

Without an experienced and determined Army Aviation Chief Engineer, there's a risk of conflating developmental and operational flight test responsibilities. In my four years of briefing Army Generals regarding operational testing of their land capabilities, I found it challenging and I often relied upon being Air Force and having direct report to an independent three-star.

15

20

I can readily empathise with the difficulties of a Lieutenant Colonel briefing T&E results and recommendations within an aligned Chain of Command. Further, when briefing such Operational Land T&E, I would frequently rely on deep, technical expertise in the Land Engineering Agency, largely public servants in another separate group, who had independently done developmental T&E on the same capability.

25

What I've read is correct?

GPCAPT JOINER: That's correct.

30

COL STREIT: Your reference to a Lieutenant Colonel, the difficulties of a Lieutenant Colonel briefing T&E results, is that a reference to the SO1 of AATES at the time?

GPCAPT JOINER: Correct.

35

COL STREIT: Concerning TopOwl?

GPCAPT JOINER: Correct.

40

COL STREIT: In relation to a new organisation, you've just described AATES two years in existence, and a separation of the framework from involvement of Air Force in flight testing, which had existed beforehand. It would have been necessary, do you think, for Army's Chain of Command in the Aviation space to do things that reinforced to the Chain of Command the independence of the newly established Army Flight Test Organisation?

45

GPCAPT JOINER: Absolutely. If you read COL Burton's book on Pentagon Wars, he was part of an experiment within the US whereby the testers would be provided from a different service in order to have independence, and so he was an Air Force person working on an Army Land Vehicle Program, and I reflected on the fact that I often used that in the fact that I was Air Force in briefing some difficulties with things like battle management systems within Army, and some of the difficulties with the number of gun crew on artillery, et cetera. Our test results are not always popular and if you have a different uniform on, it can help.

And as I said, also Land Engineering Agency is a bunch of – “bunch” is probably a hard word – they are a professional organisation down in Victoria who do a lot of the Army's engineering, and they have a Public Service structure, and senior engineers, and that also helps, having the independence, is that it's coming from – at the time, it helped with the independence.

It is harder when you are wearing the same colour uniform and working in a small part of one branch of Army to deliver that same news. And that's the tension between centralising T&E or disaggregating it. And the US model is perhaps the best, where you have it disaggregated, but you have external regulation and oversight, so you have the best of both worlds.

MS McMURDO: So I predict that the Army would say, “Oh, yes, but if you're outside Army, you don't understand our operational requirements”. That would probably be the argument that they would put against that. What would you say to that?

GPCAPT JOINER: Every service tries that, ma'am, and it – a certain extent of independent testing is good, and yes, all the service has resisted external regulation, but we have now accepted it with the nuclear submarine. The Parliament has passed new regulations to create a regulator for nuclear submarines, so I think it is inevitable that the ADF will also have external regulation.

MS McMURDO: Thank you.

AVM HARLAND: Just a question on the structure there, because you talked about individuals having some pressures because they effectively come from, and go back to, the same pool. So they go out – and this was all to do with their independence, and how they might be perceived as testers. With AATES being in the Chain of Command within Army, basically all the way up to a single one-star, single two-star, they live in that Chain of Command. SO1 AATES, by my understanding, comes

under the AAvnTC boss, so the Commander of the AAvnTC. That's my understanding. I'm happy to be corrected.

5 But it would seem to me that they're kind of in – because they're in the same Chain of Command, that would seem to me a challenge to their independence, rather than having them as separate Chain of Command where they are effectively providing objective advice, and there's no pressure from their direct Chain of Command. What are your thoughts on that? Because this is really where the FPR took us, and I guess I'm
10 questioning whether that's functioning.

GPCAPT JOINER: So in part they tried to address it by having the licensing of T&E through the Land Test and Evaluation Agency up to the Major General, who was the Head of Capability, so there is an
15 independent chain that could be used to go sideways from aviation, or artillery, or, you know, armour. It doesn't matter. They can go across to an independent chain and say, "Our test results are as follows".

20 We have to remember here that there was no difficulty in making an "unacceptable" finding. They made the "unacceptable" finding. So hats off. The independence must be there. The experience and training must be there.

25 And this is common across Defence, is that we have the experience. We invest in the testers. It's at the point of listening to their results or getting them to actually test, that people push back and avoid it, which is unfortunate.

30 And that's where regulation is needed, to say that you need to do testing in order to support key decisions where it's safety-critical, for example. If you make a safety-critical decision to release something, and there is no testing, it needs to be reviewed, and that practice stopped. It's why testers leave the organisation, is they are often upset with not being listened to, and it's a very common reason for them leaving, despite the fact that
35 they've chosen to be experts in their system and received additional training. It's often nothing to do with pay outside. It's the fact that they are not listened to, or that the testing is just not done.

40 AVM HARLAND: But in the case of version 5.1 after the initial AATES testing, which proposed the "unacceptable" feature, and basically that got put in the Chain of Command, then as things unfolded, this concept of an OPEVAL came to being, which was a change from Category 2 to Category 4 Flight Test, regardless of the fact that they're still testing the same thing, with some limitations and some boundaries, and that was
45 agreed to by AATES as an organisation, and by a previous witness, by my

understanding, so that they would maintain connection with the process of how it was going to go ahead.

5 MS McMURDO: And also because they were so busy themselves that they didn't have capacity to do it quickly.

10 AVM HARLAND: And they didn't have the resource to do it. So that, to me, seems concerning, because it seems like a break from the discipline of flight test. That's the read that I get from it. What are your thoughts on that?

15 GPCAPT JOINER: So the way I read that – and this is very common with the testers – is that, like I said earlier, the operational testing was programmed to start, and so we'll put some caveats on it, and some limits on it, and we will get that started whilst we resolve the other issues. And so putting some serious limits on that is part of that. But this is where not conflating the two is important.

20 The developmental testing is there to support the Chief Engineer in determining what is safe. What has the Chief Engineer got to say? The operational testing is to learn how to fight with a modification, and make sure you can fight with the modification.

25 AVM HARLAND: It's about effectiveness sort of.

30 GPCAPT JOINER: Yes, the effectiveness and suitability. And so they're two different streams informing two different decisions, in my view. And therefore the other question didn't get answered, which is, "How do I set safe limits on this, given the 'unacceptable' finding?" I don't see the OT&E as a means to do that because clearly restrictions were put on the limits of the OT&E.

35 The OT&E was limited to certain parts of the envelope in order to keep it safe, so there is a huge question about the unanswered developmental test, which is what are the safe limits for this system?

AVM HARLAND: Understood. Thank you.

40 MS McMURDO: And reliance was also placed in the decision to progress it to Service Release on the AMAFTU testing of the version 5.10 for Navy conditions, which was testing flying on and off a Navy craft. And we've heard evidence from the Head of AMAFTU at the time that he did not consider that that meant that it was safe for Army operations; that it was tested only for Navy, those particular Navy conditions. What do

you say about reliance being placed on the AMAFTU acceptance of the version 5.1 as reliance for Army to release it?

5 GPCAPT JOINER: Yes, ma'am. Again, it comes down to
configuration, role and environment. The role is very different.
Approaching a ship to land on a ship is a cooperative engagement. The
ship is working with you to safely get you on board, right? So there's all
sorts of precautions and actions, particularly if there's disorientation, that
can be taken to make that a safe engagement. So it's a very specific sort
10 of purpose.

That is a different role to what Army was ultimately using this helicopter
for, and we often get that shallow argument sitting in all the government
proposals for new capabilities from 2010 to 2014. Everything that went
15 across the lake I sat there as the test adviser for, and we would often get
very shallow, "This is in service with" – one that I gave to the Senate
Inquiry for Defence Capability Assurance and Oversight Bill was
AIR-9000, and I was directly involved in making sure that AMAFTU
tested the new Army and Navy helicopter, the training helicopter, that was
20 put at Nowra. You know, a 25-year support contract. And the project,
during the down-select, tried to avoid having flight testers test the three
different simulators for the three different aircraft types. And then right at
the end, when they got down to a single contender pre-contract, we
wanted to do about 10 hours of flying on the helicopter, and 10 hours in
25 the simulator with an AMAFTU Team, and they argued all the way to
three-star, and we had to pay \$50,000 from an independent agency in
order to get that testing done.

30 The lengths that they will go to, to avoid a 4000-flying hour helicopter test
pilot from testing something before 25 years of service was
ridiculous. Anyway, that's public record on the Senate Inquiry.

35 But that's the sort of thing that you see if you're not careful here. People
don't want to – when you don't test, you can – it comes down to who you
know, and who is the most senior rank in the building, and that's a
comfortable space for those that want to play politics within the service.

40 When you get the testing done, you're down to the facts of is it safe for
what configuration, what role, and in what environment, and usually
there's been enough participation from all of the operators that everyone is
in violent agreement about either not using it or using it within certain
restrictions.

45 And, yes, it is very disappointing in this instance that – normally
operational testers put additional limits that the developmental testers

5 didn't find. This is an example of where operational testers are rolling through without finishing the developmental test. I did not see many instances of that, but I am alarmed by it because usually the operational testers are the last gatekeepers of making sure that a system is used safely, and they have to sometimes crawl, walk, run in order to do that.

10 A good example is the landing helicopter dock ship. There's an ANAO report on that, talking about the operational risks that were accepted by Army and the introduction to service of that, and yes, we were involved in that testing, but they made sure that it was done safely.

We've got to be really careful if operational test is turning around and actually pushing things through with their own limits.

15 AVM HARLAND: Because what we saw in this was that the OPEVAL, which was clearly an operational test, it effectively reviewed the AATES initial testing, which was done under CAT 2, and it reviewed it as less consequential. So it went from "unacceptable" to a lower grading. Would that be normal?

20 GPCAPT JOINER: So one of the principles of airworthiness, sir, is that the organisation has to be the appropriate organisation. In this particular case, the appropriate organisation to conduct flight test, to set safe limits, is Developmental Flight Test, which is AATES.

25 AVM HARLAND: And they did the Flight Test Plan for the OPEVAL.

30 GPCAPT JOINER: But again, I read that as a different purpose. The purpose of OPEVAL is for operational effectiveness and suitability, not for safe limits.

35 AVM HARLAND: So by my understanding of what you're saying there is that there was a piece of the process in developmental test and evaluation relating to the "unacceptable" finding that was incomplete because the OPEVAL couldn't possibly have sat in its place.

40 GPCAPT JOINER: Correct, sir. It's not the appropriate organisation to set that. Again, we go back to the definition of "specialist T&E". Flight test is specialist T&E. You can have a fully qualified flight test pilot who happens to be in the OPEVAL, but that is meaningless because the structures, and the approval, and the oversight, and the authority, is not vested in that OPEVAL, it's vested in AATES. And that is clearly managed within normally ARDU, in Air Force terms, and Army set up a structure to do that.

45

And so one of the people that potentially should be is the Land Test and Evaluation Agency, who get questioned on is that the structure that they created in this particular case, and what auditing did they perform of that in its first two to three years of existence to make sure that it was being bedded in and listened to as a T&E organisation.

AVM HARLAND: Thank you.

COL STREIT: Just accept from me there's evidence before the Inquiry to this effect, by way of background, and then I'm going to ask you a question. So there's some evidence before the Inquiry that an organisation, Airbus, was engaged by Army Aviation Command to bring into the Army Aviation space TopOwl version 5.1. Version 5.1 had been developed in combination with the BUNDESWEHR, the German army, and another organisation. The attitude irregularity – my word – was accepted, and developed in fact, by the German army for its own purposes.

So when the organisation, at the time Airbus, did what Army Aviation Command, or Army, asked it to do, it brought an application before DASA in the ordinary way. The application was for a major change to the aircraft type, for an upgrade from version 4 to version 5.1 TopOwl. DASA approved that change for reasons I don't need to trouble you with, but they nonetheless approved it, and it was authorised.

It then transitioned to the operational side of house, and to the Military Air Operator for Army, the Commander of Aviation Command, who ultimately through – or DG Aviation Branch within Forces Command was the predecessor. Ultimately, it was referred to newly formed AATES to conduct flight testing. AATES did its flight testing. A qualified test pilot did the testing with an engineer. The SO1 of AATES signed the report and issued it.

The report identified an “unacceptable” finding, and effectively an unacceptable risk to flight safety. It recommended certain things. What occurred next was an Operational Evaluation undertaken by Aviation Branch within Forces Command in 2019, and that's what you've been asked about by the Chair and Deputy Chair.

My question is this: in circumstances where AATES, the Flight Test Organisation, was established to perform the function that Air Force used to perform for Army in terms of flight testing equipment comprising major change to an aircraft type, where an “unacceptable” finding isn't identified, would you expect that the report by AATES and its supporting information would then go back to the Defence Aviation Safety Authority

to review the basis upon which the authorisation for version 5.1 had been made?

5 GPCAPT JOINER: Yes. I would also expect that it would find its way to Army Headquarters through the Land Test and Evaluation Agency, or that's why that organisation was established with a degree of independence into a two-star position within Army Headquarters, was to provide independent T&E oversight of contentious – as well as governance – of the day-to-day of those agencies.

