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TRANSCRIPT OF PROCEEDINGS
TRANSCRIPT-IN-CONFIDENCE

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

PUBLIC INQUIRY

THE HONOURABLE M McMURDO AC
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0930, FRIDAY, 18 OCTOBER 2024

DAY 26

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**	03/11/24	(Transcription)

EXHIBIT LIST

Date: 18/10/2024

Number **Description** **Page No**

WITNESS LIST

Date: 18/10/2024

Name Of Witness **Page No.**

MS McMURDO: Yes, MAJ Chapman.

MAJ CHAPMAN: Thank you, Ms McMurdo, and good morning to you and to AVM Harland. Just before we resume and I call the next witness, who is MAJ Ian Wilson, can I just put on the record or address something that was raised prior to the chair rising yesterday, i.e., in relation to the notice that was provided to Airbus, particularly with respect to Mr Lamb or MAJ Lamb's giving of evidence and his cross-examination?

It was indicated by me yesterday – I say incorrectly – that Airbus was notified at some stage yesterday that Mr/MAJ Lamb would be giving evidence yesterday. That's not correct. The last that they were informed, I understand, was on Wednesday. So I just wanted to just clear that up.

MS McMURDO: They were informed when, sorry?

MAJ CHAPMAN: On Wednesday. On Wednesday, by email.

MS McMURDO: On Wednesday. But as I understand it, that doesn't alter the fact that they didn't wish to cross-examine MAJ Lamb yesterday.

MAJ CHAPMAN: I understand that still to be the position.

MS McMURDO: Yes, correct. Thank you.

UNIDENTIFIED SPEAKER: I can confirm that.

MS McMURDO: Thank you. I just wanted to check that. Thank you. Yes?

MAJ CHAPMAN: With that, can I call MAJ Ian Wilson, please.

MS McMURDO: Yes. I just note too that we allowed some time, at the request of Counsel representing today, to look at some material before this witness was called.

MAJ CHAPMAN: Thank you, Chair.

MS McMURDO: Yes.

<MR IAN CHARLES WILSON, Sworn

<EXAMINATION-IN-CHIEF BY MAJ CHAPMAN

MS McMURDO: Please help yourself to water and let me know if you need a break at any time. Thank you.

MR WILSON: Thank you.

MAJ CHAPMAN: Thank you. Can you please state your full name?

MR WILSON: Ian Charles Wilson.

MAJ CHAPMAN: Thank you. Can you confirm please that you're happy for me to refer to you as Mr Wilson or MAJ Wilson?

MR WILSON: I'd be happier with Ian, but - - -

MAJ CHAPMAN: Thank you. Can you just confirm you've received each of the following documents prior to today. The first is a section 23 Notice requiring your appearance today to give evidence?

MR WILSON: That's correct.

MAJ CHAPMAN: The second is an extract of the Inquiry Directions?

MR WILSON: Yes.

MAJ CHAPMAN: The third is a copy of my appointment as an Assistant IGADF?

MR WILSON: Yes.

MAJ CHAPMAN: The fourth is a Frequently Asked Questions Guide for witnesses appearing before IGADF Inquiries?

MR WILSON: Yes.

MAJ CHAPMAN: And the last is a Privacy Notice for witnesses giving evidence?

MR WILSON: Yes.

MAJ CHAPMAN: Thank you. Mr Wilson, have you prepared and signed, for the purposes of this Inquiry, a statement?

MR WILSON: Yes, I have.

MAJ CHAPMAN: Can I hand you a document? Do you recognise that to be the statement that you prepared for this Inquiry?

MR WILSON: Yes, I do.

MAJ CHAPMAN: Is it a statement which is dated on the cover page 4 October? And if you go over to page 28, the last page, it's there dated 5 October? Do you see that?

MR WILSON: That's correct, yes.

MAJ CHAPMAN: So do we take it that the cover page, "4 October", is an error and it should read "5 October"?

MR WILSON: Yes, that would be correct.

MAJ CHAPMAN: Thank you. Other than that, do you wish to make any amendments to the statement?

MR WILSON: No.

MAJ CHAPMAN: Thank you. Ma'am, I tender the statement of Ian Wilson.

MS McMURDO: Exhibit 87.

#EXHIBIT 87 - STATEMENT OF MAJ WILSON

MAJ CHAPMAN: Thank you. Mr Wilson, just before we begin, can I ask you just to be mindful, as we've asked all witnesses, of security classifications during the course of your evidence? If you could just let me know if certain topics, including during cross-examination, might lead to matters going to the "Official: Sensitive" level. Just let us know, because we may need to go to a private hearing. Do you understand that?

MR WILSON: I understand, yes.

MAJ CHAPMAN: Thank you. I'd like to begin, if I may, with some personal background, before moving on then to your professional experience. So we take it from paragraph 4 that you're no longer serving in the ADF and you retired in 2022. Is that correct?

MR WILSON: Retired from the ADF, that's correct, yes.

MAJ CHAPMAN: Yes. It's the case, is it, that you've retired fully and you're not in the Reserves as of presently.

MR WILSON: No.

MAJ CHAPMAN: You say then at page 1 of your statement that your current role is as a consultant. Do you see that?

MR WILSON: That's correct, yes.

MAJ CHAPMAN: Without going into detail, is that an Aviation-related consultancy or some other type of consultancy?

MR WILSON: It's a wider safety and systems - - -

MAJ CHAPMAN: Sorry, would you mind speaking up a bit?

MR WILSON: It's a wider safety and systems consultancy.

MAJ CHAPMAN: Safety and systems consultancy?

MR WILSON: Systems. Systems analysis, yes.

MAJ CHAPMAN: Great. Prior to your retirement in 2022, was your last role with the ADF as a Qualified Test Pilot with AATES?

MR WILSON: Yes.

MAJ CHAPMAN: By "AATES", as the Inquiry is very familiar with by now, I'm referring to the Army Aviation Test and Evaluation Section.

MR WILSON: Yes.

MAJ CHAPMAN: Thank you. By the time of your retirement in 2022, how long had you been a test pilot with AATES?

MR WILSON: That would be – I did my test pilot course in 2015, so I was with AATES from 2016 on, to '22.

MAJ CHAPMAN: Thank you. Just briefly stepping back a little further, when did you commission with the ADF?

MR WILSON: I started in the ADF in '87.

MS McMURDO: Excuse me, I'm afraid I've got a note saying we've got technical issues. There must be problems with the recording. There's a request to pause for 15 minutes.

MAJ CHAPMAN: Thank you, ma'am.

MS McMURDO: We're not having a good day. Okay, we'll adjourn, thank you.

HEARING ADJOURNED

HEARING RESUMED

MS McMURDO: Yes, I understand there was a problem with the quality of the livestream, which has now been remedied. But the quality was so poor that it has been requested – and I think it's a reasonable request – that this witness start his evidence from the commencement. For the record, I'll just note that he has been sworn, and his statement has been tendered as Exhibit 87. So if you could start at the beginning, thank you.

MAJ CHAPMAN: May it please the Inquiry.

Mr Wilson, I'd like to begin with some personal background before moving to your professional experience. So you're no longer serving in the ADF, and you say at paragraph 4 that you retired in 2022. That's correct?

MR WILSON: That's correct.

MAJ CHAPMAN: It's the case, isn't it, that you fully separated from the ADF and you're not in a Reserve capacity.

MR WILSON: That's correct.

MAJ CHAPMAN: You say on page 1 of your statement that your current role is as a consultant. Do you see that?

MR WILSON: That's correct.

MAJ CHAPMAN: Again, without going into any significant detail, is that an Aviation consultancy?

MR WILSON: Not necessarily. It's a wider systems and systems safety consultancy.

MAJ CHAPMAN: Thank you. Prior to your retirement in 2022, was your last role in the ADF as a Qualified Test Pilot with AATES?

MR WILSON: That's correct.

MAJ CHAPMAN: And that's the Army Aviation Tests and Evaluation Section?

MR WILSON: Yes.

MAJ CHAPMAN: Thank you. By the time of your retirement in 2022, I take it you'd been at AATES for six or so years?

MR WILSON: '22. That was six or seven years, yes.

MAJ CHAPMAN: Six or seven years. If I could just step back a little further in your time, when did you commission in the ADF?

MR WILSON: '87.

MAJ CHAPMAN: Did you commission into Army?

MR WILSON: Into Army, yes.

MAJ CHAPMAN: Sorry, that date again was?

MR WILSON: 1987.

MAJ CHAPMAN: 1987. When did you first qualify as a pilot, which year?

MR WILSON: That would've been '88 – sorry, I'll correct that, '89.

MAJ CHAPMAN: And you list at around paragraph 10 your many postings during your career which include, I see at 10 India, reference to the National Test Pilot School. That's correct?

MR WILSON: That's correct, yes.

MAJ CHAPMAN: When approximately did you attend the National Test Pilot School?

MR WILSON: That was 2015.

MAJ CHAPMAN: That's the Test Pilot School which is located in the United States?

MR WILSON: Yes, in California.

MAJ CHAPMAN: I'm sorry?

MR WILSON: In California.

MAJ CHAPMAN: Thank you. If you could just speak into the microphone a little more, thank you.

MR WILSON: Yes.

MAJ CHAPMAN: Am I right in saying, Mr Wilson, that selection for the Test Pilot School is particularly competitive?

MR WILSON: Yes, that's correct.

MAJ CHAPMAN: And that there are only a few sent by the ADF, is it yearly, annually, or - - -

MR WILSON: Annually, yes. Usually from Army there would be one, maybe two a year.