10 COL STREIT: In the context of – and the evidence before the Inquiry is that the AATES report did not go to the Defence Aviation Safety Authority. They were, as an organisation, unaware of it at the relevant time. In circumstances where the Operational Evaluation was conducted –
15 which you've given some evidence about its basis and its limitations – in circumstances where the Operational Evaluation was conducted, coming to particular outcomes, would you expect also not just the Flight Test Organisation report but the Operational Eval would also go back to DASA as part of its review of authorising 5.1?

20 GPCAPT JOINER: And so this goes to the question that the Deputy Chair asked earlier, which is that what if this was not considered a major change to the type certification, which then means that the ultimate authority becomes the Control Configuration Board, which simply has the
25 Chief Engineer and the Aviation senior representative on it, and so it's treated as just a minor change to the normal support to the aircraft. The problem there is the dependence in this particular mission on the sights for primary flight, which brings into question that some of those missions really struggle with that categorisation.

30 COL STREIT: So in your experience in test and evaluation process, procedures within the ADF and externally civilian, if, in the context of version 5.1, it's to be used in a particular type of operations which include flying in formation, flying at night, flying overwater, and in combination
35 of all those things, potentially in low cue environments, that even if there was a rule that told the pilot, "You can't take attitude information from the HMSD, you have to look at the Primary Flight Display, eyes in", even if that rule existed, the practical reality is that in formation, at night, overwater, in a low cue environment, the pilot is going to want to have eyes out. Correct?

40 GPCAPT JOINER: Again, you're straying into what is aircrew and flight test, and I think what might be helpful here is that sometimes when you're creating test plans or you're deciding what to test, to simplify it
45 down, particularly for Army Generals, I used to say, "At the very least, we

will test the most dangerous and the most likely. Okay. And we'll do it with a representative sample".

5 And in this case the circumstances you described is the most dangerous, and so you would want to make sure that the most dangerous was tested. And in this case, I don't think it was getting sufficient test.

10 COL STREIT: Well, that was where I was leading to in my next question, and that is, in circumstances where the Operational Evaluation is not testing in the environments in combination that I've just described, but in circumstances where the HMSD is to be used by the pilot in those environments, i.e. the most dangerous, as you've identified, in your view, could an Authorised Officer give Service Release for the HMSD in those circumstances, notwithstanding no flight testing had been conducted in
15 other flight aspects of the envelope?

GPCAPT JOINER: As is clear from my testimony, I do not agree with the Service Release of this item, on the basis that the most dangerous condition was not flight tested, and I have rarely seen testers get denied
20 the ability to do the most dangerous test. It's fundamental that we take a risk approach to things, and so you'd want to do the most dangerous at the very least. And in this case, the Operational Eval was restricted from doing the most dangerous, and so who did it? The BUNDESWEHR? Probably not. Different roles, different configuration
25 and environment.

And we need to be really, really careful in using previous certifications. We need to make sure that they are a basis to reduce the testing, but not to the point that the most dangerous is not evaluated or considered
30 appropriately.

COL STREIT: Can I just take you to two final matters? The first is just in relation to your evidence commencing at page 31 concerning improving future T&E governance, and you've set out a number of matters going
35 over onto page 35 in relation to those matters. But what would you regard as key amongst, in your opinion, key amongst improving future test and evaluation governance?

GPCAPT JOINER: Independent regulation of testing means that you
40 have a lot of confidence in informed decision-making in general, and so making sure that the testing is conducted as and when required. You know, breaking it down to really simple public statements. You wouldn't buy a car without a test drive, and we often see people in service environments try to take shortcuts or savings in schedule and time by
45 arguing previous certification is all-encompassing, when it is not. It needs

to be very carefully evaluated and subjected to at least a minimum standard of testing, and that will only occur if there is some external oversight of testing.

5 COL STREIT: An improvement for the future, it would also include
ensuring direct linkages between the Defence Aviation Safety Authority
and ADF Flight Test Organisations to ensure flight test reports are
something that are communicated to the Defence Aviation Authority if
they've given permission and authorisation for the use of a particular item
10 for a major change?

GPCAPT JOINER: I would have thought that the airworthiness system
with making sure that any major – and the definition of “major” includes
all of those safety-critical elements of the aircraft – if that was
15 appropriately followed through, then those flight test reports, and the
decisions underpinning it, would have been reviewed. It appears that
creating it as a situational awareness tool, and then using it extensively to
fly with has been done as a minor, when it should have been done as a
major, which would have seen those reports be reviewed by DAFS.

20 That's my experience. The P-300, the PC-9, the Primary Flight Display
modifications, the JHMCS, Joint Helmet-Mounted Cueing System, for the
ASRAM, they were all subjected to the full scrutiny of major
airworthiness modifications, and I never once begrudged that oversight
25 because they were all safety-critical elements, and because of that
oversight I got additional testing done, which I then later helped
coordinate and became a tester. But at the time, I never begrudged it
because it was deemed to be safety-critical. So we've got to be real
careful.

30 COL STREIT: My understanding of the evidence before the Inquiry is
that it was submitted as a major change by Airbus to DASA. Does that
change - - -

35 GPCAPT JOINER: If it's a major change, then it should have been
reviewed by DAFS. In my day, that would've gone to Director-General
Technical Airworthiness with Chief Engineer recommendations, and the
operational recommendations would have gone forward ultimately to the
Deputy Chief of Air Force, and a decision would have been made on
40 operational release. And all through 2003 through to 2010, that was my
experience of the airworthiness system, is that any major change was
reviewed because it was designed that way by the architect of the
airworthiness.

45 We don't give names, but the Air Commodore who designed the

airworthiness system built it on a replication of the CASA system with some Military overlays, and hence a major design change goes through and gets reviewed by the Certification Authority.

5 COL STREIT: Just a moment, sorry.

AVM HARLAND: Could I just clear up that when you said
“Director-General Technical Airworthiness” there, that that’s the
equivalent of what we now know as Director-General DASA, the
10 DG DASA?

GPCAPT JOINER: That’s my understanding, sir, yes, that they now
perform that role. So instead of having a Director of Aviation Safety and
a Director-General Technical Airworthiness, they’ve merged the two
15 functions together.

AVM HARLAND: As DASA, they had approved the version 5.1 design
through a process, and effectively that would vouch for the design being
incorporated into the aircraft, and the understanding that it was generally
20 safe, and then subsequent testing on that found that there was an
unacceptable risk to flight safety as a result – and it goes to COL Streit’s
question before – should that not be, like, a red flag that goes back to the
regulator to say, “Hey, that thing that you just approved, we’ve just found
that there’s actually an unacceptable risk to flight safety with it. Do you
25 want to reconsider?”

GPCAPT JOINER: Absolutely, sir, you would expect that that was the
case. If it didn’t come up in business as usual, then you would expect that
an Airworthiness Board would pick it up at the next hearing. So every
30 year you go to an Airworthiness Board. Because I had three aircraft types
for my two years as a Chief Engineer, I had the pleasure of six
Airworthiness Boards, and they were a place that you could not hide those
sorts of findings. They were usually attended by the Aircraft Research
and Development Unit, also by the Prime System Integrator, or Original
35 Equipment Manufacturer, and the operational and technical authorities
would be present as well, and everyone would make submissions.

And so that was a place to air those sorts of concerns. You were even
allowed to make independent submissions. So on leaving as PC-9 Chief
40 Engineer, I made an independent submission, pleading for the
continuation of engine condition trend monitoring systems and terrain
collision avoidance, two modifications that we had put through that were
critical, in my view, to the continued operation of the PC-9. Ultimately, I
was unsuccessful because the aircraft was supposedly only going to stay
45 in service for another five years. It stayed in for another decade, and we

had no accidents. But I sleep better at night now that we're not using the PC-9 without those two systems.

AVM HARLAND: Thank you.

5

COL STREIT: One final matter, Group Captain. Paragraph 39, which is on page 34 of your statement, in the body of that paragraph, about two-thirds down, you say:

10

How much simpler would the MRH-90 TopOwl sight testing have been if the Flight Test Engineer had been present at the ground test modelling and simulator (i.e. early integrated operational T&E with functional testing) and the developmental contractor had been present at the flight testing?

15

Consequently, the ADF should regulate all acquisition cannot go into production or pay for a service until some initial Operational Evaluation (try before you buy).

20

So what I've read is correct?

GPCAPT JOINER: That's correct.

25

COL STREIT: So is what you're saying that before the ADF fully pays for an item to be brought into service which is yet to be subject to the Standard testing required, including from a Flight Test Organisation in the ADF, we should do that testing first, i.e. do the try before we do the buy?

30

GPCAPT JOINER: Yes. The US has a section 10 regulation that used to be 2399, but the number has changed. I made sure I got the right number in the Pentagon Wars article. But that regulation has existed in the US for nearly 40 years now, and what it essentially does is it limits you to low-rate initial production or prototypes until such time as an Operational Evaluation has occurred.

35

In the case of an Australian purchase of an off-the-shelf system, there would be an Operational Evaluation of that before you were allowed to buy sufficient for the entire fleet. It's a commonsense thing that many good Project Managers do, but unfortunately too many do not.

40

COL STREIT: Group Captain, I am just going to read out the final aspect of your statement, which is at paragraph 41. You say this:

45

I found the account of the flight tester, apologising to families for not doing enough, fundamentally disturbing because he went well

5 *beyond normal practices to seek a safer outcome. As a former
Director-General of T&E, I feel responsible for the system that
left that test pilot such conflict in conveying obvious results, and
for the T&E structures that may have contributed to this awful
outcome.*

10 *I will continue to advocate for better T&E. Perhaps as set out in
the enclosed article, I will set or implement the regulations of the
new Defence Capability Assurance Agency, renewed by the
disturbing testimony about T&E at this Inquiry.*

What I've read out is correct?

15 GPCAPT JOINER: Correct.

COL STREIT: Thank you. Nothing further.

MS McMURDO: Yes, applications to cross-examine?

20 AVM HARLAND: I just have one question before we go through there.

MS McMURDO: Yes, of course.

25 AVM HARLAND: I just wanted to ask you your opinion on the use of
civil aviation regulation or advisory circulars that may or may not apply to
your system. This was quoted by LTCOL Reinhardt in the AATES
report, referencing an FAA advisory circular about the use of situational
awareness displays and how incorrect presentation on a situational
30 awareness display could not just be written off by saying, "Don't look at
it". Is it valid and reasonable to use regulations and guidance that may not
be applicable to you in your regulatory framework, i.e. in the Australian
Military, for example? Is it reasonable to use that as a guide to your
thought processes when thinking about the future safety of a system?

35 GPCAPT JOINER: So, sir, this often comes up when you're building a
regulatory basis in the first instance, and so you – a good example is the
MRH-90, you know, with the FAR 29. Clearly there are things that we
do, and things on board that are not present or considered in those
40 regulations at all, and so as you build a case to certify all of the missions,
and the environments, and roles that you want, you will need to draw from
multiple sources. But that then becomes your baseline from which you
then will look after that aircraft through its life.

45 And we often criticise what's known as the grandfather principle, which is
that we are tied to the version that was originally certified, not the current

version, but there is that responsibility to review, and the Airworthiness Board is the most appropriate place to raise those concerns. And so there should have been the opportunity for that Lieutenant Colonel to present those considerations at an Airworthiness Board as part of his independent submission as the Test Authority for that aircraft.

The continued airworthiness requires due regard to changing technologies, changing missions, and therefore continued review. That would be my argument.

AVM HARLAND: Is it valid to consider regulations which may not apply to you directly in terms of building up a picture to make a recommendation about a system that's under test?

GPCAPT JOINER: Absolutely, sir.

AVM HARLAND: Is it valid to say, "Well, that doesn't apply to us, therefore we won't take that into account"? If somebody was to counter that and say, "Well, we don't follow that regulation set. We're under this regulation set", is it valid to just say, "Well, we don't" – to disregard it because we're not under the regulation set?

GPCAPT JOINER: As long as the risk has been tested and assessed. And my argument would be that probably in that instance it was not assessed, so you would say, "Okay, that's a view that has been formed by another regulatory authority. What testing would check whether that was a risk for us?" And potentially several hours in the simulator perhaps monitoring how frequently somebody moves from out of sight to in the cockpit in different phases of flight might form a view as to what is an appropriate certification regime moving forward for the different areas.

So if you want to fly at the most dangerous circumstance, then you need to treat it as a different basis than these other areas where you clearly can have a secondary source, and you have time to process the secondary source of situational awareness.

AVM HARLAND: That's good. Thank you.

MS McMURDO: Thank you. How long will you be, LCDR Gracie?

LCDR GRACIE: 10 minutes, ma'am.

MS McMURDO: Any other applications to cross-examine?

MS MUSGROVE: Two minutes.

MS McMURDO: Two.

LTCOL HEALEY: 10 minutes.

5

MS McMURDO: 10.

LCDR TYSON: Possibly brief, ma'am.

10

MS McMURDO: Yes. Okay. Thank you. Yes, LCDR Gracie.