MAJ CHAPMAN: Can you provide, just for context, a rough estimate of how many test pilots you're aware are in Army Aviation, at the time you left, for example?

MR WILSON: Across the board there would've been one per type. So there'd be a Chinook one, an MRH one, and I think there were two for ARH because we had the execs as well. So no more than a handful.

MAJ CHAPMAN: So it's a relatively small, specialised community.

MR WILSON: Yes.

MAJ CHAPMAN: We see from paragraph 10 that you've operated both as a test pilot and a line pilot, and you have a very wide range of fixed and rotary wing experience.

MR WILSON: That's correct, yes.

MAJ CHAPMAN: Some examples the Inquiry are familiar with include experience on Kiowa.

MR WILSON: Yes.

MAJ CHAPMAN: Black Hawk.

MR WILSON: Yes.

MAJ CHAPMAN: And, of course, the MRH-90.

MR WILSON: Yes.

MAJ CHAPMAN: Just focusing now on the MRH-90. You were a senior instructor?

MR WILSON: That's correct.

MAJ CHAPMAN: And indeed paragraph 14 says you were the lead instructor responsible for developing the initial MRH training capability at the Army School of Aviation.

MR WILSON: That was correct. Built it from the ground up.

MAJ CHAPMAN: Built it from the ground up, was your evidence?

MR WILSON: Yes.

MAJ CHAPMAN: You were a senior test pilot?

MR WILSON: Yes.

MAJ CHAPMAN: On the MRH?

MR WILSON: Yes.

MAJ CHAPMAN: And you outline at 16 and 17 of your statement your specific experience on the MRH-90. Do you see that?

MR WILSON: Sorry, the paragraphs again?

MAJ CHAPMAN: 16 and 17, but particularly 17.

MR WILSON: Yes.

MAJ CHAPMAN: And this includes, and I'll just take it at a broad level, extensive experience operating and testing the MRH-90 in what I might neutrally describe as a Special Operations context?

MR WILSON: Specifically, yes.

MAJ CHAPMAN: So we can take it that you have in-depth knowledge of the use and the deployment of the MRH-90 in that Special Operations setting?

MR WILSON: Yes.

MAJ CHAPMAN: You go on in your statement at paragraph 18 to describe your specific testing experience with NVD on the MRH-90. Do you see that?

MR WILSON: Yes.

MAJ CHAPMAN: "NVD" is a reference to night-vision devices?

MR WILSON: Yes.

MAJ CHAPMAN: Thank you. The NVD testing was conducted by AATES while you were there?

MR WILSON: That's correct, yes.

MAJ CHAPMAN: Of the systems that you list as testing at 18, they included at least three systems: Image Intensifier Tubes?

MR WILSON: Yes.

MAJ CHAPMAN: The HMSD 5.1 symbology?

MR WILSON: Yes.

MAJ CHAPMAN: And the use of pilotage FLIR?

MR WILSON: That's correct, yes.

MAJ CHAPMAN: And FLIR is a reference to Forward-Looking Infrared.

MR WILSON: Yes.

MAJ CHAPMAN: Just briefly, you'd agree, would you, just as a general description, that the Image Intensifier Tubes testing is a reference to testing tubes which provide the HMSD with a night-vision capability, in general terms?

MR WILSON: In general terms, they amplify the ambient light and present it on the HMSD.

MAJ CHAPMAN: Yes, and the amplified light presents as a green monochrome image that's projected onto the TopOwl HMSD visor?

MR WILSON: Yes.

MAJ CHAPMAN: Thank you. As for the HMSD symbology – and we'll get into considerable detail about this concerning ambiguous attitude – but the testing concerned just that, the ambiguous attitude that was discovered with the HMSD?

MR WILSON: The full test plan covered a wide range of data points. The specific data point that caused issue was the presentation of attitude information.

MAJ CHAPMAN: Part of the test planning included testing for distance to go or distance to run function; is that right?

MR WILSON: That's correct, yes.

MAJ CHAPMAN: Which was one of the primary purposes of the upgrade?

MR WILSON: That's correct. We identified that earlier in Special Operations approach testing.

MAJ CHAPMAN: Lastly, in relation to pilotage FLIR, that's a reference to testing the camera system, specifically the use of that system essentially as a navigation aid. Is that right?

MR WILSON: No. It was testing as a pilotage aid. The manufacturer prohibited its use as such, but Army was using it in that role, and our testing was to review that decision.

MAJ CHAPMAN: Is that what you would call substantiation testing?

MR WILSON: Yes.

MAJ CHAPMAN: Just moving to around paragraph 19 and 20 of your statement, you stress the point, don't you, that the process involved in producing a Flight Test Plan itself goes through rigorous testing and review by other test pilots?

MR WILSON: Yes.

MAJ CHAPMAN: Internally to AATES?

MR WILSON: Internally, yes, and externally by the Office of the DoSA Flight Test as well.

MAJ CHAPMAN: We've heard some evidence yesterday about this, but the Office of the DoSA-FT being the authorising position to issue the Military Permit to Fly?

MR WILSON: That is correct, yes.

MAJ CHAPMAN: And the Military Permit to Fly being necessary to authorise flight outside of certification?

MR WILSON: That's correct, yes.

MAJ CHAPMAN: Thank you. Just going back to the testing and the review of the test plan. It's a multi-stage review process and, as you say, the critical feature is to ensure the overall quality control and the integrity of the ultimate flight test reports.

MR WILSON: So for the test plan, we go through a Review Board, which is a Test Integrity and Safety Review Board, where, as the test lead, I present my plan to a panel, and they would challenge aspects of the plan to ensure its integrity and safety before its approved to proceed to the next stage.

MAJ CHAPMAN: Then, in relation to test reports – this is post the testing activity - - -

MR WILSON: Okay, sorry.

MAJ CHAPMAN: No, this is a different point.

MR WILSON: Okay.

MAJ CHAPMAN: In relation to the test reports that are produced following the testing, they go through a similar testing or review critique to ensure quality control and integrity of the reports?

MR WILSON: Yes. We would openly challenge, amongst our peers, the contents of those reports.

MAJ CHAPMAN: Thank you. I'll just turn now to deal with your experience with the TopOwl HMSD. So the Inquiry has received extensive evidence concerning the off-axis ambiguity. You're aware of what I'm referring to?

MR WILSON: Yes.

MAJ CHAPMAN: You say at paragraph 21 that you first qualified on TopOwl HMSD in about 2011.

MR WILSON: That's correct.

MAJ CHAPMAN: So you'd been using the TopOwl system for about eight years at the time that you conducted the version 5.10 test?

MR WILSON: I first qualified on it in 2011. The earlier version of the IIT configuration was substandard and we ceased flying on that. We reverted then to an ANVIS system on a HGU-56P helmet. At a later date – I can't recall the exact date now – we had an upgrade to the TopOwl system, which was released into Service and we commenced flying on that. I can't recall the exact date that occurred.

MAJ CHAPMAN: Accepting you can't recall the exact date, could you say that you'd had experience with the TopOwl HMSD for some years by the time of version 5.10 testing?

MR WILSON: Most certainly, but I can't say it was a consistent period. There was a gap in there where we were flying on an ANVIS system.

MAJ CHAPMAN: Your answer to that though was "Yes", was it, you had been?

MR WILSON: Yes.

MAJ CHAPMAN: Yes, and that experience had been making use of earlier iterations of the software, including version 4, and perhaps even earlier?

MR WILSON: Version 4, correct.

MAJ CHAPMAN: Where AATES ultimately concluded in their report of 14 June 2019 that the symbology or the misleading attitude information could lead to controlled flight into terrain, that was based on testing that you had yourself conducted?

MR WILSON: Correct.

MAJ CHAPMAN: Can the witness please be shown Annex D to Exhibit 41, please?

MS McMURDO: Yes. Annex D to Exhibit 41.

MAJ CHAPMAN: Thank you. Mr Wilson, do you recognise that – and I'll just give you a minute to look at it – as the AATES test report into version 5.10?

MR WILSON: Yes, I do.

MAJ CHAPMAN: If you just briefly – and I invite you to go to page 9 of that report, and without going into any detail of that by reason of the security classification, you'll see there there's references to "unacceptable risk" to "flight safety".

MR WILSON: At para 26?

MAJ CHAPMAN: There's at least three references to that.

MR WILSON: Yes.

MAJ CHAPMAN: Just to be clear about it, these were conclusions in this report that were the product of, first, flight testing that you conducted at Oakey as the Aircraft Captain; is that right?

MR WILSON: Yes.

MAJ CHAPMAN: And convocations, or meetings, that were held within AATES to arrive at the conclusion of "unacceptable risk to flight safety"?

MR WILSON: That is correct. The report attracted a lot of attention within the organisation.

MAJ CHAPMAN: By my reference to "staff within AATES", and just to be clear about who was involved in arriving at that conclusion, we have LTCOL Reinhardt as the SO1; is that correct?

MR WILSON: Correct.

MAJ CHAPMAN: And we have MAJ David Lamb as the XO of the unit; is that right?

MR WILSON: Correct.

MAJ CHAPMAN: And, of course, yourself as the test pilot who actually flew the sorties?

MR WILSON: That's correct.

MAJ CHAPMAN: Was there anyone else involved in those meetings, coming to that conclusion?

MR WILSON: It would've been my Flight Test Engineer, CAPT Jordan Zahra.

MAJ CHAPMAN: And he was flying with you at the time of the sorties?

MR WILSON: That's correct, yes.

MAJ CHAPMAN: And that it was in your capacity then as the lead test pilot for AATES responsible for testing and evaluation, as you say at paragraph 22 of your statement. And you say at paragraph 23 that the purpose of the version 5.10 testing, as with the FLIR and the IIT testing, was that it was required under the DASRs to assess performance capabilities of the systems under test against the ADF's airworthiness safety framework. Is that right?

MR WILSON: I'm sorry, which paragraph are we on?

MAJ CHAPMAN: I'm at your statement at paragraph 23, and I'll just repeat that.

MR WILSON: Yes.

MAJ CHAPMAN: You say that the purpose of the testing, or one purpose of the testing, was that it was required under the DASRs to assess performance capabilities of the systems under test against the ADF's airworthiness safety framework.

MR WILSON: That is correct.

MAJ CHAPMAN: So is that another way of saying, Mr Wilson, that the testing that was conducted on version 5.10 was testing that was mandated or it was required to be undertaken by AATES in order for this particular upgrade to enter Service on the MRH-90?

MR WILSON: Mandated under the DASR construct, yes.

MAJ CHAPMAN: That was "Yes"?

MR WILSON: Yes.

MAJ CHAPMAN: Without this testing being conducted by AATES as the Flight Test Organisation, to your knowledge such a system, or an upgrade to a system, could not proceed to Service release. Is that your understanding?

MR WILSON: Yes.

MAJ CHAPMAN: As far as you're aware, there was no ability to satisfy the DASR requirement in this context, other than through testing being conducted by AATES as the Flight Test Organisation?

MR WILSON: That's correct, to approve use of that system across the full operating environment that the MRH is required to operate.

MAJ CHAPMAN: Though understanding that – and we'll get to this in further detail – the version 5.10 upgrade proceeded to Service release, notwithstanding the "unacceptable" finding made by AATES; correct?

MR WILSON: That's correct, yes.

MAJ CHAPMAN: The testing of this particular upgrade was required under the DASRs because it represented a significant change to the configuration, role and environment of the MRH-90?

MR WILSON: Significant or substantial. I can't quote the exact word, but that's quite - - -

MAJ CHAPMAN: Sure, and could you, just for our assistance, just give us an overview of what the CRE refers to – the configuration, role and environment – in this context?

MR WILSON: So it puts a finer point on the testing we do. So we're talking about a change to the aircraft configuration. The role in this specific case would target the pinnacle role for the aircraft, which would be the

Special Operations role, and then we talk about environment. We would talk about making sure that we progressively progress testing to the point where we have gone out into degraded visual environments where Special Operations approaches or procedures could be conducted. So we have to kind of hold the whole operating environment.

MAJ CHAPMAN: We move now to around paragraph 26 of your statement, and there you make the general observation that, in your view, the technical regulatory framework surrounding Defence Aviation activities is, to your mind, well considered and provides a sound foundation for safe operations. That's right?

MR WILSON: Absolutely. If you take the time to read the DASRs, they weave threads together very well. I thought it was a very good document.

MAJ CHAPMAN: That was my next question.

MR WILSON: I'm sorry.

MAJ CHAPMAN: No, not at all. I take that to be a reference to the DASRs' framework?

MR WILSON: Yes.

MAJ CHAPMAN: You then next say at paragraph 27 that it's been your experience that the application of the framework in response to AATES' testing has been very selective and incomplete; is that right?

MR WILSON: Yes, it was a source of friction between AATES and the Army Organisation.

MAJ CHAPMAN: So it's fair to suggest that, at least in your experience, while you consider the DASRs themselves, the framework, is adequate and sound, your experience is that they are not, or they have not been, followed to the letter in some cases?

MR WILSON: To the letter, or disregarded.

MAJ CHAPMAN: And you're talking specifically here about 5.10?

MR WILSON: Specifically in this case 5.10, but there were wider cases as well.

MAJ CHAPMAN: I understand. You can agree or not with this

proposition, but is it your experience, at least up until when you retired in 2022, that other Services adhered to the DASR requirements in a more consistent way? And I'm talking about Navy and Air Force particularly, and their Flight Test Organisations.

MR WILSON: That would be my subjective opinion. I can't back that up, but that's my feeling. Yes.

MAJ CHAPMAN: Is it your feeling based on some experience you have interacting with other Flight Test Organisations?

MR WILSON: Just based on interactions with colleagues. They weren't experiencing any of the difficulties that we were.

MAJ CHAPMAN: And the difficulties you're referring to is this friction that you encountered in the chain of command?

MR WILSON: Correct.

MAJ CHAPMAN: At paragraph 28, Mr Wilson, you specifically deal with version 5.10, and you refer to Standards Branch intervening at a number of stages in the testing continuum, in effect purposely to diminish certain less than favourable recommendations that AATES made. Do you see that?

MR WILSON: Yes.

MAJ CHAPMAN: Just to break that down, firstly, can you just describe where, at least in 2022, Standards Branch sat in the organisation, and its role compared to AATES?

MR WILSON: So Standards Branch sat underneath the Director of Operational Airworthiness. The role of the unit is to maintain the standardisation, as in the consistency, of instruction across the capability, and also the Standards, as in the grade of instruction.

MAJ CHAPMAN: Part of their role – and we'll come to this – involves updating of Standardisation Manuals; is that right?

MR WILSON: That's correct, yes.

MAJ CHAPMAN: And a Standardisation Manual is, in effect, a Flight Manual?

MR WILSON: No, they are separate documents. The Flight Manual is provided by the manufacturer. The Standardisation Manual is, for want of

a better term, a pilot procedures manual which the authority to write, to amend, or change that document is held within Standards Branch. It carries the authority of the Chief of Defence Force.

MAJ CHAPMAN: And the Standardisation Manual was a manual which essentially sets out the rules by which a pilot was to operate that aircraft?

MR WILSON: It constitutes a lawful general order.

MS McMURDO: Sorry, I missed what you said there. Could you - - -

MR WILSON: A lawful general order. Sorry, I am sitting closer.

MS McMURDO: Thank you.

MAJ CHAPMAN: Now, the Inquiry has received some evidence from a number of former AATES colleagues concerning the Aviation chain of command's response to the "unacceptable" findings. Am I right – I think you may have said this – that where you're referring to this friction, that this occurred in response to the 5.1 testing, but also in relation to others, other testing that was undertaken?

MR WILSON: That's correct. Yes.

MAJ CHAPMAN: Just in terms of these interventions – I withdraw that. In relation to what you've personally experienced with some of this opposition, and these interventions that you refer to, what are you referring to there?

MR WILSON: The SO1 Standards, on hearing of the proposed "unacceptable" finding, requested a flight to see the symbology set. I took him on a flight where I displayed – sorry, demonstrated the characteristics of the system to him. When we returned, I asked him to come back to AATES to take part in a debrief of the sortie. He chose not to. My understanding is he then went and lobbied against the findings of the report before we could even produce it.

MAJ CHAPMAN: So this flight occurred prior to AATES producing the report where you indicated the "unacceptable" - - -

MR WILSON: Correct, yes.

MAJ CHAPMAN: Apart from the SO1 Standards that you've referred to, you refer also to attempts to essentially impugn your professionalism. Can you offer any explanation as to why that was occurring at this time?

MR WILSON: No, I can't. The only indication I had that it was occurring was from interview with the SO1, the XO and the senior Flight Test Engineer, who advised me this was occurring. They wouldn't be drawn on who or what was being said, but I know it was occurring.

MAJ CHAPMAN: So you didn't yourself experience it in the hallway, or anything of that nature?

MR WILSON: No.

MAJ CHAPMAN: Do we take it from your evidence that at least some elements within Army Aviation, to your mind, did not respect or even accept the findings of AATES with respect to the version 5.10?

MR WILSON: There was a correlation between my name and the performance of the system.

MAJ CHAPMAN: I'm sorry, a?

MR WILSON: A correlation was being drawn between my name and the findings.

MAJ CHAPMAN: So you're saying you were associated with the findings?

MR WILSON: It appears, because my name was associated with the findings, that the findings were not being trusted.

MAJ CHAPMAN: This is despite the fact that the testing being conducted by AATES, and the findings that you arrived at, were findings made by Army's own in-house Flight Test Organisation?

MR WILSON: That is correct. They were verified by the manufacturer.

MAJ CHAPMAN: I just want to turn now to the OPEVAL, or the Operation Evaluation, that was conducted by Standards Branch.

MS McMURDO: Can I just ask you, were you ever told who was responsible for this backgrounding against you?

MR WILSON: No. I had a discussion with LTCOL Reinhardt. He has made me aware of it. He said that if we went any further, it would probably make me angry. And I would rather have a harmonious work environment

and we got on very well within AATES. And I thought, "Well, my specific work environment is good. I'll leave it to his judgment".

MS McMURDO: Thank you.

MAJ CHAPMAN: I want to turn, as I say, to the Operational Evaluation that was conducted, and that topic. Can I show you a document, and this is Annexure E to the Exhibit 41, which is the Operational Evaluation Report?

MR WILSON: If I could just speak briefly?

MAJ CHAPMAN: I'm sorry?

MR WILSON: Can I just speak briefly?

MAJ CHAPMAN: Speak briefly?

MR WILSON: Briefly, yes. In preparing this document, preparing my statement, I have not had access to these documents since I left Defence, so it's to the best of my recollection.

MS McMURDO: Yes, thank you.

MAJ CHAPMAN: Just to be clear about that, you haven't had access to any of this material that I've handed you since you retired from the ADF in 2022?

MR WILSON: That's correct, yes.

MS McMURDO: That is the documents that you've been handed in the hearing today?

MR WILSON: That's correct. Yes, ma'am.

MS McMURDO: Do you want some time to look at them?