<CROSS-EXAMINATION BY LCDR GRACIE

15

LCDR GRACIE: Sir, my name is LCDR Malcolm Gracie. I represent the interests of CAPT Danniell Lyon, who was the Captain of Bushman 83. Thank you for your evidence. Before I start, could I just give the Sergeant a heads-up that I would like Exhibit 107 at some point? I've run out of coasters to pass my usual note in advance. And, ma'am, I also apologise, my folders are sitting in my check-in luggage outside, so I'll do my best without them.

20

Could I take you firstly to your evidence about the simulator? Ma'am asked a question about the simulator not being configured for the 5.10. I just wanted to be clear, based on your answer, I think you gave an answer which might have suggested that there was no simulator by the manufacturer, Airbus. The point of ma'am's question was that we didn't have it configured in a simulator in Australia, but there was some simulator testing, some flatbed testing, back in 2014 in France. So does that change the answer that you might have given ma'am?

25

30

GPCAPT JOINER: So when I referred to simulation, it was that, you know, a firm basis for full coverage across the envelope, understanding the safety of the aircrew in the way that they use it is better done in a simulator, right, and then your aircraft does a representative sample of that, usually focussed on most likely and most dangerous, with some progressive build-up to most dangerous. If you don't have a simulator, you become critically reliant on a very expensive resource for testing, and then builds an aversion to testing because of the sheer cost, okay, and so you've got a question, "Why we didn't have that simulation capability?"

35

40

LCDR GRACIE: In Australia?

45

GPCAPT JOINER: In Australia.

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LCDR GRACIE: Thank you. Yes.

5 GPCAPT JOINER: Particularly given that we had unique roles that we were responsible for the flight test and certification of that they don't do, and therefore you would think that there would be an investment in the simulation because that's an investment through life safety and testing.

10 LCDR GRACIE: Yesterday we saw some video presentations of a simulator with the 5.1 configuration. I just want to ask you this: can the simulator testing be quite different in terms of replicating the actual operating environment of an aircraft?

15 GPCAPT JOINER: So every simulator is certified to different standards, depending on its ability to represent. So in the simplest, you know, you can have a three degree of freedom motion, or a five degree of freedom motion, or six, right? That is simply motion. "Visual representation, where is it accurate, and at what speeds is it accurate?" So every simulator is supposed to be certified on an annual basis as remaining at its level that it is being relied upon. And some of the retired flight testers that I referred to before do those roles across Australia for the simulators.

20 LCDR GRACIE: I'm just thinking of this scenario: if the MRH-90 was grounded and no longer flying from July or August 2023, you wouldn't expect any testing of the 5.1 from that time in a simulator. My question is, if that's the case, would the currency of that testing be questionable because it hasn't been configured since that time? The testing was done - - -

30 GPCAPT JOINER: All I would say is that every time - - -

LCDR GRACIE: I should say, sir, the testing was done in June last year in the simulator, so you've got that period.

35 GPCAPT JOINER: The simulator, you should do an evaluation of the configuration of the simulation before relying upon it, always, right? So how representative is it of the real aircraft? And there are certain categories of simulators that aircraft use that have already pre-decided that for you, and they get certified. So, again, if there has been some testing done recently in a simulator to help inform the Inquiry, you do need to check the actual fidelity of the simulation and its configuration at the time to make sure that it matches what the system was during the accident.

40 LCDR GRACIE: Is that why you mentioned the words that "you need to do the end-to-end testing"? The simulator is the first ground test, for want

of a better word, and then you need to do the next series of testing to get to that end point.

5 GPCAPT JOINER: Well, yes. It's because simulators inevitably have some difficulty representing all of the envelope, and as a consequence you at least need to do those areas that the simulator can't do as part of your testing, and you rely on the simulators being accredited and certified so that there is regular representative sampling of the fidelity of that simulator. You kind of go, "Well, can't you certify it once and leave it alone?" The answer is, software continuously changes nowadays. As a
10 consequence, you need to have a routine ability to go and re-test and re-certify your systems that are software-dependent and software-intensive.

15 LCDR GRACIE: Thank you. There was some matter put to you by Counsel Assisting in relation to whether or not you would have expected the AATES report to have made its way through to DASA. Are you aware – and I'm sure you are, sir – you're aware of on the DASA website there's a DASA Safety Program, Policy and Guidance Portal – something
20 like that?

GPCAPT JOINER: I'm aware there is one. Yes.

LCDR GRACIE: Can I just read section 15.3 of that to you? It says:
25

*Defence aircraft indicating systems must conform to standards appropriate to the functions that the instrument or display will perform. Authority-recognised civil and military airworthiness codes prescribed as own requirements that provide a sound
30 foundation for the safe design of common Defence aircraft indicating systems, including those used as a primary flight reference. However, indicating systems that are in the early stages of technology development may be proposed for fitment to Defence aircraft to satisfy a capability need, and design requirements for such systems may not have been prescribed in
35 authority-recognised airworthiness codes.*

Breaking all that down, is that the trigger for the AATES report to have been sent to DASA?
40

GPCAPT JOINER: Yes.

COL STREIT: Sir, I just wish to raise a particular matter.

45 GPCAPT JOINER: I'm happy - - -

COL STREIT: Sorry, Group Captain.

GPCAPT JOINER: I'm happy to say yes.

5

COL STREIT: Context and timing is quite important in relation to this matter. What might exist on the DASA website now doesn't mean it existed in 2019, and that needs to be put to the witness.

10 MS McMURDO: Yes. Well, that's fair enough.

LCDR GRACIE: Assuming that was part of the DASA Policy and Guidance Principles back in 2020.

15 GPCAPT JOINER: It's a good principle. What it's simply saying is that new technologies may be proposed, and that they need to come forward to DASA to be assessed appropriately, right? The same principle applies, as you've just proposed – the same principle applies to concerns around safety. If you believe that a system isn't behaving as it was previously
20 thought to behave, or had assumed to be behaving, then you should take that forward to DASA.

It's the same principle that I was talking about earlier with the
25 Airworthiness Boards. They are a venue for people to put forward concerns about the continuing airworthiness of aircraft, and it would be wholly appropriate that the AATES report should have been tabled at an Airworthiness Board, or sent directly to DASA. Using that principle is perfectly reasonable. Don't forget, it's not just DASA, okay? AATES was an accountable unit to the Land Test and Evaluation Agency, and
30 under the Army T&E Policy it would be perfectly reasonable for that test report to have ended up on MAJGEN Blank Blank's desk in Army Headquarters, and she could have dealt with it appropriately.

LCDR GRACIE: Can I put this scenario to you, which again you'll be
35 very familiar with, but my understanding is that in testing and evaluation undertaken by CASA, one of the things that they do require is that the OEM – what is it – the Original Equipment Manufacturer provide CASA with flight test reports and other data necessary to demonstrate compliance with Flight Test Certification Standards, aircraft type changes. And, as
40 we've heard, this was identified by Airbus as a major change. In that scenario, can I put this to you? The evidence in relation to the flight controls imposed by AATES for the OPEVAL required, as one of the measures for treatment of the risk in relation to the off-axis ambiguity, for the provision of information from Airbus, which the evidence seems it
45 was provided, but also the German and French test reports.

Now, in August 2019 Army Aviation Command requested Airbus to provide that information, those three bits of information. They were not provided with the French test results, on the evidence that we've seen. They weren't provided with the German test results. They were provided with some information from Airbus. Now, that was a treatment control. Would you expect that OPEVAL to have required, if it was one of the treatment measures, to have had that information before doing the OPEVAL?

GPCAPT JOINER: I'd even go a step further back, and say that the DASA approval for the use of the TopOwl sight should not have been given without access to the flight test reports on which it was based. That's fundamental. There are two different levels of trust, I guess, within the airworthiness system. Some agencies, we will accept that they have certified something with a copy of the certificate, and not having the underpinning test reports. Others, we require them, and the European agencies have historically – we have required the delivery of the test reports in addition because quite often the systems are not tested to the same standards that you would expect of US systems, and secondly, it goes back to configuration, role and environment.

If we were using the aircraft in identical roles to the German military, then you would have an argument to say, "Okay, that's fine. Perhaps I don't need to read your flight test report," but we know that we use it in different ways, and so therefore we would need to read their report, and there would always be a Delta, which is the extra missions that we have that they don't use, which are part of the baseline that we have to re-test.

LCDR GRACIE: So when you said the Germans probably didn't test it, you meant test it for the purpose and environment in which the MRH was going to be utilised in Australia by 6 Avn?

GPCAPT JOINER: Yes, not in the entirety. Just those pieces that – where the roles are different, right, and where they're known to be different, that Delta should be front and centre of every Chief Engineer through life, because that's the piece that requires Australian re-test every time it occurs.

LCDR GRACIE: Thank you. I'll show you this Exhibit 107.

GPCAPT BRAUN: Is that the statement?

LCDR GRACIE: Yes. It's got an attachment to it, I think. I'm hoping. An email, or it's an extract of an email.

MS McMURDO: The statement of MAJ Peter Scullard.

LCDR GRACIE: Correct.

5

GPCAPT BRAUN: There's no attachment.

LCDR GRACIE: No, it has an extract within it then.

10

MS McMURDO: Just show it to him.

LCDR GRACIE: The actual email is probably in another statement. Could I show you – ma'am, it's paragraph 21 under subpara (b), and there's an email received on 7 June 2019. It has a part redacted, but the rest is not. Could I show you that? Just have a read of it to yourself.

15

GPCAPT JOINER: Read.

LCDR GRACIE: So in the context of the questions that I'll put, I just want you to make an assumption that the German test results, test plans, were not received by Army Aviation. Just assume that for me. And assume also, please, as the second matter that Army Aviation relied upon the content of that email to satisfy itself about the German MAA's test, or acceptance of the upgrade to 5.10 in those operating environments. What's your comment about that, please, sir?

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25

GPCAPT JOINER: So airworthiness relies on an approved organisation giving authoritative documents. An email from somebody is not authoritative. It's not objective quality evidence, and I guess that's what you are asking. We have made decisions in Defence on numerous occasions from, essentially, these sorts of things. One of the worst that is on an ANAO report concerns watercraft going to and from the LHD. We procured a certain sort of watercraft based off a General that visited and saw one cross a bay in Spain, and there was no post visit report, just the assertion that he saw it carry a tank, but we weren't sure of the configurations or anything.

30

35

And that's why we have preview T&E. Preview T&E is about if you're proposing to buy something new, you get out and you have a look from the Flight Test Organisation. So when Australia was purchasing the Largs Bay from the UK, we sent a team of 10 to the UK and gave it a thorough going over as a preview before we even signed on the dotted line for the \$100 million that we paid. That sort of preview T&E is what avoids this. It was like, yes, that's a great basis. Now, let's send a Flight Test Team to Germany to actually have a look and do some – a visit test

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program, and write up an authoritative account of the German military's use of the system, and how – and, of course, that would bring out CRE, and probably also get you exposure to a proper simulator with the system fitted to be able to do a confirmation.

5

LCDR GRACIE: So, again, to use the word I used before, that would be a trigger to do more, not an end in itself, that email?

GPCAPT JOINER: Yes, and that's just not a Keith Joiner opinion. That is a read the Senate Inquiry into Defence Procurement, 18 months in the making. Chapters 2 and 12 consistently say that the Military is being duped by off-the-shelf systems that they haven't done appropriate preview testing of. And so the term "preview T&E" came from – as an outcome of that Senate Inquiry, and is preserved in T&E Policy today, is to avoid assumptions about the quality of systems from – you know, the email is great. It's the follow-up as to where to next, preview test.

15

LCDR GRACIE: But to rely upon it would be, can I suggest, casual at best, and alarming at worst?

20

GPCAPT JOINER: Yes, it's not great. It's not objective quality evidence.

AVM HARLAND: Excuse me, LCDR Gracie.

25

LCDR GRACIE: Sorry, sir.

AVM HARLAND: Just on that testing where you do a preview, by our understanding, the Commonwealth test pilot had a look at it, at version 5.10, as had some staff from DOPAW, if not DOPAW themselves. Would that satisfy that preview requirement, or would it be something more formal where they test plan, which articulated a number of points you wanted to look at, and then a follow-up test report, or would just a visit to a simulator or a facility suffice and satisfy that requirement?

35

GPCAPT JOINER: So when we wrote the policy on preview test and evaluation, sir, we specifically tried to avoid people doing visits without understanding the configuration that they are being demonstrated and/or given an opportunity for early test on. So we do want to send qualified test personnel because they will make sure there is a test plan, and there is an assessment of the configuration, or system under test, and there will be a write-up that can then later be relied upon. And so preview T&E has to be – you have to be an accountable T&E unit to conduct preview T&E, and there would be an expectation there was a plan and a report as a result.

45

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AVM HARLAND: So it's a formal process, rather than a visit where you just go, "Actually, this looks fairly positive", but your expectation of what you're describing is that that formality would involve things like a flight test plan and a flight test report, and it would be based on what you were specifically looking at for the system under test.