MR WILSON: If we go into specifics, I'll need time to review the whole document. But if we're talking in general terms, I'll be happy to answer.

MS McMURDO: Well, let us know if at any time you'd like a little bit more time to review the document to answer the question.

MR WILSON: Thank you. Yes.

MS McMURDO: Thank you.

MAJ CHAPMAN: Thank you. So do you recognise that, Mr Wilson, as the OPEVAL report that was produced by the Standards Branch?

MR WILSON: Yes.

MAJ CHAPMAN: You would say, would you, that this report was essentially produced to address, and possibly oppose, the "unacceptable" findings made by AATES in the earlier report?

MR WILSON: Yes.

MAJ CHAPMAN: During your time at AATES I assumed, as I think we've established, that you worked from time to time with other FTOs, so AMAFTU and ARDU?

MR WILSON: We would normally do that, but my workload in response to Plan Palisade was quite high, so I was mainly working within AATES.

MAJ CHAPMAN: I think you've said that your experience, or at least your observation, has been that they seem to have faced lower levels of resistance from their chain of command in relation to accepting recommendations?

MR WILSON: That's correct, yes.

MAJ CHAPMAN: You've touched on this in part, but can you offer any explanation as to why, in general terms, AATES, in particular, experienced these levels of resistance?

MR WILSON: I can't offer that. I don't know why it was occurring. The friction appeared to be between the Director of Airworthiness and Standards Branch.

MAJ CHAPMAN: At paragraph 30 of your statement you refer to a culture that left you with the impression that elements of Army Aviation were indifferent to Defence's adherence to the DASR technical airworthiness requirements. Is that correct?

MR WILSON: Yes.

MAJ CHAPMAN: And you make that statement because, in your experience, when the chain of command did not agree with an AATES' recommendation, that it's your experience they may seek to work around that recommendation, using other processes?

MR WILSON: It appears they sought favourable opinion over a Flight Test Organisation report, yes.

MAJ CHAPMAN: So your evidence is that you - - -

MR WILSON: They appeared to seek favourable opinion to offset against the authorised Flight Test Organisation conducting a test, providing a test report.

MAJ CHAPMAN: Thank you. And one way that they did this in the case specifically of version 5.10, in your view, was to embark on this Operational Evaluation process?

MR WILSON: That's correct.

MAJ CHAPMAN: You say, do you, that this culture of not accepting or undermining the work of AATES continued more or less throughout your time until you retired in 2022?

MR WILSON: Yes.

MAJ CHAPMAN: So across the entire time you were at AATES?

MR WILSON: I wouldn't say the entire time. It was mainly associated with the organisational pressures associated with Plan Palisade, but yes.

MAJ CHAPMAN: Plan Palisade was essentially the deployment of the MRH-90 in a Special Operations context?

MR WILSON: That's correct, yes.

MAJ CHAPMAN: You've referred earlier to your impression that there was an attempt to impugn your professionalism. That's right?

MR WILSON: That's correct, yes.

MAJ CHAPMAN: And it was for that reason, was it, that as you describe at paragraph 31, you took the view, with LTCOL Reinhardt and MAJ Lamb, not to sign yourself the AATES report in version 5.10?

MR WILSON: That is correct, yes.

MAJ CHAPMAN: You say you did so because you did not want the

appearance of your name on that report to possibly undermine the integrity of the findings?

MR WILSON: Yes, that's correct.

MAJ CHAPMAN: That was because, was it, of the significant nature of those findings?

MR WILSON: It's a very serious report. Yes.

MAJ CHAPMAN: Just to be clear, while you did not sign the report, you were closely involved in the drafting of it?

MR WILSON: Absolutely.

MAJ CHAPMAN: Did you draft it?

MR WILSON: Yes, in - - -

MAJ CHAPMAN: Did you draft it with someone else?

MR WILSON: Yes, with CAPT Jordan Zahra.

MAJ CHAPMAN: Who is the Flight Test Engineer?

MR WILSON: Yes. That would be normal practice.

MAJ CHAPMAN: And it's also the case, isn't it, that you were central to the convocations with AATES, where it was agreed that they'd make the "unacceptable" finding?

MR WILSON: That's correct, yes.

MS McMURDO: Did you agree with everything in that report?

MR WILSON: Yes, ma'am.

MAJ CHAPMAN: You've referred then at 33 to there being defects inherent in the TopOwl design that rendered a pilot more susceptible to spatial disorientation.

MR WILSON: That's correct.

MAJ CHAPMAN: What do you mean by that?

MR WILSON: When we work in a degraded visual environment, we're aligned on the useful cues presented to maintain orientation. The performance of the night-vision system providing those cues is paramount to it maintaining spatial orientation. So if we take a system that effectively degrades the IIT performance by 50 per cent by projecting the IIT image through a series of mirrors onto a dichromatic patch, we get substantial loss in performance, and accordingly the cues provided to the pilot to maintain orientation, and that is inherent to the design.

The process of projecting an essentially flat IIT image onto a curved visor surface means that the centre of the field of view will be in focus, but as you progress to the edge of the field of view, it will be out of focus, or blurred, so you'll have a loss of acuity as you get towards the edges. So that means that the centre of the field of view, you'll be picking up cues to maintain orientation, but as you get towards the edge, you'll lose those cues.

They're important because if we roll the aircraft at a rate, the angular displacement of the cues at the edge of the field of view will be larger and you will detect that motion earlier. So if you're constrained to a narrower field of view, you are more likely to become disoriented. So they're the inherent design features I'm discussing.

MAJ CHAPMAN: Thank you for that. At paragraph 34 you set out an explanation as to the meaning of "airworthiness" in the DASR context. Do you see that?

MR WILSON: Yes.

MAJ CHAPMAN: You say that – and I'm paraphrasing here – that technical airworthiness describes compliance with minimum safety standards in the airborne environment?

MR WILSON: That's correct. We would call them "airworthiness codes".

MAJ CHAPMAN: I'm sorry?

MR WILSON: Airworthiness codes.

MAJ CHAPMAN: Yes, and it was the function of AATES to test systems before it for technical airworthiness; is that right?

MR WILSON: That's correct.

MAJ CHAPMAN: So, basically, the principal function of AATES is to

test systems to ensure they are suitable and, more importantly, safe for Service release. Is that right?

MR WILSON: So the baseline would be achieving the airworthiness code requirements, which are a minimal safety requirement. They're across the civilian aircraft industry. We would then progress further to assess the system's suitability or fitness for purpose for use in the specific Army role and operating environment.

MAJ CHAPMAN: And that was your reference earlier to the CRE?

MR WILSON: That's correct, yes.

MAJ CHAPMAN: But it remains a principal function of AATES to test for airworthiness to ensure that the Service release of the system under test is safe?

MR WILSON: Yes.

MAJ CHAPMAN: You set out, at paragraph 36, an overview of how the DASRs operate, and draw a link between the ADF requirement to operate aircraft according to the DASRs, and also the ADF's obligation to provide a safe work environment, as reflected under the *Work Health and Safety Act*. Correct?

MR WILSON: The DASRs call out that relationship.

MAJ CHAPMAN: You say "call out"?

MR WILSON: In the DASRs there is a section where it refers back to the *WHS Act*.

MAJ CHAPMAN: You then refer to the requirement under the DASRs - and this may or may not be the same one – that the aircraft systems must be compliant with technical airworthiness standards.

MR WILSON: That's correct.

MAJ CHAPMAN: And these standards are only assessed by the Flight Test Organisation, such as AATES?

MR WILSON: A Flight Test Organisation is the only organisation that is authorised under the DASRs to conduct that assessment.

MAJ CHAPMAN: Technical airworthiness assessments?

MR WILSON: Correct.

MAJ CHAPMAN: By including those references in your statement – and you can agree or disagree – but are you seeking to emphasise, are you not, that the Flight Test Organisations are the only organisations able to make those technical assessments for the purposes of DASR?

MR WILSON: For the purpose of the HMI elements of technical airworthiness under DASRs, yes.

MAJ CHAPMAN: Am I right in saying that the OPEVAL process that was embarked on and completed, conducted by Standards Branch, not being a Flight Test Organisation, in your view did not have the necessary authority under the DASRs to conduct the airworthiness testing that they did?

MR WILSON: Sorry, can you repeat the question?

MAJ CHAPMAN: Certainly, it was long.

MR WILSON: Yes.

MAJ CHAPMAN: Is it a correct statement, in your view, that the OPEVAL process that Standards conducted did not have the necessary authority under the DASRs to assess airworthiness in the way they purported to?

MR WILSON: It had neither the authority, nor did it produce sufficient evidence to substantiate non-compliance with the airworthiness construct.

MAJ CHAPMAN: On that basis, would you say also, by extension, that in this context of DASRs and technical airworthiness, that in reality the outcome of the OPEVAL process was a nullity, or it was of no significance, no effect?

MR WILSON: The outcome of the OPEVAL process provided further information in a very constrained flight envelope. The problem occurs when the organisation approves the use of an unairworthy system in the full operating environment. It was not approved. It was not airworthy for use in that full operating environment.

MAJ CHAPMAN: I'll put it another way. To the extent that the OPEVAL process purported to deal with matters of technical airworthiness, you say that wasn't authorised?

MR WILSON: It was unauthorised. To my knowledge, the OPEVAL did not make a positive statement that it was compliant with an airworthiness code requirement.

MAJ CHAPMAN: Could it have been compliant with an airworthiness requirement as an OPEVAL?

MR WILSON: No.

MAJ CHAPMAN: I'm going to turn now to deal with what you've said in detail about spatial disorientation, and how that may manifest in flight, particularly in adverse conditions. So you begin to deal with this around paragraph 48, and you provide this explanation by way of background to understanding the errors in the 5.10 symbology. Is that a fair statement?

MR WILSON: Yes, NVDs, in general, but specific to the 5.1.

MAJ CHAPMAN: We can take it that while you're not a medical expert, you provide your explanations about spatial disorientation, no doubt based on many years of experience as a pilot and a test pilot?

MR WILSON: If I could clarify, what I presented here is a common knowledge base amongst all pilots' experience.

MAJ CHAPMAN: So you're drawing on your long experience as a pilot?

MR WILSON: Every pilot should know this; it's part of our aeromedical training.

MAJ CHAPMAN: Yes, but my question is, you are drawing these opinions based on your experience as a pilot; correct?

MR WILSON: Yes.

MAJ CHAPMAN: Thank you. And also dealing with your own experiences, having – I'll start that again. And drawing on your own experiences of spatial disorientation personally?

MR WILSON: Yes.

MAJ CHAPMAN: Just going back briefly to your test pilot training in the United States, did that involve at all identifying elements of spatial disorientation and how to recover?

MR WILSON: No, that would be the pilot and instructor training, which would be recognising and recovering from unusual attitudes or disorientation.

MAJ CHAPMAN: So that didn't form part of your instruction in Test Pilot School?

MR WILSON: Test Pilot School would look at the systems aspect which would be likely to contribute to spatial disorientation.

MAJ CHAPMAN: Just to begin with, at paragraph 49 of your statement you describe spatial orientation, as distinct from spatial disorientation, as the ability of the human body to maintain orientation and posture relative to the surrounding environment, both at rest and during motion.

MR WILSON: Yes.

MAJ CHAPMAN: And you distinguish between spatial orientation on the ground on the one hand, and then spatial orientation in flight. Is that right?

MR WILSON: That's correct, yes.

MAJ CHAPMAN: Can you just briefly explain to the Inquiry why there's a difference between the two of them?

MR WILSON: We've evolved to be oriented on the ground. If we sit here now, our vestibular and proprioceptive responses sense gravity, and give us an orientation as to which way is up. The brain then takes the visual input and overlays that, and we maintain orientation. When we go into an airborne environment, an aircraft can generate its own sense of gravity, so the vestibular and proprioceptive sensors could sense that we are sitting here as we are now but the aircraft could be completely inverted, or anywhere in between, and the body wouldn't know. That's why when we progress to an airborne environment it is so vital that the visual input is correct.

MAJ CHAPMAN: So attempting a summary of that, we understand it to be the case that the body's innate systems – and I think you referred to them as the vestibular and the – I'm going to get this wrong – the properceptive?

MR WILSON: Yes.

MAJ CHAPMAN: Can you just correct me on that?

MR WILSON: Proprioceptive.

MAJ CHAPMAN: Thank you. Those innate systems regulate our ability to maintain awareness of our surroundings when we're on the ground.

MR WILSON: Yes.

MAJ CHAPMAN: And it's the combination of those inputs which essentially enable us to maintain balance.

MR WILSON: Yes.

MAJ CHAPMAN: You say at 51 that in this mix of inputs there is a bias on the part of humans, in the brain, towards visual stimulus. Is that right?

MR WILSON: That's correct, yes.

MAJ CHAPMAN: Or visual cues?

MR WILSON: Yes.

MAJ CHAPMAN: Is that to say that of all the inputs informing where we are in space and time at any one point, the brain has a bias towards interpreting where we are based on what it can see as that paramount reference, or the principal reference?

MR WILSON: That's correct, yes.

MAJ CHAPMAN: Notwithstanding what the body might otherwise be telling us?

MR WILSON: That's correct, yes.

MAJ CHAPMAN: You say at 52 that these concepts are all relatively straightforward when we're on the ground perhaps standing here in this room and not moving, but it's far more complicated when in flight, the interactions of these systems?

MR WILSON: When in flight, particularly when you progress to a degraded visual environment. When you have strong cues, it's very easy, but as you get to greater cues, the visual illusions can have an impact.

MAJ CHAPMAN: That's because the body's various systems, some of which rely on gravity, can provide false orientation information?

MR WILSON: The vestibular and proprioceptive systems can provide a false indication. If we don't have good visual cues, we don't have a strong visual stimulus to override those body-oriented systems, and that can generate a feeling of discomfort or confusion within the pilot, within the (indistinct).

MAJ CHAPMAN: You've used the example at 52 where you say the sensory organs while in flight can indicate that the body is upright when, in fact, the aircraft might be completely inverted?

MR WILSON: That's correct, yes.

MAJ CHAPMAN: But this is just one example of spatial disorientation?

MR WILSON: Exactly, yes.

MAJ CHAPMAN: You go on to explain in the next paragraph, at 53, about the known false horizon phenomenon. Can you just explain that or outline that in basic terms?

MR WILSON: So if we look at the horizon during the day, it's a very defined, easy to discern line. As with lessened and degraded visual environment, that cue may become obstructed or not present at all. In the absence of a strong horizon line, other features in the field of view may become – you may orientate it off those cues. A cue like a coastline being a straight line may be misinterpreted as a horizon. A line of lights, an angled ridge line, a bank of clouds, they're all linear-type features that we may just lock on to and falsely believe that they are horizon.

MAJ CHAPMAN: This false horizon issue is a particular – and it's a known manifestation of spatial disorientation and it occurs particularly in DVE conditions – degraded visual environment?

MR WILSON: That is correct, yes, and again, that is part of the common pilot knowledge base. This is not new information to a pilot community.

MAJ CHAPMAN: Sure. And you say that because principally the brain in this context doesn't have the benefit in DVE conditions of visual cues to give that orientation the reference?

MR WILSON: If you have poor or insufficient visual cues for orientation, it becomes difficult, yes.

MAJ CHAPMAN: You refer in the next paragraph, 54, to how in this same vein, particularly in a degraded environment where there's an absence of

visual horizon, that the pilots can be vulnerable to false horizon issues which, as you've said, just can lead to spatial disorientation?

MR WILSON: Correct.

MAJ CHAPMAN: That's again due to the conflict that can occur between the body's innate systems and a lack of a visual cue to orientate oneself?

MR WILSON: Yes, it's a complicated area, but I've tried to paraphrase it the best I can.

MAJ CHAPMAN: Thank you. So I just want to move now to the next section where you address pilot training in this context. So you say at 55 of your statement how ADF pilots in your experience train specifically to identify and deal with the effects of spatial disorientation?

MR WILSON: That's correct. As an instructor, I've taken a number of students through this process where they've become disoriented and guided them to becoming reoriented with reference to the instruments.

MAJ CHAPMAN: So, as an instructor, this was part of specific serials, flight serials that you went on to give instruction about experiencing spatial disorientation and the recovery from it?

MR WILSON: That's correct, yes.

MAJ CHAPMAN: Did that occur at initial training or at each stage of the sort of training?

MR WILSON: It normally occurs when you progress a student to instrument flight where the horizon is blanked out by – basically, the cockpit screen from the horizon, and the student flies off instruments. They'll get a mis-compare between the body systems and the visual stimulus from the instruments. Because the instrument horizon is relatively small, it becomes a bit of a challenge to derive sufficient visual orientation to override the body systems and the body will believe that the aircraft is in a bank, whereas the instruments are saying that the aircraft is flying level. So it's a case of taking them through it to reinforce that the instruments are correct.

MAJ CHAPMAN: So the instruments are correct?

MR WILSON: The instruments are correct, and to trust the instruments. Every time the person is exposed to that level of – that feeling of discomfort, disorientation, and they reorientate themselves using those instruments, it

reinforces possibly in that brain that the instruments are correct. They can trust them; they can rely on them.

MAJ CHAPMAN: Yes. So this training is deliberately denying visual cues for orientation reference so that students can experience spatial disorientation and know how to recover from it?

MR WILSON: That is correct. So we progress from day flight to instrument flight which is the ultimate degraded visual environment, and we use that as a foundation before progressing to things like night, and night unaided, or night unaided and NVD flight.

MAJ CHAPMAN: You refer to it being stressed throughout this pilot training that they come to trust their instruments. So they encourage students to trust their instruments?

MR WILSON: They will absolutely believe what the instruments are telling them, yes.

MAJ CHAPMAN: You'd agree that that is even in circumstances where what the instruments might be telling the pilot is at odds with what they might be feeling in time and space?

MR WILSON: Correct. It's quite a discomforting feeling, but when you work through it, it works.

MAJ CHAPMAN: You get used to it?

MR WILSON: Yes, you build a trust in the systems.

MAJ CHAPMAN: So you build an inherent trust in the information that's being provided to you by the aircraft system?

MR WILSON: That's correct, yes.

AVM HARLAND: Up until now, we've talked about the difference between flying on instruments and flying with a visual environment as effectively a binary set of outcomes.

MR WILSON: Yes.

AVM HARLAND: Clearly, in actual flying, you may transition from an environment where you have good horizon to an environment which is compromised somewhat.

MR WILSON: Yes.

AVM HARLAND: Could you describe the importance of recognising that and some of the hazards with transitioning from a visual environment where you have a good horizon to an instrument environment and the time-sensitive nature of that transition? Does that make sense?

MR WILSON: Hopefully, I can answer this. So as an instructor we will build those layers of competency into a pilot, so we'll get them able to orientate themselves by day with reference to a horizon. We'll then blank the horizon out and teach them how to use – they'll maintain orientation with reference to the instruments.