GPCAPT JOINER: Yes, so preview T&E has got to be careful not to replace operational test, or developmental test, because it's pre-contract. It relies on access, and it is a "try before buy". So it has to focus on risk. So again, you know, most dangerous, most likely. You would want to have some exposure to, you know, what is the most dangerous that perhaps you've done in the German military with this system, and how did it go. Show me in the simulator. And then most likely would be okay, step me through a typical use of the system on a daily basis so I can get an appreciation for some of the fundamental inputs to capability that might be required if we were to bring this into Australian service. So that would be a typical preview T&E plan.

AVM HARLAND: So it's a formal process.

GPCAPT JOINER: Yes, and we did it with the Largs Bay, just as an example, and a lot of other systems, but using the example given, the most dangerous was that the engines would cut out in high sea state temperatures, and we actually made sure that the ship transferred to Australia via sea states where it wouldn't cut out, and we then had the system upgraded once it was in Australia. That's an example of just one little thing that was picked up during preview T&E. And I would suggest that if you were contemplating a new TopOwl sight, conducting preview would have been important.

AVM HARLAND: That's great. Thank you.

LCDR GRACIE: Thank you. One final thing, sir. CRE, you've mentioned configuration, role and environment, and its importance. I understand role. It might be a Special Ops role. Formation flying, low level, would that be role, r-o-l-e?

GPCAPT JOINER: Yes.

LCDR GRACIE: Environment – night, low visual cues. Something like that?

GPCAPT JOINER: Correct.

LCDR GRACIE: What actually is configuration? Is it the software itself, or is it the human interface? What is configuration in the context of the sort of things that AATES were testing in the OPEVAL?

5 GPCAPT JOINER: Yes. So at its most formal, it's an MRI, Master
Record Index, and that includes a software version description document,
or SVDD, to cover off on what are the software versions fitted. More
simply, in test it's if I'm being – for example, in a preview reviewing, I
10 I'm looking at versus the one that I have. So it's a formal assessment of
what is the software loaded, and what is the hardware, and are they
analogous, and how analogous are they.

15 LCDR GRACIE: Thank you. Thank you, sir, ma'am.

MS McMURDO: Thank you. Who is applying next?
Yes, LTCOL Healey.

20 **<CROSS-EXAMINATION BY LTCOL HEALEY**

LTCOL HEALEY: Thank you, Madam Chair. Sir, I am LTCOL David
25 Healey. I appear for BRIG Fenwick. Good afternoon, I think it is. You
had a question, I think, from the Air Vice in terms of TopOwl, and I think
the analogy was one of which, I think you said, if you're flying in high
altitude. Do you recall that conversation in terms of being able to look at
your main instruments?

30 GPCAPT JOINER: Not well, sorry.

LTCOL HEALEY: So the Air Vice was talking to you about TopOwl,
and it being an aid, or it being a primary display. Do you recall that?

35 GPCAPT JOINER: Yes, absolutely now.

LTCOL HEALEY: I think your response was if you were in high
altitude, for example, you might have more time to look at the Primary
Flight Display. Do you recall that now?

40 GPCAPT JOINER: That is correct.

LTCOL HEALEY: What sort of aircraft would you be flying in those
sort of circumstances?

45

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GPCAPT JOINER: Transport aircraft.

LTCOL HEALEY: So not a helicopter?

5 GPCAPT JOINER: Not a helicopter, no.

10 LTCOL HEALEY: Thank you. And then I think you went further to say that if you were flying at low altitude, I think 200 feet, in poor weather conditions, or words to that effect, in a helicopter, at night, in low cue environments, that it would be very difficult to stop looking at the Head-Up Display. Do you recall that?

GPCAPT JOINER: Correct. Yes.

15 LTCOL HEALEY: And you can accept this or not, but the Inquiry has heard from a number of witnesses that have said it's good practice when there's two pilots in an MRH-90 for one of them to have eyes out. Would you accept that?

20 GPCAPT JOINER: Absolutely.

LTCOL HEALEY: So you wouldn't expect - - -

25 GPCAPT JOINER: It would be common practice.

LTCOL HEALEY: Yes, common practice. So you wouldn't expect both pilots to have pure attention on the HMSD TopOwl?

30 GPCAPT JOINER: Correct.

LTCOL HEALEY: Thank you.

GPCAPT JOINER: The same with trucks, Army trucks are the same.

35 LTCOL HEALEY: And just on the Primary Flight Display, some evidence was given yesterday about the Standardisation Manual. You would be familiar with that, sir?

40 GPCAPT JOINER: Yes.

LTCOL HEALEY: In terms of TopOwl, can I just show the Group Captain a document? That's what I'm showing him.

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Now, sir, just a few particulars on that particular document. So on the front page you'll see some dates – 6 June 2022 is the original date of issue. Do you agree with that?

5 GPCAPT JOINER: Yes.

LTCOL HEALEY: And I think it says, "AL date", and maybe you could help me with that? So AL date 7 June 2023. Do you see that?

10 GPCAPT JOINER: Yes.

LTCOL HEALEY: Would you know what "AL" stands for?

15 GPCAPT JOINER: It's amendment list. So you amend your primary documents on a regular basis, so you would turn to the next page and it should tell you what are the amendments, and you would expect that between 22 June and – sorry, June '22 and June '23 there would be four amendments to that document in the amendment list.

20 LTCOL HEALEY: Just turning over that page, to Chapter 16, you'll see around about halfway down the page – can you see the description, "HMSD"?

25 GPCAPT JOINER: Yes.

LTCOL HEALEY: And it says that – "Official", yes. Okay. Could I just draw your attention to that? So just have a read of that, and that's – thank you, learned Counsel.

30 Can I just draw your attention to that particular paragraph, and get you to read it, and not repeat it, and just let me know when you're done?

GPCAPT JOINER: Yes, read.

35 LTCOL HEALEY: Now, reading that, do you interpret that to mean that the 5.10 is not to be used as a Primary Flight Display?

GPCAPT JOINER: Yes.

40 LTCOL HEALEY: Thank you.

MS McMURDO: So we might tender that now, do you think?

45 COL STREIT: I think so.

MS McMURDO: Yes.

LTCOL HEALEY: I know it's been a little bit of a battle, Madam Chair, but I tender that document.

5

MS McMURDO: It's an extract from the – from what?

LTCOL HEALEY: It is an extract from the Aircraft Standardisation Manual MRH-90, Australian Air Publication 7210.023/16.

10

MS McMURDO: That will be Exhibit 194. Does the extract have some numbers on it or something, or have you identified it sufficiently?

15

LTCOL HEALEY: That's what I've identified sufficiently, I think, your Honour.

MS McMURDO: Thank you.

20

**#EXHIBIT 194 - EXTRACT FROM THE AIRCRAFT
STANDARDISATION MANUAL MRH-90, AUSTRALIAN AIR
PUBLICATION 7210.023/16**

25

MS McMURDO: So are you finished with that document now?

LTCOL HEALEY: I am finished with that document, so that can be handed back.

30

AVM HARLAND: Does that document also contain the warning as at July '23 relating to the use of HMSD in an unusual attitude situation?

LTCOL HEALEY: Not that I can see, sir.

35

AVM HARLAND: Because we asked for that yesterday, if you recall?

LTCOL HEALEY: Yes, it's still something – I've been working on it with my learned friend, who is no longer in the room, and I understand that that's going to be tendered in the last sitting, that particular document.

40

MS McMURDO: Yes.

45

LTCOL HEALEY: There is just one other thing I'd like to take you to, sir, and, sorry, I was on my feet for a long time, but it's the statement from BRIG Fenwick, and it's Annex 23. Sorry, sir, to keep you waiting.

GPCAPT JOINER: No, you're right.

LTCOL HEALEY: Yes, if he can be just given that? Thank you.

5

GPCAPT JOINER: Thank you.

LTCOL HEALEY: So, sir, I aim to try and be quite brief, but take you through that particular document and ask you a number of questions, and you'll see that that is an Inspector Report from Comcare. Do you agree with that?

10

GPCAPT JOINER: Yes.

LTCOL HEALEY: And the background is that on 3 December 2021 Comcare received information alleging that MRH-90 Taipan multi-role helicopter is operating outside of certification basis. Can you see that?

15

GPCAPT JOINER: Yes.

20

LTCOL HEALEY: And namely, that the allegation claimed it was operating TopOwl, and the Forward-Looking Infrared system of MRH-90 in a manner that is exposing workers and other persons to unnecessary WHS risks. Do you agree with that?

25

GPCAPT JOINER: I agree.

LTCOL HEALEY: And you'll see the outcomes there at paragraph 4, that based on the information reviewed during the inspection, that Comcare didn't identify any non-compliance with WHS or WHS Regulations in respect to the scope of the inspection. Do you agree with that?

30

GPCAPT JOINER: Yes.

35

LTCOL HEALEY: If you turn the page, and I take you to paragraph 9 – are you there at that paragraph 9?

GPCAPT JOINER: Yes.

40

LTCOL HEALEY: You'll see that on 24 June 22 that the Comcare Inspector met with GPCAPT Dennis Tan, Royal Australian Air Force, Director of Flight Safety Bureau. Do you know who that is?

45

GPCAPT JOINER: Yes, I'm familiar with Dennis.

LTCOL HEALEY: And GPCAPT David Smith. Do you know who that is?

5 GPCAPT JOINER: Also, and your BRIG Fenwick as well. Yes.

LTCOL HEALEY: And do you agree that they voluntarily agreed to cooperate with the inspection?

10 GPCAPT JOINER: Yes.

LTCOL HEALEY: Thank you. If you look at paragraph 12, that's the title that says, "TopOwl and FLIR". So do you agree that TopOwl was part of that inspection?

15 GPCAPT JOINER: Yes.

LTCOL HEALEY: Thank you. And looking at the summary at paragraph 15, which is on the back page at page 4, and just noting that I think there was some evidence from you in relation to what sir was asking you about, whether some of these tests should have gone back to DASA. Do you agree with that?

20 GPCAPT JOINER: Yes, that's what I said.

LTCOL HEALEY: Have a look at paragraph 15, where it states:

I am satisfied the use of MRH-90, that TopOwl and FLIR were authorised by the relevant technical agencies.

30 Would you agree with that?

GPCAPT JOINER: Yes.

35 MS McMURDO: Well, you agree that that's what it states?

LTCOL HEALEY: Yes.

40 GPCAPT JOINER: I agree that's what it states.

LTCOL HEALEY: And I think just my follow-up question is – and it's a bit clumsy, and I apologise – but is there any regulatory power for a test to be – is there a compulsion for a particular test to be sent back to DASA when they've already approved the actual device?

45

GPCAPT JOINER: No.

LTCOL HEALEY: Thank you. They're my questions.

5 MS McMURDO: Thank you. Any other applications to cross-examine?

LTCOL HEALEY: You can hand that back, yes. Thank you.

10 MS McMURDO: Yes, Ms Musgrove.

COL STREIT: Might I have that exhibit, please?

15 MS MUSGROVE: Chair, I'd actually like to reserve my position in relation to this witness, please. There's been a number of questions asked of him, and answers given, that are well outside the bounds of his statement, and I'd like time to review the transcript and to obtain instructions as to any further cross-examination of this witness.

20 MS McMURDO: Yes, I don't know that it's gone outside his statement actually, most of his evidence.

25 MS MUSGROVE: In my submission, there have been a number of propositions that perhaps give a characterisation of the evidence that we would like time to review and consider as to whether or not we need to recall this witness for cross-examination.

MS McMURDO: Did you want to be heard on that, COL Streit?

30 COL STREIT: Thank you, Ms McMurdo. There's always an issue or a tension that arises when a witness is asked questions about all kinds of things, and I've said this before, statements are not an encyclopaedia of everything they're going to say. There's a level of elasticity between what is related, or directly/indirectly related, to the evidence they've given in their statement. And where something completely new has come about, 35 it's a challenge and an issue that arises with all witnesses.

40 All Counsel representing should take fulsome instructions of all matters relevant to the contents of a particular statement. They should ask those questions that sit within their instructions. If the Commonwealth are in the capacity to do that, they do that now.

45 If they say there are other matters of which I'm not aware, and my learned friend didn't articulate to you, that requires further instructions, then the usual process is they ask what they need to ask now, and then they reserve their position at a later stage and confirm with Counsel Assisting whether

there's a need to bring an application to recall a witness, as opposed to not asking the witness any questions, even based on their current instructions, unless, of course, they never had any questions based on his statement. In that way, if no issue arises, the witness doesn't need to be recalled because the Commonwealth has already put those matters they're going to put to the witness in any event.

So I ask that that be done, but if they did have no questions on his statement and they want to reserve their position in relation to the new things they think he has said, then I don't oppose that, and they can bring an application in the ordinary way.

MS McMURDO: Do you have any questions today, Ms Musgrove?

15

<CROSS-EXAMINATION BY MS MUSGROVE

MS MUSGROVE: Sir, can you please articulate the information that you had before you in writing your article about the decision-making process for TopOwl 5.10?

GPCAPT JOINER: So the article was based off a review of four testimonies to this Inquiry. So I read through the three test pilots', and the AIRCDRE Medved DAFS testimonies, but that's all, and it clearly says that that's – a limitation of the article is that it only is based on four testimonies.