Then we'll progress to night unaided which would be a degraded visual environment so they get used to the idea of a blended scan between outside and the instruments. Then as we progress on to night-vision devices, it becomes a little more complex. You have to scan within the NVD image and then back into confirm that you're correctly using the Primary Flight Displays or the instruments. Has that answered the question correctly?

AVM HARLAND: Partially. Perhaps I'll frame it a different way. If you're flying in what you consider to be a visual environment, just say you're on a night-vision system and everything is looking fairly good and you miss the cues that tell you that you're now in a degraded visual environment where the horizon is uncertain, and you don't transition to instruments, to me, that would seem to be an area of risk?

MR WILSON: Absolutely, yes.

AVM HARLAND: Could you describe some of the complications with not recognising that you have transitioned to an environment where you need to switch to instruments?

MR WILSON: Well, the complications could be a crash, particularly when we're operating at low level. If you're in a degraded visual environment, the risk of becoming disoriented, the problem is that when you start to become spatially disoriented, it takes a degree of cues to correct that misinterpretation or that disorientation. So the first problem is recognising you are disoriented in the minimal time you have available to you before you would impact the ground.

AVM HARLAND: Thanks for managing my clumsy question; I appreciate it.

MR WILSON: That's okay, yes.

MAJ CHAPMAN: Just returning to the idea of trusting the instruments, that's a recognition that – or that recognises that the body systems, especially when affected by spatial disorientation, may risk providing pilots with incorrect information that they may act on. Is that right?

MR WILSON: Yes, there are airworthiness standards for zero tolerances for attitude systems; and if the attitude system is providing incorrect information, there is an alerting system requirement for the pilot as well.

MAJ CHAPMAN: The starting point for all of this, in terms of relying on instruments, is that the instruments are themselves accurate. You'd agree with that?

MR WILSON: That would be a baseline, yes.

MAJ CHAPMAN: Yes, and not at all misleading?

MR WILSON: No.

MAJ CHAPMAN: Yes. That's because especially, again, in cases of spatial disorientation, the training is that the pilots need to put their faith in what they're being told by the instruments?

MR WILSON: That's correct, because it's a more reliable data source than the body systems.

MAJ CHAPMAN: To the extent that those instruments may present misleading information, and you don't have the external visual cues, that can create a situation where recovering from spatial disorientation becomes extraordinarily difficult. Do you agree with that?

MR WILSON: Sorry, can you say that again?

MAJ CHAPMAN: To the extent that the information from the instruments may be misleading or providing incorrect information, it may contribute to making recovery from spatial disorientation very difficult?

MR WILSON: If we talk to the false horizon information presented in the HMSD 5.1 being incorrect attitude information, if I present that within my field of view, it would make me more likely to become spatially disoriented and make it more difficult for me to recognise that I am disoriented.

MAJ CHAPMAN: So assume degraded visual environments with poor visual cues.

MR WILSON: Yes.

MAJ CHAPMAN: Assume also misleading information on the instruments, the proposition is do you agree that recovery from spatial disorientation in that setting can be very difficult?

MR WILSON: Yes.

MAJ CHAPMAN: That's especially the case, as you said in response to a question from the Air Vice-Marshal, at low altitudes?

MR WILSON: Absolutely.

MAJ CHAPMAN: We'll return to spatial disorientation though I just want to go now to your experiences with the system under test which is 5.10. So at paragraph 69 you explain that during the course of the flight testing of 5.10, you soon identified that the software introduced had a significant defect. Is that correct?

MR WILSON: That's correct, yes.

MAJ CHAPMAN: That defect was basically that in terms of the attitude information being displayed to the pilots on the TopOwl HMSD, when looking off-axis, pitch and roll were reversed?

MR WILSON: That's correct.

MAJ CHAPMAN: Do we understand, for the benefit for those in the room and online, that pitch and roll are different concepts?

MR WILSON: That's correct.

MAJ CHAPMAN: Can you just describe what pitch is?

MR WILSON: Pitch would be with reference to the longitude in relation to the aircraft – nose up, nose down. And roll would be a bank angle left or right.

MAJ CHAPMAN: So could you use your hand as a visual cue?

MR WILSON: Pitch: nose up, nose down. Roll: left and right.

MAJ CHAPMAN: Thank you. Just jumping forward in your statement to around 86, you provide a number of practical illustrations of a point just made.

MS McMURDO: Sorry, what paragraph is that?

MAJ CHAPMAN: Sorry, 86, Chair.

MS McMURDO: Thank you.

MAJ CHAPMAN: By reference to two particular examples, and these examples, in substance, reflected your description of the issue in the AATES report which ultimately concluded the "unacceptable risk to flight safety". Is that right?

MR WILSON: That is correct.

MAJ CHAPMAN: So just going to the example at paragraph 86.

MR WILSON: If I could have a moment? The description of the behaviour we saw was based on observation. As a test organisation, we would like to make a definitive statement based on analysing the lines of code in the data pack, but we weren't able to do that. So you may find that there was a reluctance to make an absolute statement that the systems were reversed or, in our description there, but this is what I saw it was like.

MAJ CHAPMAN: This is your experience?

MR WILSON: Absolutely, yes.

MAJ CHAPMAN: So we'll just go through that because the illustrations are instructive. So at Example 1 you say this – paragraph 87 – for the first example tested. You adopted an aircraft position, or attitude position, of 30 degrees angle of bank and zero degrees pitch.

MR WILSON: Yes.

MAJ CHAPMAN: So we're now talking about level but at an angle?

MR WILSON: Yes.

MAJ CHAPMAN: At that position, the issue that you identified was that when looking straight ahead, the information presented on the HMSD and the Primary Flight Display, both indicated 30 degrees angle of bank and zero degrees pitch?

MR WILSON: That was correct, yes.

MAJ CHAPMAN: This is when you're looking straight ahead?

MR WILSON: Yes.

MAJ CHAPMAN: So that would, you'd agree, be consistent with the actual position of the aircraft?

MR WILSON: Yes.

MAJ CHAPMAN: However, you go on to say at 87(b), when you looked, or when the pilot looked off-axis – and pausing there – "off-axis" being off straight ahead

MR WILSON: To the side, yes.

MAJ CHAPMAN: Longitudinal axis of the aircraft?

MR WILSON: Yes.

MAJ CHAPMAN: The HMSD symbology indicated, erroneously, a zero degree angle of bank when the aircraft was at 30 degrees, and a 30 degree pitch when the aircraft was actually at zero degrees pitch?

MR WILSON: That's correct. It appeared to be a linear change with, as you panned your head or line of sight to the side, it was a gradual linear change as you moved across. The full change occurred at the 90 degrees.

MAJ CHAPMAN: So accepting that there's a graduated change in that way, and using rudimentary hand as an example, you had, when looking straight ahead, an angle such as this, an angle of bank which was adopted.

MR WILSON: Yes.

MAJ CHAPMAN: Which reflected the true attitude of the aircraft?

MR WILSON: Yes.

MAJ CHAPMAN: Then what we have is, when you look off-axis, we have something approximating this, or perhaps this, or a pitch indication as opposed to a roll indication?

MR WILSON: Yes.

MAJ CHAPMAN: As another hypothetical example – and this is Example 2 – you considered that the aircraft adopted a position of 30 degrees angle of bank and 10 degrees nose up pitch. Again, when looking straight ahead, the information presented on the HMSD accurately, you would say, reflected the position of the aircraft?

MR WILSON: Yes.

MAJ CHAPMAN: Though again, when the pilot looked off-axis, it was your experience that the HMSD symbology indicated 10 degrees angle of bank, when the aircraft was actually at 30 degrees angle of bank, and 30 degrees pitch when the aircraft was actually at 10 degrees pitch.

MR WILSON: That's correct. So as far as data points, so I had two reliable data points: straight ahead, and to the side. I could not properly describe the system function when we had multiple errors – sorry, multiple like pitch and roll, what occurred in between.

MAJ CHAPMAN: So you then say, drawing on those two examples, that – this is at 90 – boiling it down: when looking off-axis, the symbology swapped the pitch out for angle of bank and vice versa, and that the scenarios demonstrate that the presentation of the true state of the aircraft's attitude, when looking off-axis, was misleading when the pilot was looking other than straight ahead.

MR WILSON: Maybe the language "swapped" is a little inaccurate. It appeared to be a linear change. I was describing swapped in the perspective of looking straight ahead and to the side. There was a clear swapping between pitch and roll, but in between it was a graduated change.

MAJ CHAPMAN: But, in any event, when you were looking off-axis, what was being presented to you as attitude information was not consistent with the actual attitude of the aircraft?

MR WILSON: It was false, yes.

MAJ CHAPMAN: It was false?

MR WILSON: Yes.

AVM HARLAND: Can I just ask, in the planning for the flight test, what documentation did you rely on for the description of the characteristics of the head-up display symbology and did that documentation articulate the ambiguity that we're talking about?

MR WILSON: Short answer, no. The documentation we had was just a paper description. It had a description of the symbology. It displayed – sorry, described the pitch ladder and how a bank was indicated using the system. But there was no indication that it was going to change as you went off-axis. We had a heads up from our sister organisation, AMAFTU, that there was something amiss there and so we weren't caught completely unaware when we went airborne. We didn't have any data to substantiate that.

AVM HARLAND: So AMAFTU had given you an indication that there was an issue with the data looking off-axis?

MR WILSON: Yes.

AVM HARLAND: Another question. With the system, when you got the new software and you were actually doing your research into how to do the testing, had any ground testing, like independent verification and validation, been done of that software before it went to flight test, and were you able to access that information?

MR WILSON: No. We expect this to be a very straightforward test activity, essentially. Except for the off-axis thing, we thought – well, we couldn't define that, but for all intents and purposes, it looked like a very straightforward activity. We would go up, work through a series of data points, expecting everything to work fine, and then come home and write it up.