MS MUSGROVE: And for your statement, what material did you review in preparing your statement?

GPCAPT JOINER: So moving to the statement, I took a lot more time at looking at my experience of modifications of aircraft, and there was a number of questions in there that were not in the article that I was asked under the section 23 to address, such as the formation of AATES, and yes, definitions for T&E, which clearly in an IT journal, international T&E association, you don't have to have definitions of T&E. The readership is expected to know test and evaluation. So the witness statement, I had to refer to the Defence T&E Manual, plus a whole lot more of my experience of modification of aircraft.

MS MUSGROVE: In terms of any evidence that's been provided to this Inquiry in relation to the certification process for version 5.10, over and above the four witness testimonies that you saw from the public hearings,

did you review any other material in preparation for your witness statement?

5 GPCAPT JOINER: So in terms of today's testimony clearly I was provided some articles, such as the latest Standards Manual for the aircraft, if that's what you are referring to?

10 MS MUSGROVE: No. For the purposes of your statement, preparing your statement, over and above the four witness testimonies that you relied on for your article, is there any other evidence that's before this Inquiry that you relied on for the purposes of your statement preparation?

15 GPCAPT JOINER: There was one additional testimony that I had a look at, and it concerned the Chief Engineer. I noted it was not the Chief Engineer from 2019, but one posted in in 2020 that you reviewed in not the last round, but the round before that. So I did review one more testimony, looking to see whether you had yet cross-examined the Chief Engineer from this particular period for the introduction of the TopOwl.

20 MS MUSGROVE: I'd like to preserve my position, please, in relation to recalling the witness.

25 MS McMURDO: Well, it may be that we are able to – if we do need to hear from you further, we might be able to deal with it by way of videolink.

MS MUSGROVE: Thank you.

30 MS McMURDO: Seeing as that would be more convenient for you, I'm sure.

GPCAPT JOINER: Certainly, ma'am. Thank you.

35 MS McMURDO: Yes. Any other applications to cross-examine? No. All right, thank you.

Well, you're free to go. Thank you very much.

40 COL STREIT: There's just one matter I wish to raise.

MS McMURDO: Yes, sorry, re-examination.

<RE-EXAMINATION BY COL STREIT

5 COL STREIT: You were asked by my learned friend – look, perhaps I
can deal with it with my learned friend. I won't ask this witness that
question.

MS McMURDO: All right then.

10 COL STREIT: Thank you.

MS McMURDO: So thank you very much for your evidence to the
Inquiry, it's greatly valued and appreciated. So even experienced test and
15 evaluation experts like you can sometimes be a little fazed by giving
evidence before an Inquiry, and if you are, there is plenty of assistance
available, and you shouldn't hesitate to take advantage of it.

GPCAPT JOINER: Thank you very much, ma'am.

20 MS McMURDO: Thank you, and the Inquiry will be in touch if you are
required further. Thank you.

GPCAPT JOINER: Thank you.

25

<WITNESS WITHDREW

MS McMURDO: We will adjourn until 2 o'clock. Thank you.

30

HEARING ADJOURNED

HEARING RESUMED

5 MS McMURDO: Yes, COL Streit.

COL STREIT: Thank you, Ms McMurdo. Just very briefly, I've been informed that some Counsel representing at a point in time today, subject to the length of the witness's evidence, may respectfully pack up and depart the hearing. That will be at their discretion.

10 MS McMURDO: That's fine. Absolutely, that's fine.

COL STREIT: They were just concerned to ensure that you understood that that was not any disrespect.

15 MS McMURDO: No, that's fine.

UNIDENTIFIED SPEAKER: I'm staying.

20 COL STREIT: Ms McMurdo, and AVM Harland, can I call Mr Joseph Anthony Rule?

25 <MR JOSEPH ANTHONY RULE, Affirmed

<EXAMINATION-IN-CHIEF BY COL STREIT

30 MS McMURDO: Mr Rule, let me know if you want a break at any time. Thank you.

MR RULE: I will. Thank you, Chair.

35 MS McMURDO: Yes, COL Streit.

COL STREIT: I'll give you a moment, Mr Rule, to do the important task of having a water.

40 MR RULE: Thank you.

COL STREIT: Mr Rule, can you please state your full name?

45 MR RULE: My full name is Joseph Anthony Rule.

COL STREIT: And your current occupation?

MR RULE: My current occupation is National Manager Flight Standards Branch at the Civil Aviation Safety Authority.

5

COL STREIT: I understand from your statement, which I'll show to you shortly, but you are also an admitted legal practitioner. Is that correct?

MR RULE: I am.

10

COL STREIT: Do you maintain a current practising certificate in that regard?

MR RULE: I do.

15

COL STREIT: Does that mean you are a solicitor practising in the Australian Capital Territory?

MR RULE: I have the unrestricted right to practise as a Government Solicitor in the ACT, but I'm not obviously working - - -

20

COL STREIT: You're not presently in a legal role?

MR RULE: I'm not working in a capacity where I'm practising. That's right.

25

COL STREIT: Thank you. Now, Mr Rule, just some preliminary matters, please. You were issued a section 23 Notice by the Inquiry to be here today?

30

MR RULE: I was.

COL STREIT: And that section 23 Notice contained a series of questions for you to answer in the form of a statement; is that correct?

35

MR RULE: It did, yes.

COL STREIT: Together with the section 23 Notice, was there also a Frequently Asked Questions Guide for Witnesses?

40

MR RULE: There was.

COL STREIT: A Privacy Notice?

45

MR RULE: Yes.

COL STREIT: A copy of an Instrument of Appointment of an Assistant IGADF?

5 MR RULE: Yes, there was.

COL STREIT: And a copy of an extract of the Inquiry's Directions?

10 MR RULE: Yes, there was.

COL STREIT: Thank you. Now, just in relation to your statement, can I show you a document?

15 MR RULE: Thank you.

COL STREIT: Just take a moment, Mr Rule, to satisfy yourself as to the contents of what you have just been provided. Thank you. The document you have in front of you, is that a copy of your statement to this Inquiry?

20 MR RULE: It is, yes.

COL STREIT: Does it comprise 14 numbered pages, and 75 paragraphs?

25 MR RULE: It does, yes.

COL STREIT: Is there an enclosure, or attachment rather, to your statement which is titled, "*Civil Aviation Act 1988*, Statement of Expectations for the Civil Aviation Safety Authority from 1 July 2023 to 30 June 2025"?

30 MR RULE: Yes, there is.

COL STREIT: And that comprises four pages; is that right?

35 MR RULE: Yes, that's correct.

COL STREIT: Did you sign your statement digitally on 28 March 2025?

40 MR RULE: I did.

COL STREIT: Are there any amendments or additions you wish to make to your statement at this stage?

45 MR RULE: Just a couple of very brief ones.

COL STREIT: Certainly.

MR RULE: I'll just turn up the pages.

5 COL STREIT: Perhaps if the witness could be provided a pen,
please? Which page?

MR RULE: Yes, so paragraph 65 on page 12 of the statement.

10 COL STREIT: Yes.

MR RULE: In answer to the question regarding mandatory training
requirements for fatigue management, I say in the first sentence of that
paragraph:

15 *The training is mandatory for operators operating under
Appendices 1 to 6 of the relevant civil aviation order.*

It should be "Appendices 1 to 7".

20 COL STREIT: 1 to 7. Could you make that amendment, please, and just
initial on your statement?

MR RULE: I can.

25 COL STREIT: Is there anything else?

MR RULE: No other changes.

30 COL STREIT: Thank you. Just rest assured that if, during the course of
your evidence, you identify another amendment, typographical error, then
we will just correct it at that point on the statement before you.
Ms McMurdo, I tender the statement of Mr Joseph Rule of 28 March
2025, with the enclosure as he has identified.

35 MS McMURDO: Exhibit 195.

#EXHIBIT 195 - STATEMENT OF MR RULE AND ENCLOSURE

40 COL STREIT: Mr Rule, that statement will stay before you, and what I
propose to do is take you through your statement in a narrative form and
not address each and every aspect of your statement but some matters, and
45 I will draw your attention to those matters then ask some questions. First,

just dealing with your background and qualifications. Before I do that, can I ask you some questions in relation to the formulation of your statement? You say at paragraph 2, you make this statement based on facts within your own knowledge and belief, save for where you indicate otherwise. You say that:

10 *Where there are statements of fact or opinions made by me, I say that those facts and opinions are true and correct to the best of my knowledge and belief. And where I have relied upon information provided to me, I have identified the source of that information and believe it to be true.*

That's correct?

15 MR RULE: That's correct.

COL STREIT: And obviously in the preparation of your statement, and noting your role, of which we'll have some more information, but you have a number of staff that report to you, and you have been able to call upon their expertise in their areas to provide you certain information. Is that right?

25 MR RULE: Some information provided by my staff, but other information provided by staff in other branches and divisions in the organisation who don't report to me.

COL STREIT: But all members that you've had regard to are members of CASA?

30 MR RULE: Yes, so all staff employed in business areas within CASA that have responsibility for administering the issues that were the subject of the questions.

35 COL STREIT: Now, just in relation to your background, looking to paragraph 3, you are employed by the Civil Aviation Safety Authority as the National Manager Flight Standards Branch, having commenced the position in 2023. You have principal responsibilities. Your principal responsibility is to lead and manage a multi-disciplined team of subject matter experts, and then you list at paragraphs 3(a) to (f), and (g) over the page, those particular areas. Is that correct?

MR RULE: That's correct.

45 COL STREIT: Now, in particular, having regard to paragraph 3(d), you identify that one of the teams of subject matter experts you are responsible

5 for is the team that deals with ensuring that the regulatory framework is compliant with Australia's obligations under the Convention on International Civil Aviation, which is the Chicago Convention, administered by the International Civil Aviation Organisation. Is that right?

MR RULE: That's right.

10 COL STREIT: Also at 3(e), one of the areas is conducting elements of CASA's engagement with the ICAO on the development of international standards for the conduct of civil aviation activities. Is that right?

MR RULE: That's right.

15 COL STREIT: At (f), liaising with foreign aviation regulators on international developments in safety regulation.

MR RULE: Yes, that's right.

20 COL STREIT: We'll come to it a little later, but in relation to liaising with other foreign aviation regulatory authorities, there is a mechanism, isn't there, for CASA to rely, to some extent, on Military certification – sorry, certification of type for aircraft determined by other regulatory authorities that CASA recognises?

25 MR RULE: Yes. So civilian type certification activities performed by certain recognised countries are effectively automatically recognised.

30 COL STREIT: If I slip between military and civilian, please forgive me as there has been a lot of Military acronyms, but my questions are in relation to civilian aviation. Thank you. At paragraph 4 on page 2, you set out your previous roles in CASA, including being the last legal role you had was Principal Lawyer, Legal Branch, Legal Services Group from February 2007 until April 2010. That's correct?

35 MR RULE: The last legal role I had was Manager Litigation and Investigations.

40 COL STREIT: Apologies, I'm starting at the wrong end. The last legal role you had was Manager Litigation Investigation and Enforcement Branch, Legal International Regulatory Affairs Division from July 2016 until February 2023.

45 MR RULE: That's right.

COL STREIT: Then you moved from that role to your current role; is that right?

MR RULE: I did.

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COL STREIT: You have a Bachelor of Arts and a Bachelor of Laws degree conferred by the Australian National University, and a Graduate Diploma in Legal Practice conferred by Australian National University.

10 MR RULE: That's right.

COL STREIT: Now, in relation to how you have structured your statement and responses to the questions appearing on page 2 and onwards, you set out the question you were asked, and then the information underneath comprises your evidence. Is that right?

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MR RULE: That's correct.

COL STREIT: Just in relation to question 3, which is one of only a couple of questions I have, CASA, you say at para 7 is a Statutory Authority established as a Body Corporate under section 8 of the *Civil Aviation Act 1988*. Just can you assist the Inquiry, indicate what is the effect of CASA being a Statutory Authority?

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MR RULE: Well, it means that it has a separate legal existence from the Commonwealth, so it is not an emanation of the Commonwealth, as it were. It is a separate and distinct legal entity in its own right.

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COL STREIT: Does that provide it a level of independence from other organisations and institutions?

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MR RULE: It gives it, I would say, more freedom of action than agencies that don't have that status.

COL STREIT: Does the Act, that is, the *Civil Aviation Act*, or the CAA as you've abbreviated it, essentially establishes the framework for CASA, including its powers?

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MR RULE: It does.

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COL STREIT: As a Statutory Authority, there's also the existence of the Civil Aviation Regulations.

MR RULE: That's right.

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COL STREIT: And powers contained in both the Act and the Regulations permit CASA to issue various orders and publications as part of its monitoring of the Civil Aviation Safety Framework.

5 MR RULE: Yes, that's right.

COL STREIT: Now, at paragraph 13 you say:

10 *The Minister has only limited powers in relation to the management and operation of CASA.*

The first question, which Minister would we be – not by necessarily name, but by position?

15 MR RULE: Well, the Minister for Transport is the Minister who is responsible for the portfolio agency, the senior Minister.