AVM HARLAND: Thank you.

MAJ CHAPMAN: Based on your assessment of those issues as reflected in the examples, you reached the conclusion, as reflected in the report, that the misleading nature of the information presented, combined with DVE conditions, formation flying, were conditions apt to mislead the pilot as to two matters. The first is where the aircraft was relative to the horizon; is that right?

MR WILSON: Yes.

MAJ CHAPMAN: And the control inputs that were necessary to safely recover; is that right?

MR WILSON: Yes, that's correct.

MAJ CHAPMAN: So just to develop that a little further. The issue with the misleading attitude information was that a pilot, in your view, especially in degraded conditions, and possibly in the grip of spatial disorientation, might misunderstand the actual attitude of the aircraft.

MR WILSON: Yes.

MAJ CHAPMAN: And that based on that misunderstanding of the actual attitude of the aircraft, they may, acting rationally, provide control inputs in response to incorrect information.

MR WILSON: This is where it goes to our assessment to - - -

MAJ CHAPMAN: I'll just ask you, do you agree or disagree with that?

MR WILSON: Yes.

MAJ CHAPMAN: You agree?

MR WILSON: Yes.

MAJ CHAPMAN: Please continue.

MR WILSON: Okay, this is where it goes to the role of AATES is to assess that system specifically in the Defence construct. So with our knowledge of how our pilots are basically put together, or trained, this system represented a significant departure from the norm. So they would expect that an angle of bank would result in a – a right-angle of bank would need a left stick to recover. And it's all oriented on the axis of the aircraft.

This was a significant departure from that norm and it represented a hazard because of the normal – the expectation built up by the pilots over their entire training continuum.

MAJ CHAPMAN: Just taking that second part where it risks the pilot putting control inputs that might not be appropriate. That may well, in a spatial disorientation context, make an already perilous situation worse?

MR WILSON: Absolutely. This concept was further explored by NASA. The - - -

MAJ CHAPMAN: Was that NASA?

MR WILSON: NASA.

MAJ CHAPMAN: The US National Space Agency?

MR WILSON: Space agency, yes. Yes, they're a research body. They set out to assess a similar system in a different application, in a highly agile fighter aircraft at altitude. So the results don't compare directly, but the results are conservative, I would suggest, compared to the low-level helicopter environment. They found that a pilot would be three times more likely to become disoriented using that system, that type of system.

MAJ CHAPMAN: And flowing from that, the use of – or the presentation of misleading attitude information, you agree, in your view, could further exacerbate the effects of spatial disorientation?

MR WILSON: It could – sorry, it could make you more likely to become disoriented.

MAJ CHAPMAN: Yes.

MR WILSON: And that would inhibit your ability to recover from – or recognise and then recover from the disorientation. It would take going from an understanding of your orientation with respect to the image presented on the HMSD, recognise it's an error, and then transition to the instruments, become reoriented on the instruments inside and affect a recovery. That would be a very complicated thing to do at low level.

MAJ CHAPMAN: Understand. Now, I'm just going to turn to discuss flying in DVE conditions and your experience with that. So at 92 of your statement you deal with how normal daytime flying differs from flying in DVE – and that's degraded visual conditions – you see that?

MR WILSON: Yes.

MAJ CHAPMAN: And you agree, do you, that your point is that flying in DVE conditions is noticeably more challenging than daytime flight?

MR WILSON: Yes.

MAJ CHAPMAN: That's simply because the pilots are – and we've established this – to varying degrees, deprived of the normal visual cues and need necessarily to rely on more instruments?

MR WILSON: That's correct. You could think about in terms of total of cognitive capacity. If you have 100 cognitive capacity points, by day you may use 20 to maintain orientation. By night you may get up towards – I'm picking numbers out – but maybe towards 80 just to maintain orientation.

MAJ CHAPMAN: Before you add in dealing with other factors.

MR WILSON: Mission, manoeuvring the aircraft, it affects the degree of aggressiveness with which you can manoeuvre the aircraft. So if you try and do an aggressive manoeuvre in a DVE, you are more likely to exceed your ability to maintain awareness of your orientation.

MAJ CHAPMAN: Would you agree with the description of that circumstance to be a high workload environment?

MR WILSON: Absolutely.

MAJ CHAPMAN: These challenges, as you've just touched on, of flying in a DVE conditions, are further compounded when you're flying in formation?

MR WILSON: Yes.

MAJ CHAPMAN: And overwater?

MR WILSON: Yes.

MAJ CHAPMAN: And executing turns and manoeuvres; is that right?

MR WILSON: Yes.

MAJ CHAPMAN: That's because each of those elements builds on the other to increase a risk of spatial disorientation?

MR WILSON: Yes.

MAJ CHAPMAN: Is it the case that very frequently, specially when flying in formation, pilots are required to execute turns to the left and the right?

MR WILSON: Yes, you are required to turn.

MAJ CHAPMAN: And that's especially the case when you're, as I say, flying in formation? It's often not just a linear path for the whole flight, especially in a Special Operations context. Do you agree with that?

MR WILSON: If you're operating at low level, the formation has to manoeuvre around obstacles, climb and descend over terrain. While you're doing that the lead aircraft isn't to your front, it's off to the side. So I'll be sitting in the cockpit looking off at lead here. And particularly the case, I

think, where we're talking today, number 3, I have to be looking at lead but also have to be maintaining awareness of where number 2 is, further displaced out, I think, to the right.

MAJ CHAPMAN: In terms of turning and executing turns, depending on where the flying pilot might be positioned, that can often involve looking cross-cockpit?

MR WILSON: That's correct, yes.

MAJ CHAPMAN: That's for at least two reasons. The first is to maintain safe visual separation from other ships in the formation?

MR WILSON: That's correct.

MAJ CHAPMAN: The second is when turning to maintain visual sight of the aircraft's vector along a flight path.

MR WILSON: Sorry, say that again?

MAJ CHAPMAN: To maintain your view, as the flying pilot, of where the aircraft is turning or heading.

MR WILSON: Yes, my flight path – projected flight path, yes.

MAJ CHAPMAN: You'd agree, would you, that looking cross-cockpit on the MRH almost invariably involved looking off-axis?

MR WILSON: Yes.

MAJ CHAPMAN: That's because whatever the scenario, unless the pilot is looking straight ahead, you're looking off-axis; correct?

MR WILSON: Yes. If I can have a second?

MAJ CHAPMAN: Sure.

MR WILSON: So if I'm looking across the cockpit, the MRH has quite a wide cockpit, and if the aircraft ahead are off to the side, I'll have to look across. There is cockpit structure, like the windscreen support pylon, we go across the door, there's door frames. But most importantly, the dash sits relatively high. So as soon as I start to bring the nose up or bank, I run the risk, particularly looking cross-cockpit, that I lose sight of the preceding aircraft under the dash or within the cockpit structure. If it's just the cockpit

structure, you can move your head from side to regain visual. But if it's under the dash it becomes a whole lot more complicated.

MAJ CHAPMAN: And it's when – sorry.

AVM HARLAND: Just to clarify as well, if you're not looking cross-cockpit, is it still likely that you're going to be looking off-axis if you're flying in formation?

MR WILSON: Absolutely. Absolutely. So if I'm on the inside of the formation, I'm not so much concerned about the dash now, but I just have the door frame and structure, which become obstacles, and you can then move your head around to correct that problem. But on the off-axis side, looking cross-cockpit, the dash becomes a problem.

AVM HARLAND: It's more problematic. But suffice to say that regardless of what seat you're looking, whether you're looking cross-cockpit or not cross-cockpit, in a formation it's likely that during parts of the formation you're going to need to look off-axis.

MR WILSON: Yes, that's the geometry of the formation.

AVM HARLAND: Thank you.

MAJ CHAPMAN: And it was when your pilot was looking was looking off-axis, as the Air Vice-Marshal has just referred, was when, according to your own experience in the AATES report, that a pilot using 5.1 may be being provided with misleading attitude information.

MR WILSON: Yes.

MAJ CHAPMAN: And it's misleading insofar as, as you've said, the HMSD's indication of pitch did not reflect the reality of the aircraft's pitch?

MR WILSON: Pitch and roll, yes.

MAJ CHAPMAN: And the same for roll?

MR WILSON: Yes.

MAJ CHAPMAN: The risk, you agree, is that specially in the DVE environment, that the misleading nature of this information may lead to or exacerbate the effects of spatial disorientation.

MR WILSON: Yes.

MAJ CHAPMAN: You then set out at paragraph 98 a particularly stark illustration as to how relying on erroneous information or misleading information might cause pilots to provide inputs which do not recover the aircraft. Do you see that?

MR WILSON: Yes.

MAJ CHAPMAN: Is it the case that that example draws on earlier illustrations of the behaviour of the symbology to explain how responses can dangerously imperil the aircraft?

MR WILSON: That's correct. I think there is a risk that when we look at this system, if you're looking at the centre line of the aircraft and at small angles to the side, it's a small error. But in a – when we do flight testing, we had to consider the full gamut of situations a pilot can be exposed to.

If I was looking further off-axis, say in a bank to the left, as I looked off-axis to the right, it would be indicating a nose up change. If I panned across to the left side, I would be seeing the nose pitch down as I pan across that angle. So it would be showing quite a substantial change in pitch down, which would cause me to pull the nose up.

MAJ CHAPMAN: I understand. And in paragraph 101 you explain at the end of this illustration that when in – and I'll use the term grip of the spatial disorientation, you say that anyone's cognitive capacity would be overwhelmed – or can be overwhelmed.