20 COL STREIT: Thank you. And you identify at paragraphs 13 and 14 that the Minister for Transport has certain powers. I take it they're provided under the *Civil Aviation Act*.

MR RULE: They are.

25 COL STREIT: When the Minister, at paragraph 15, decides to ask CASA to do something, it's generally in the form of a direction under section 12A of the *Civil Aviation Act* in the form of a Statement of Expectations. Is that correct?

30 MR RULE: That's correct.

COL STREIT: And by reference to the enclosure that you have attached to your statement, is that an example of a Statement of Expectations?

35 MR RULE: It is. That's the Statement of Expectations that is presently in force for CASA.

40 COL STREIT: When a Statement of Expectations is brought into existence by the Minister, does that in and of itself substitute whatever the Statement of Expectations was previously?

MR RULE: Yes. So the previous Statement of Expectations is overtaken by the new Ministerial Statement.

45 COL STREIT: Now, at 17 of your statement, in relation to the scope of the Civil Aviation Safety Regulations you identify that CASA is in the

final phases of a regulatory reform program to consolidate the relevant regulatory requirements into one set of regulations, the Civil Aviation Safety Regulations. Is that right?

5 MR RULE: That's correct.

COL STREIT: You set out in paragraphs 17(h), (i) and onwards, that:

10 *In combination, the Civil Aviation Regulation and the Civil Aviation Safety Regulations, set out the detailed requirements which ensure the safe conduct of civil air operations in Australia, including but not limited to –*

and then you set out a list from (h) through to (t). That's right?

15 MR RULE: That's right.

COL STREIT: Now, on pages 4 and 5 you set out matters concerning the structure of aviation regulations, moving into CASA oversight of civil aviation. Is that right?

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MR RULE: That's right.

COL STREIT: Can I just ask in relation to question 4, where the question was:

25

Explain the CASA process for oversight of civil aviation.

You say at 22:

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CASA takes an integrated approach to the conduct of comprehensive industry oversight through six elements of its National Oversight Plan.

35 You then list those elements. In relation to monitoring – or perhaps the word you choose in your evidence is “surveillance” – but in relation to monitoring of the users of – well, if we just take the airlines, for example, as the simple, straightforward – in relation to CASA's monitoring of the airlines and what the airlines do, ensuring compliance with CASA's Safety Framework, is there a process by which CASA does audits of an

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airline to ensure the airline is compliant in its own regulatory structures?

MR RULE: Yes, there is.

45 COL STREIT: In broad compass, can you just assist the Inquiry to

understand how that process is performed?

MR RULE: Yes. Okay. So our legislative framework sets or
5 establishes a safety continuum for the conduct of different regulated
activities, and it sets different levels of safety assurance for the
performance of different kinds of aviation activity. So the lowest levels of
safety assurance are for private and recreational activities. The next level
is what we call aerial work activities. So that's specialised use of an
10 aircraft to perform a task, such as aerial firefighting, or aerial survey. And
then the highest level of safety is reserved for commercial passenger and
cargo-carrying transport operations.

And essentially the principles of CASA's audit program are structured
15 around that risk continuum, so obviously we spend most of our time
looking closely at the area where we've got the least risk tolerance. So
we're spending the majority of our time looking very closely at
commercial air transport operations, and there's sort of a cascading level
of oversight down through that regulatory continuum.

20 COL STREIT: So in terms of conducting an audit of an airline – I won't
identify any particular airline, but a major airline in this country, for
example – would that mean an audit would see CASA staff go to the
airline office, head office, or a regional office for that matter, and simply
25 go through and audit compliance in relation to their Standard Operating
Procedures against CASA's requirements?

MR RULE: Yes. So there's a number of system elements that our
operators are required to have in place, and generally the auditing program
30 is designed to ensure that CASA is looking at each of those system
elements for each operator over a defined period of time, so that within
that defined period of time we've looked at each system element, and
we've assured ourselves that that operator is operating compliantly.

35 COL STREIT: Is the operator under a legal obligation to permit CASA
access to its records for the purposes of assurance and compliance?

MR RULE: Yes. So CASA has powers to require operators to produce
records related to its activities, and it has powers to access facilities and
40 locations where aviation activities are taking place.

COL STREIT: And the outcome of an audit, does it generate a report by
CASA back to the airline in relation to the success or otherwise of the
audit, and in relation to the particular matters that were examined?

MR RULE: Yes. So if we take what I describe as a continuation surveillance event, an audit of the operator's activities, that would involve a CASA team going out to a defined location, depending on what system scope they're wanting to look at with the operator, engaging with the operational staff of the operator to review whatever documentation they need to see, to ask whatever questions they need to ask, and then coming back and writing up a formal report of the findings of that particular auditing event.

COL STREIT: If CASA had within its audit program a plan to visit a particular airline at a particular time in a six-month window, for example, CASA contacted that airline and said, "We're intending to visit your premises at this time. We'll send you the paperwork", and so on, if the airline said to CASA, "Look, we're all a bit too busy at the moment. Can you come back in a couple of months' time?", what would CASA's response be in that regard?

MR RULE: It would depend on the situation. Scheduled surveillance is re-scheduled and delayed fairly regularly for a range of different reasons, and generally CASA is quite accommodating of operator commitments in that regard. But if it was a situation where there was a critical need for CASA to obtain access to the operator's premises, or to perform some sort of safety auditing activity, then obviously CASA's willingness to delay that necessary activity would be much less.

COL STREIT: If there is an aviation safety incident involving an airline, does that lead to a review of CASA's audit program as to whether or not CASA might target that particular airline to look at that particular safety matter, even though the ATSB might be doing its own investigation into something?

MR RULE: Look, I can't say that that happens in the case of every, single incident or accident, but I do know that the occurrence of an accident, in particular, is generally a catalyst for CASA to go and have a look at the operator who has been conducting the operations in which the accident occurred.

COL STREIT: So regardless of the outcome of the aircraft accident, an aircraft accident generates a heightened level of awareness for CASA to then go and conduct an audit of that particular airline operator.

MR RULE: Yes. Well, certainly it would be a catalyst for CASA to seriously consider whether it needs to or not, yes.

COL STREIT: And, of course, I take it that one of the factors that would be in contemplation at that time by CASA, would it, is whether or not such audit might impact what ATSB is doing?

5 MR RULE: Yes.

COL STREIT: And in terms of such an audit, and what ATSB is doing, if there was a potential overlap of those matters, would the ATSB take precedence?

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MR RULE: We have working arrangements with the ATSB, as I have explained later in the statement, to help us to work through those sorts of issues. So where there's a need for CASA to obtain records or information that the ATSB would normally be looking to acquire during their investigation, there's a process for us to work with the ATSB to, as far as is possible in a given situation, to arrange for CASA to have access to what it needs to see before the ATSB acquires, using its powers, whatever material it needs. Yes.

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20 COL STREIT: Is the answer really this: in an aviation accident, for CASA there's a heightened level of the potential for scrutiny on what an airline is doing, but that will be tempered by other things, including what the ATSB is doing and what the particular issue might be?

25 MR RULE: That's correct.

COL STREIT: You explain on page 6, at the top, subpara 22(f), you say:

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Resolution of Safety Findings: The implementation of appropriate corrective actions to identify non-compliance identified during surveillance, and where needed, utilising CASA's enforcement-related powers to enforce compliance with safety obligations, or remove them from the industry. Participants who demonstrate an unwillingness or inability to comply with their safety regulations - - -

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I perhaps have read that out of context, but can you just explain in terms of compliance – sorry, in terms of resolution of safety findings, what are you really saying there in (f)?

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MR RULE: Right. So if we go back to that auditing process that I was describing, and the audit report that comes out of it, for a larger systems audit there'd be a formal report, and if there were findings that the operator was non-compliant with regulatory obligations, or with the published requirements of their own operations manuals, then there would

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be a safety finding issued by CASA as part of the audit report, and the operator would be required to essentially explain to CASA how it was going to ensure that that kind of non-compliance didn't occur in the future.

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COL STREIT: Does it mean that the severity of the non-compliance will, at first instance, determine what CASA's response might be? Is that correct?

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MR RULE: Yes, that's right.

COL STREIT: So for non-compliance findings of less seriousness, there may be a window of opportunity for the airline to rectify that matter and explain to CASA, or report back to CASA it's been done. Correct?

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MR RULE: Yes, and that is the usual process.

COL STREIT: The usual process.

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MR RULE: The operator has that window of time in which to examine the finding, explain what's occurred, and explain what they're going to do about it.

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COL STREIT: And for more serious non-compliance findings, might that lead to more stringent activity by CASA to enforce what's required?

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MR RULE: Yes. So CASA has the ability – well, we have an administrative process within the auditing arrangements to issue what we call a safety alert, and that relates to a non-compliance which is assessed to have serious and potentially immediate safety implications, and it expresses an expectation that the operator will take immediate action to address the non-compliance.

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COL STREIT: You set out, in answer to question 5 on pages 6 and 7, matters concerning implementation and compliance. That's right?

MR RULE: That's right.

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COL STREIT: You say at 24 that:

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The legislative framework contemplates that operators will ensure compliance with the legislative obligations by ensuring they can establish and maintain appropriate organisational systems of control. This can be discerned from the fact that the various regulatory criteria for the grant of authorisation

5 *permitting the conduct of regulated activities under the civil aviation framework are all heavily focussed on operations having appropriate organisational structures in place to ensure that their authorised activities will be conducted safely, and in accordance with regulatory requirements.*

Is that right?

10 MR RULE: That's right.

COL STREIT: So the important feature of what you're saying at 24, is it, is essentially part of the assurance process that CASA goes through is to assure itself that an organisation has the appropriate resources set aside to comply with what's required?

15 MR RULE: Correct.

COL STREIT: Because even with all the best intentions in the world, without appropriate resources it's likely to lead to non-compliance.

20 MR RULE: Correct. Yes, so those organisational elements that I've identified there are some of the system elements that CASA looks at when it goes and does its auditing of operators.

25 COL STREIT: So in some ways, is it the case of ensuring an organisation has sufficient resources to perform its regulatory requirements. Even in circumstances where they might be saying they do, by CASA identifying that they don't, essentially saves the organisation from themselves.

30 MR RULE: That can and has occurred, yes.

COL STREIT: Without breaching any confidentiality, are you able to provide the Inquiry an example about where that has occurred?

35 MR RULE: Look, not a specific example, but what I can say is that in the context of when that happens, it tends to happen when you see an organisation that is rapidly expanding, and it may think that it is keeping up in terms of its internal governance and system control. But CASA auditing will often reveal that that's not necessarily the case, and that normally emerges through levels of non-compliance that are found in an audit, which can then be traced back to people not having enough resources to dedicate to compliance assurance, for instance, within the organisation.

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COL STREIT: Thank you. Just turning to question 6, you deal with a question about how does CASA ensure compliance with mandatory requirements of the regulations, and you identify at paragraph 28:

5 *CASA uses the different elements of its regulatory capability in an integrated way to ensure that aviation industry participants comply with the mandatory requirements.*

10 You set out the key elements of that capability in (a) through to (e), inclusive. Can I turn to 28(e) briefly, where you identify engaging in enforcement activities, and you set out points (i) and (ii). At (ii), you say:

15 *detering non-compliance by issuing administrative fines, Aviation Infringement Notices and, in appropriate cases, referring participants for consideration of criminal prosecution by the Commonwealth Director of Public Prosecutions.*

Is that correct?

20 MR RULE: That's correct.

COL STREIT: So in relation to non-compliance, that's a reference to non-compliance with either the *Civil Aviation Act*, the Regulations, or a particular order or direction that's been issued by CASA?

25 MR RULE: That's right.

COL STREIT: The issuing of administrative fines, Aviation Infringement Notices, does the power to issue an Aviation Infringement Notice sit within CASA itself?

30 MR RULE: It does.

COL STREIT: And is there a separate part within CASA that essentially manages that process?

35 MR RULE: Yes, there is.

COL STREIT: If the recipient of such an administrative process wished to challenge that process, then what mechanisms does the regulatory framework provide?

40 MR RULE: So the recipient of an AIN – to use the acronym – has the option to ask CASA to withdraw it, and that effectively allows them to try and convince CASA that the AIN has not been properly issued, so there's

insufficient evidence to support a finding of breach. If CASA doesn't withdraw the AIN, then the recipient has the obligation of – not the obligation – the opportunity or the options of either paying the AIN or taking the matter to Court and challenging it in Court.

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COL STREIT: And challenging a matter in Court, would that be through – well, is there jurisdiction in the Administrative Review Tribunal to deal with CASA matters, or do you go off to judicial review in the Federal Court?

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MR RULE: So for an Aviation Infringement Notice, that is an Infringement Notice that is focussed on the commission of a criminal offence.

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COL STREIT: I see.

MR RULE: So it's similar to a driving infringement where you get the Infringement Notice. If you pay it, then you receive certain demerit points against your licence, but your criminal liability in respect of that offence is discharged. So if you decide not to pay the fine, then CASA briefs the matter to the Commonwealth Director of Public Prosecutions, who then commences a prosecution in the relevant State Court.

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COL STREIT: State Court exercising Federal jurisdiction.

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MR RULE: Correct.

COL STREIT: Would that be the Local Court equivalent in each state and territory?

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MR RULE: Generally, the Local Court for the summary offences.

COL STREIT: And the summary offences, are you able to say is it simply limited to fines, or does it extend to potential imprisonment?

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MR RULE: No. So we can only issue an Aviation Infringement Notice for an offence against the regulations, and that's an offence that has a maximum penalty of 50 – I think it's 50 penalty units. So not for indictable offences under the Act.

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COL STREIT: So whatever the penalty unit is at the relevant time, maximum times 50 of that amount?

MR RULE: Yes. So the Aviation Infringement Notice allows the recipient to pay a lesser penalty than what the maximum fine would be.

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COL STREIT: Now, on page 7, at paragraph 29 onwards, you deal with how the regulation is reviewed and updated. That evidence is there for the Inquiry to consider. Can I take you to page 9, paragraph 39, where we deal with type certification? You were asked at question 8 to explain the type certification process, and the procedure for evaluation and approval of aircraft type design and changes to approved type design. Do you see that, your responses.

MR RULE: I do.

COL STREIT: Now, at paragraph 41 you say:

Civil type certification requires the applicant, Original Equipment Manufacturer, to show compliance to all Airworthiness Certification Standards applicable to the aircraft type design or changes to the approved type design which is undergoing certification. CASA, or an approved delegate of CASA –

I pause there. In terms of a delegate of CASA, who would that be? Who could that be?

MR RULE: So the legislation allows CASA to delegate certain powers under the legislation to people who are not employed within CASA, including people who are employed in the aviation industry. So there are a number of delegates who are employed in the aviation industry who have certain powers to approve modification to design approvals under the legislation.

COL STREIT: I'll continue the sentence by starting it again so it doesn't lose sense.

CASA, or an appointed delegate of CASA, is required to agree the applicable Certification Standards and then make findings that the applicant/OEM has satisfactorily demonstrated compliance to these Standards. Issue papers are raised for unique design features that are not covered by existing Airworthiness Certification Standards. Civil type certification does not allow the transfer of certification risk non-compliance to operators via the use of issue papers.

What I have read is correct?

MR RULE: That's correct.

COL STREIT: At 42 you say:

5 *CASA delegates for aircraft certification are only authorised to make approvals within scope of their approval, and generally only for changes classified as minor to the approved type design. Only CASA can issue a type certificate for new aircraft type, or supplemental type certificate for a major change to aircraft type.*

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Are you able to describe – and if not, if it’s beyond your experience or knowledge, say so – but are you able to describe what is a major change?

15 MR RULE: So a major change is a change that will have an appreciable effect on the weight, the balance, the structural strength, the operational characteristics, the reliability, or any other characteristic which may affect the airworthiness of the aircraft. That is - - -

20 COL STREIT: Does that incorporate “may affect the safe operation of the aircraft”?

25 MR RULE: No, so – well, I think what I’ve recited to you there is pretty much word-for-word the definition of “major change” in Part 21 of the Civil Aviation Safety Regulations. So it doesn’t use - - -

COL STREIT: Specifically say “safe”.

30 MR RULE: - - - the words “maintain the operational safety of the aircraft”. But each of those elements that I have referred to are critical to ensuring the safe operation of aircraft.

35 COL STREIT: So if we wanted to understand what airworthiness means in the context of your response, we would need to look at the Act or the Regulations?

MR RULE: The Regulations, yes.

COL STREIT: Turning to page 10, question 44, you were asked:

40 *Does CASA rely upon certification by foreign regulators?*

Just coming back to a point we started your evidence with, you say at 44:

45 *CASA does rely on civil type certification carried out by the regulators of recognised foreign countries.*

You go on to describe the recognised countries: Canada, France, Germany, the Netherlands, New Zealand, United Kingdom, United States and the European Union. That's correct?

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MR RULE: That's correct.

COL STREIT: You say:

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For these countries, CASA follows a type acceptance process, which essentially ensures the provision of certification data necessary for CASA to perform continued operational safety responsibilities of these aircraft as they are registered in Australia.

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MR RULE: That's right.

COL STREIT: And at 45 you set out a different process in relation to all other countries.

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MR RULE: Yes, that's right.

COL STREIT: Turning to question 10, you were asked:

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Does CASA undertake its own flight testing and evaluation?

You say at 47:

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CASA does undertake flight testing and evaluation as required for certification of an aircraft type design or changes to the approved type design; however, it is the responsibility of the applicant/OEM to first make all flight tests that CASA considers are necessary in accordance with a Flight Test Plan that has been agreed by CASA, and then provide CASA with flight test reports and associated data that demonstrates compliance with Flight Test Certification Standards.

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MR RULE: That's right.

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COL STREIT: So you go on to say:

Once CASA has received this flight test documentation, then CASA would conduct, or witness, flight test activities to the extent necessary to find compliance to the applicable Certification Standards.

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MR RULE: That's right.

5 COL STREIT: So Flight Test Organisations, or the flight test report completed by a Flight Test Organisation, is the Inquiry to understand is critical information for CASA to consider in relation to evaluating the certification of an aircraft type design or change to that aircraft type design?

10 MR RULE: It is.

COL STREIT: And if a Flight Test Organisation that – I'll start again. If, upon application by an applicant or Original Aircraft Manufacturer, even if it provided its own flight test reports, once you say CASA has received the flight test documentation CASA would conduct, or witness, flight test activities. I pause there. So if CASA became aware of or witnessed a flight test activity which produced a report that identified an unacceptable risk to flight safety, that would be something critical, would it not, to CASA's ultimate consideration as to whether or not to approve certification of an aircraft type design or change to the aircraft type design?

MR RULE: Yes, it would be.

25 COL STREIT: It may be that the unacceptable risk can be addressed at a later stage by some change, but at a prima facie level, first instance, is just unavoidable. CASA would have regard to that matter?

MR RULE: Yes. So in the civil system we don't tend to talk about unacceptable risk. The question is whether the results of the flight test show that the design, or the design change, conforms to the requirements of the applicable Airworthiness Standard, and they either do or they don't. If it passes, then obviously CASA will then be satisfied to move to the next stage of the approval process. If it fails, then the approval can't be given until the proponent has gone away and made whatever changes are necessary to ensure that the design change, or the design, can meet and show compliance to the Airworthiness Standard.

40 COL STREIT: So if it fails, the applicant or the Original Aircraft Manufacturer in relation to a certification application of an aircraft type design or a major change to an aircraft type design essentially has to go back to the drawing board, fix whatever the issue is, and then make a fresh application to CASA?

MR RULE: Well, not necessarily make a fresh application, but they need to bring back new data, backed up by new flight testing results that show how they've resolved the issue that was previously non-compliant.

5 AVM HARLAND: Under what instrument do they fly for the flight test portion of this?

MR RULE: So, generally speaking, there will be a Special Flight Permit issued for an aircraft that is operating under an Experimental Certificate of Airworthiness. So if it's a prototype aircraft, then there are mechanisms for CASA to issue Experimental Airworthiness Certification documentation to facilitate developmental testing. If it's a design change, then you're talking about a type certified aircraft that's been modified, then there will be an Experimental Type Certificate issued for the modified aircraft, and a Special Flight Permit to facilitate the flight testing.

AVM HARLAND: Would there be any design acceptance or approval before the flight test that would possibly endure beyond the flight test?

MR RULE: Yes. I don't know the answer to that. We're starting to sort of go down to a level of detail around type certification that goes beyond my level of knowledge about how the process works at an operational level.

AVM HARLAND: Yes, but notwithstanding, if the flight test couldn't demonstrate compliance to the applicable Standard, it wouldn't go further.

MR RULE: Correct, yes.

AVM HARLAND: Thank you.

COL STREIT: Just in relation to your evidence you've just given, in the context of where CASA is presented by the Original Aircraft Manufacturer, or applicant, information establishing a foreign country has certified the aircraft or the item that constitutes the major change to the aircraft, and it fell into the category of Canada, Germany, the Netherlands, and so on, you say that:

40 *CASA would undertake a type acceptance process, which essentially ensures the provision of certification data necessary for CASA to perform continued operational safety responsibilities of these aircraft as they are registered in Australia.*

45 That's your evidence earlier, and my question is this: does that type

5 acceptance process you've described at paragraph 44 essentially require
CASA to have regard to what the foreign nation certification process did,
and also a bespoke consideration of any particular features of flying that
aircraft in Australia; that is, in Australian conditions, if I can put it that
way?

10 MR RULE: So what the type acceptance procedures effectively provide
is that the type certificate issued by the recognised country is effectively
given effect in Australia as if it were a type certificate issued by CASA.
So there's very limited powers for CASA to impose conditions upon that
type certificate that haven't been imposed by the initiating aviation body,
so the foreign body responsible for the type certification. And there's a
reserve power, if CASA has very serious safety concerns about the type
certificate, for CASA to communicate with the foreign aviation body
15 that's issued the type certificate to try and resolve those issues. But
outside of those very limited powers, the process effectively requires
CASA to give effect to the foreign type certificate as if it was a type
certificate issued by CASA.

20 COL STREIT: So if Canada, France, Germany, the Netherlands, or
New Zealand had issued a certificate in relation to an aircraft, and that
aircraft was picked up by an airline to operate in Australia, stepping
through the usual process, CASA would authorise the aircraft to fly in
Australia on the basis of the certification by a recognised foreign country?

25 MR RULE: Yes. So we would issue a Type Acceptance Certificate
once we received all of the relevant type certificate data and information
from the Type Certificate Holder. And once we issue that Type
Acceptance Certificate, what that means is that the aircraft is then eligible
30 to be issued with a Certificate of Airworthiness, which is for an individual
aircraft. So type certification defines a particular type of aircraft. An
Airworthiness Certificate is then issued for each individual aircraft of that
type which is manufactured by the Type Certificate Holder, and what the
issue of that Airworthiness Certificate does is confirm that the individual
35 aircraft conforms to the type design to which it's been manufactured, and
that it's therefore safe to operate in Australia.

40 COL STREIT: You may not be able to answer this question, and if you
can't, please say so, but the provision of material from a foreign nation
that's recognised in paragraph 44 of your statement, and for an order to
CASA to recognise their certificate and issue its own, does the material
that CASA received include flight test reports? Does it go to that level?

45 MR RULE: Look, I'm not sure of the answer to that question.

COL STREIT: Can I turn now to fatigue management, which you've set out on page 11 of your statement? Is it suffice to say that CASA has – does CASA have a robust fatigue management regime for airlines?

5 MR RULE: In my opinion, yes.

COL STREIT: You've established – or rather, you include a number of links in your statement in different paragraphs to fatigue management publications issued by CASA; is that right?

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MR RULE: That's right.

COL STREIT: In terms of training and education, which is at paragraph 57, you set out the extent to which – and in following paragraphs – CASA is involved in training, engaged with operators, and providing training and education in relation to the regulation and aviation safety generally. Is that correct?

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MR RULE: That's correct.

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COL STREIT: And so it's the case, isn't it, that say for – in addition to publication of information, does CASA actually undertake training by visiting airlines in Australia to give fatigue-type training?

MR RULE: We generally don't engage in specific training of individual operators. The obligation to ensure that their flight crew members are trained falls on the operators themselves. But what we do have are a range of different channels through which we push out guidance material, educational material, to operators, and one of the channels that we use are what we call Aviation Safety Advisers, so a team of technical subject matter experts who travel the country and they put on seminars on different topics relevant to air safety, and they frequently visit airline operators in a range of different location settings around the country to provide those sorts of seminars.

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COL STREIT: So CASA doesn't just set the benchmark upon which it assures itself that an airline is complying with its policies in relation to fatigue management, CASA also engages in the process of training activities to assist operators in relation to all kinds of things, but including fatigue management. Is that right?

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MR RULE: Yes. So educational and guidance activities, I would say, more than structured training. We don't provide training to operators, but we do – for instance, one of the links that I've hyperlinked to my statement is a suggested syllabus for the design of a training course for an

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operator to provide to its flight crew members around fatigue. So we provide them with a lot of practical information to help them to discharge their own training obligations, is the way that I would describe it.

5 COL STREIT: And, indeed, it's a legislative requirement for CASA, looking at paragraph 58 of your statement:

10 *CASA's role in ensuring aviation safety, including the provision of training and education, and engagement with the operators set out in subsection 9(2) of the Civil Aviation Act.*

MR RULE: Yes. So safety education is a core regulatory function, and it's one of the most important levers that we have to influence compliance outcomes in the industry.

15 COL STREIT: Thank you, and at paragraph 61 in relation to question 17 you were asked to explain the scope and use of Aviation Works. You set that out as:

20 *Aviation Works is CASA's externally-facing learning management system which enables aviation industry personnel to access training which has been made available by CASA. Aviation Works is integrated with CASA's myCASA portal, meaning that anyone with a myCASA account can access*
25 *Aviation Works to complete the training.*

I'll pause there. Sorry, what I've read is correct?

MR RULE: That's correct.

30 COL STREIT: I take it by accessing the CASA, myCASA aviation – myCASA portal and accessing training under Aviation Works, that then creates a record, does it, of an individual? Do you know that?

35 MR RULE: I'm not a hundred per cent certain how that actually works in the system, whether someone gets a Certificate of Completion for training, or not. No, I'm not sure.

40 COL STREIT: You just identified that anyone with a myCASA account can access through the myCASA portal, which seemed to indicate there's some form of record.

MR RULE: There may well be. I just don't know the answer to that, I'm sorry.

45

AVM HARLAND: Is it fair to say that the provision of education and training by CASA to the industry is really about giving them some insight into how they might manage their compliance, and basically generate safe aviation operations?

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MR RULE: That's exactly correct. It's about helping them to understand what their regulatory obligations are, and giving them practical advice about how they can go about meeting those obligations.

10 AVM HARLAND: So beyond the expression in the regulations, this is a kind of more digestible way of expressing what your intentions are?

15 MR RULE: That's right. It's meant to be made available to the industry in more accessible language, in a more practical way than having to go and access the legislation itself, which can be very difficult to read through.

20 AVM HARLAND: Understood. And are you aware, does ATSB engage in this regulation on providing guidance – in education and training, and providing guidance about regulatory compliance?

MR RULE: Look, I'm not sure about that scope of the ATSB's educative activities, I'm sorry.

25 AVM HARLAND: That's okay. Thank you.

COL STREIT: Last matter, Mr Rule. At paragraph 65 you were asked a question:

30 *Is there any mandatory training requirements in relation to fatigue management?*

You say:

35 *Flight crew member fatigue training is mandatory for operators operating under the Civil Aviation Order 48.1, Appendices 1 to 7, as amended. Operators can integrate fatigue training with other training conducted by the operator.*

40 And you then say:

For example, human factors and non-technical skills.

Then at 66 you say:

45

In order to integrate training, operators must –

and then you list activities (a) through to (c). Just in relation to that evidence, first what I've read is correct?

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MR RULE: That is correct.

COL STREIT: Second, when CASA does an audit of an operator or an organisation, does it include an audit of its compliance in relation to fatigue management?

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MR RULE: Fatigue is one of the system elements that CASA routinely audits when it goes out to audit operators, yes.

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COL STREIT: Thank you.

MS McMURDO: Is it one of the training modules available through Aviation Works, fatigue management?

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MR RULE: I'm not sure if we've got a fatigue module.

MS McMURDO: It's not one of the ones you listed, that's all, but you're not sure whether it's there or not?

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MR RULE: I'm not sure. Sorry, Chair.

MS McMURDO: Thank you.

COL STREIT: Mr Rule, thank you. They're my questions.

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MS McMURDO: Thank you. Yes, applications to cross-examine?

COL GABBEDY: Just a few brief questions, ma'am.

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MS McMURDO: Yes, COL Gabbedy.

<CROSS-EXAMINATION BY COL GABBEDY

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COL GABBEDY: Thank you, ma'am.

Mr Rule, I'm COL Nigel Gabbedy. I appear for GEN Jobson. I'm just following on with this question of fatigue that Counsel Assisting took you

to. Do you know who CASA's safety advisers present to when they go out to the airlines? Is it executives? Is it everybody?

5 MR RULE: I'm not sure about the answer to that question, and to clarify, I'm not sure how much time they would necessarily spend at major airlines, as distinct from spending time out with perhaps smaller regional operators. So I'm not entirely sure how that is structured and how the engagements occur.

10 COL GABBEDY: Thank you. And look, if you don't know the answer to some of these questions, that's fine. I might be going outside of your area. You said that CASA does do an audit of fatigue systems for customers. Does CASA mandate the systems that they've got to have in place, or is that left up to the particular airlines?

15 MR RULE: So that depends on what options the operator selects for fatigue management. So under the applicable Civil Aviation Order 48.1, an operator has to select appendices to that order to manage its operations, or the fatigue associated with its operations. So it has to pick an appendix
20 which is appropriate to its operations, and then it has to implement whatever the relevant systems elements are that that appendix prescribes in terms of managing fatigue.

25 COL GABBEDY: So as I understand that – and tell me if I'm wrong – the organisation has to implement the system that is relevant to it, based on that appendix.

MR RULE: Correct. And so the appendix will set out a range of
30 matters. So for Appendices 1 through to 6, the appendix will set out the prescriptive flight time, flight duty, and rest period limits and requirements that the operator has to adhere to. So they will have to implement all of those into their operation, and have a system for ensuring that their flight crew members comply with those limits.

35 COL GABBEDY: Just touching on something in your answer, you were referring to flight times and rest limits. The fatigue management systems, I take it, drill down to that level. Do you know if they drill down to tracking aircrew in terms of their fatigue at home and at work?

40 MR RULE: I don't know the answer to that, no.

COL GABBEDY: And do you know if they drill down to conducting checks of aircrew in terms of their fatigue or fitness to fly prior to flights?

45 MR RULE: No, I don't.

COL GABBEDY: Thank you very much for that.

5 MS McMURDO: Yes, no further applications to cross-examine? No.
Any re-examination?

<RE-EXAMINATION BY COL STREIT

10 COL STREIT: Just very quickly, one clarification. The statement
contains hyperlinks that you have. So the hyperlinks are as the policies
exist today in your evidence; is that correct?

15 MR RULE: Yes. So they are the current versions of the documents
which I've linked.

MS McMURDO: And they're all publicly available?

20 MR RULE: They are, yes.

COL STREIT: I just have one question. Just regarding for regulatory
change, so you go through a process that engages with the community, the
regulator community, on change. You then go through a drafting process,
25 and then the regulation is promulgated. During that drafting process and
the promulgation process, how do you determine the compliance period
for the regulation when it's published?

MR RULE: Yes, right. So there's a number of factors that we take into
30 account, and I assume you're talking about the period – what period do we
look at beyond the point where the legislation is made, but before the
affected industry segment has to establish compliance with it?

COL STREIT: That's correct, yes.

35 MR RULE: Yes. So there's a number of factors that we take into
account, but probably the primary one is the regulatory burden associated
with the change. What sort of system changes are going to be required,
changes to Operational Manuals, procedures? That's probably the biggest
40 driver of the timeframes that we select for whatever we eventually set as
the implementation period for the relevant regulatory change. And that's
something that we obviously interface very closely with the affected
industry on in terms of how much time they think they're going to need,
because obviously they don't stop the business of flying while these
45 regulatory changes are going on.

5 So it is important to ensure that these changes can be implemented in a structured way that doesn't put too much pressure on operators who are, as I say, engaged in their business-as-usual activities on a day-to-day basis.

10 COL STREIT: So you don't seek to unnecessarily rush them to compliance. Do you factor in the safety risk that's associated with a regulatory change that it's addressing?

MR RULE: Yes.

15 COL STREIT: Can you give a bit of a sense as to what sort of timeframes you would have for regulatory compliance, like, for a major and a minor perhaps?

20 MR RULE: Look, it's hard to talk about specific – I can't think of one where we've sort of identified, for instance, a critical safety of flight issue that required a regulatory change where we've gone to the industry and said, "This change needs to come into effect overnight". Probably the major changes that we've made to the legislation in the last five years would be the introduction of what we call our New Flight Operations Regulations. So they came into effect in December 2021, and it's probably the biggest change to civil aviation regulation in Australia in
25 about 40 years.

30 So it came with a very heavy level of, obviously, compliance burden for pretty much every sector of the industry. So we've taken a staged approach to bringing operators across to full compliance with the new system requirements. We had in particular – what we call "certain deferred provisions". So we looked to make a significant step change in the organisational safety procedures that were in place for what we used to call "charter operators", essentially non-scheduled passenger and cargo operations.

35 The new legislation requires them to implement systemised training and checking, safety management systems, human factors and non-technical skills training. These are all things they haven't had to do before, so we've given them a longer period of time in which to address the
40 compliance requirements to introduce those systems. But that's been done on the basis of a careful safety analysis that the industry has been operating – or that segment of the industry has been operating without these systems quite safely, for a number of years. So in order to get them to make that step change, it was appropriate to give them that additional
45 period of time.

That's sort of a bit of an overview of the sort of considerations that we take into account, and the way in which we look to structure the implementation activities that we engage in with industry.

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COL STREIT: Understood, thanks. Would that be measured in years or months?

MR RULE: So post-2021 out until the end of 2026 is the implementation period for that – all of the changes to be in place for every operator. Now, obviously across that period you've got some operators who have been completely compliant pretty much from day one, and then you've got other operators who are progressively coming up to full compliance across the entirety of that timeframe.

15

COL STREIT: But as part of that consideration, I think you said with respect to charter operations you looked at the risk of allowing an extended compliance period by virtue of the fact that they had been operating under a previous regulatory system, and that was reasonably acceptable to carry that forward. So rather than pressurise them and create potential problems, you gave some allowance.

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MR RULE: Correct.

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COL STREIT: That's useful. Thank you.

MS McMURDO: So did you give that allowance by setting a particular time and sticking to it, or do you make that time a moveable feast?

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MR RULE: So the timeframe has moved. There was an initial timeframe that was set which ultimately wasn't able to be achieved, so we had to go back to the drawing board on that. But, again, that was through a mixture of internal conversations within CASA, but also conversations with the industry about what needed to change in order to make the implementation work more smoothly.

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MS McMURDO: I've just got a question about CASA and the ATSB. So clearly quite a separation of roles there between you, as the regulator, and ATSB, as the investigator of safety accidents, air accidents, apart from the very limited circumstance of emergency that you mentioned in 71, where CASA would come in. Do you find that works well, that separation, and could you tell us what you perceive as the good things about it, and if there are any drawbacks?

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MR RULE: Look, I think the strength of it is that obviously we have an independent body looking at the circumstances of an accident, and that's important in a scenario where potentially CASA, and the acts or omissions of CASA, may be a contributory factor to that particular - - -

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MS McMURDO: Well, that was one of the things I was going to ask you, is sometimes – has it ever happened that CASA has been criticised or recommendations have been made by ATSB?

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MR RULE: Yes, it has, and there's – I would say there's always – I'd describe it as useful tension between us and them because they are empowered to make their own findings. They obviously engage very closely with us, and very professionally with us, in the process of doing that, but they're not beholden to us or to our views. And they do very zealously guard their independence, and where they disagree with us, they do make those sorts of findings. And they can result in findings that CASA needs to change elements of the way that it's conducted regulation in order to improve safety outcomes.

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MS McMURDO: Thank you. Any questions arising out of that? No. Any re-examination?

COL STREIT: No, thank you.

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MS McMURDO: Thank you very much, Mr Rule, for coming and assisting the Inquiry. It has been very helpful, and we greatly appreciate it. You are free to go now. Could I just mention that even experienced lawyers like you sometimes find actually giving evidence to an Inquiry like this can be quite confronting in some ways.

30

MR RULE: Yes.

MS McMURDO: There is always assistance available, and if you feel you need it, you should certainly avail yourself of that.

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MR RULE: Yes, I much prefer that side of the Bar table, Chair, but thank you.

MS McMURDO: Thank you.

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<WITNESS WITHDREW

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MS McMURDO: COL Streit, did you have some closing words to say?

COL STREIT: Only to this extent. I'll communicate with Counsel representing as soon as I'm able to in relation to matters concerning
5 Hearing Phase 9. I can indicate at least the first two days will be taken up with witnesses in relation to some matters. They will then be followed by evidence given by D10, D19, and concluding the last witness before the Inquiry is MAJGEN Jobson, concluding in that hearing phase, and I will provide further information to Counsel representing next week.

10 I can also indicate that I will be communicating with Counsel representing in relation to the tender – without calling witnesses – the tender of some evidence, and seeking their consent to tender that evidence, which will be a matter for them. But I'll communicate that and provide an update to the
15 Inquiry when I'm able.

Save for that, it's been a long two weeks. The Inquiry has received a lot of evidence, and all of it, for different reasons, is of assistance and part of the information that the Inquiry will no doubt have regard to. I
20 acknowledge the difficulty for the families. It's been a difficult two weeks in terms of evidence led in Private Hearings, and also acknowledging having attended and received a briefing concerning the Defence Flight Safety Bureau final report yesterday, which was also attended by some Counsel representing at the Bar table here, and so I'm
25 sure they will appreciate some rest and respite before we enter our final phase. Thank you.

MS McMURDO: Yes, I just reiterate it has been another week of important but, in some cases, quite confronting evidence and information
30 being received out of the Inquiry, as well as in the Inquiry, in respect to the DFSB report for the families, and I know that Counsel representing also attended those briefings, so I would encourage anybody who feels the need, to take advantage of the assistance that is available. Could I also reiterate that to those following the Inquiry online by the video stream,
35 that assistance is available through the support services that are on the screen at the moment.

So what we anticipate, and strongly hope, will be the final bout of our hearings in this Inquiry will commence on the Monday after Anzac Day
40 here at the Convention Centre, and I guess I can almost say I look forward to seeing you all then. Yes, adjourn. Thank you.

PUBLIC INQUIRY ADJOURNED UNTIL
45 **MONDAY, 28 APRIL 2025**