MR WILSON: Depending on the extent to which it developed. So if it was a minor case of disorientation and a minor attitude upset, you could recover. But as the upset gets larger and the disorientation gets greater, then the combined effect of these known illusions will make it very difficult to recover.

MAJ CHAPMAN: That, using your example, if this were to occur at low altitudes, especially, you say safe recovery from controlled flight into terrain would likely be impossible?

MR WILSON: Thank you. I was about to clarify that. At altitude, there's obviously much more time to recover.

MAJ CHAPMAN: Sure.

MR WILSON: But this is specific to terrain flight on a helicopter at low level.

MAJ CHAPMAN: Mr Wilson, is it the case that all of these examples that you provide are to highlight the fundamental point here that, especially when operating in these conditions, pilots are trained to have innate or intrinsic faith in their instruments?

MR WILSON: Yes.

MAJ CHAPMAN: That where those instruments may be misleading or potentially misleading, it elevates significantly the risk facing aircrew in terms of their ability to operate the aircraft safely?

MR WILSON: It's not only my assessment, it's also reflected in the Airworthiness Standards laid down by our recognised airworthiness body, being the FAA.

MAJ CHAPMAN: Thank you. I'll turn now to address the - - -

MS McMURDO: Just before you leave that. If on top of all the factors you mention in paragraph 93 – operating at low level, overwater, in formation and in degraded visual environment and going into a turn – you add into that that both pilots are likely to be fatigued.

MR WILSON: Yes.

MS McMURDO: Is that fatigue likely to be a factor that might impact on their ability to counteract the visual issues?

MR WILSON: Ma'am, I suppose we're talking about – it's not my area of expertise. But I would suggest that we're talking about processing power of a system. If it's degraded through fatigue, then I would expect that you have less performance and then you're not able to cope with extra demands. That would seem a logical extrapolation.

MS McMURDO: But, as you say, it's not your area of expertise.

MR WILSON: No. But it sounds logical.

MS McMURDO: But you're an experienced pilot, have you experienced fatigue yourself, and its impact on you as a pilot?

MR WILSON: Yes.

MS McMURDO: So is that the impact it's had on you, in your experience as a pilot?

MR WILSON: Well, I haven't become disoriented while I'm fatigued, so I can't - - -

MS McMURDO: No. No, obviously. But in terms of your ability to respond to an arising situation.

MR WILSON: It would be a general term, I'm reluctant to be drawn outside my area of expertise, ma'am.

MS McMURDO: No, I'm not trying to draw you outside your area of expertise; I'm trying to ask you to draw on your experience as a pilot.

MR WILSON: Yes.

MS McMURDO: If you've been fatigued and it affected your ability to respond to challenging situations?

MR WILSON: Demands or workload, yes, that would be a fair statement, ma'am, yes.

MS McMURDO: The other thing I wanted to ask you about is the role of the aircrew. Do the aircrew have any role in assisting pilots in this position, where they're having problems with orientation?

MR WILSON: Not especially. The aircrewman, they – this is a piloting function. Their ability to intercede or provide value-added information is probably limited. If we can draw on my personal experience – and I believe it was reported during this case, that one of the aircraft called to pull up – I've had experience where I've had pilots myself who were not responsive to verbal commands. When we get to the point where we're cognitively overloaded, my experience is people tend to have two – or exhibit two types of behaviours. One is there's so much stimulus that they will just sit there and respond to none of it. Or they'll focus on one specific aspect, to the detriment of everything else.

And usually the audial – or sorry, the audio channel gets blanked out. I've had pilots with the landing gear warning audio going off in their headsets, "Landing gear, landing gear", and they were completed unresponsive to it. So at – how we perform at the limits of our cognitive capacity is a bit of a variable and I would not rely on audio as a risk mitigator in that situation.

MS McMURDO: That's interesting. Now, your experience in the

MRH-90, in any case, if the aircrew are strapped into their seats in row 7 and the doors are closed, their ability to see outside and assist would be pretty limited in any case, wouldn't it?

MR WILSON: It would be difficult. So the aircrewman are there to provide clearances, man the gun, assist will role equipment in the machine. They're not specifically trained to recognise that a pilot is disoriented and to assist them to recover. So it wouldn't be part of their formal duties or skillsets. If an individual aircrew was able to help, that would be great. But it's not something I could rely on.

MS McMURDO: Not expected.

MR WILSON: I couldn't rely on it, particularly because of where they're seated and their training and experience background.

MS McMURDO: Thank you. Thank you for that, yes.

MAJ CHAPMAN: Thank you, Chair.

Mr Wilson, so we were moving to the OPEVAL testing itself. So to begin with, you're familiar with what I'm referring to? The OPEVAL testing?

MR WILSON: Yes.

MAJ CHAPMAN: I think it's a report we've previously – you may still have it in front of you?

MR WILSON: Yes.

MAJ CHAPMAN: It might be the next one. The Standards report?

MR WILSON: Yes.

MAJ CHAPMAN: You say at paragraph 102 of your statement that it was a report, to your understanding, that was commissioned in response to the "unacceptable" findings that AATES had reached. Is that right?

MR WILSON: That's correct.

MAJ CHAPMAN: It was commissioned by the then Director of Operational Airworthiness; is that right?

MR WILSON: My understanding is - - -

MAJ CHAPMAN: Your understanding?

MR WILSON: - - - the process either went through or to, or was instigated through, that office.

MAJ CHAPMAN: So that was my next point. Do you know that to be a factor or is that just you understand it to be the case?

MR WILSON: That's my understanding.

MAJ CHAPMAN: Yes, I understand.

MR WILSON: You'd have to speak to him directly, yes.

MAJ CHAPMAN: You describe at paragraph 103 that the OPEVAL was proposed, to your understanding, to conduct a further evaluation of the HMSD 5.10 upgrade, as well as a pilot survey?

MR WILSON: That's correct.

MAJ CHAPMAN: From paragraph 104 of your statement you discuss the nature of the OPEVAL testing activity in terms of alignment, or not, with the DASR requirements; is that right?

MR WILSON: That's correct.

MAJ CHAPMAN: There you say – and I'm summarising – that where issues of attitude symbology are to be tested, the DASRs require that to be conducted as a Category 2 flight test activity. Is that right?

MR WILSON: Correct. That is looking at the situation in a retrospective fashion.

MAJ CHAPMAN: I see.

MR WILSON: Yes.

MAJ CHAPMAN: Can you just describe, drawing back a few years now, what is involved in a Category 2 flight test activity?

MR WILSON: What's involved or?

MAJ CHAPMAN: Why something would be categorised as a Flight Test 2 activity as opposed to a 1, or a 3, or a 4?

MR WILSON: I can't quote line a verse how you work through that.

MAJ CHAPMAN: Sure. It's years ago.

MR WILSON: It's a few years now. But, essentially, the key phrase there is "basic pilot procedures". There is further explanation in DASRs saying that we're talking about basic pilot procedures, we're not talking about checklist actions. But the interpretation of "basic pilot procedures" would be how a pilot maintains orientation with reference to the instruments would be a basic pilot procedure.

MAJ CHAPMAN: Which is why this was categorised as a Category 2 flight test – not the OPEVAL, but the AATES testing?

MR WILSON: Yes.

MAJ CHAPMAN: And what's your understanding of the category of flight testing that the OPEVAL was conducted under?

MR WILSON: I believe it was 4.

MAJ CHAPMAN: 4. And you say at 104 of your statement that the OPEVAL was conducted – or rather, that it ought to have been conducted as a Category 2 flight test activity; is that right?

MR WILSON: That's correct. Based on where the organisation took the capability, as into the full role environment, it needed a Category 2 test activity to substantiate that decision.

MAJ CHAPMAN: But am I right in saying that the Standards Branch, based on your earlier evidence, could not actually have conducted a Category 2 flight test activity?

MR WILSON: No.

MAJ CHAPMAN: And that only a Flight Test Organisation such as AATES was authorised to do that?

MR WILSON: That's correct, yes.

MAJ CHAPMAN: Is it the case that even if Standards correctly categorised this as a Category 2 flight test activity, they themselves would not have been able to undertake that activity?

MR WILSON: No.

MAJ CHAPMAN: You agree with that?

MR WILSON: Yes, I do agree.

MAJ CHAPMAN: So is it your point here to suggest that the OPEVAL activity that took place because it was, in substance, a Category 2 activity not appropriately authorised?

MR WILSON: It depends on perspective. So if I look back, the Category 4 activity was correctly authorised at the time. Where the organisation took the results, if I look at it from a retrospective perspective, the activity should have been a Category 2 activity and it was not authorised as a Category 2 activity.

MAJ CHAPMAN: Yes. And then you say further at paragraph 105 that had it been a Category 2 flight activity, that prior to any in-flight testing, it would have been proceeded with a period of academic research and simulated base training. Is that right?

MR WILSON: That would be a substantial activity. Because we're talking about a significant deviation for what is normal from our training edition, how we build pilots. There is also a degree of literature around, as I mentioned, from NASA and other agencies that have previously experimented with these types of displays. We wanted to make sure we were properly informed to the results of those activities.

Also, the key one we would look at is the FAA when it writes airworthiness codes; they don't take that responsibility lightly. They are literally standing on the shoulders of giants. They come off the NTSB, the aviation industry within the States and at NASA and they will take a collective approach to understanding what the problems are before they start writing a regulatory frame or regulatory requirement.

I would not take an activity to disregard their requirements without contacting the agency itself and developing a proper understanding of why they wrote that requirement.

MAJ CHAPMAN: Though it was your understanding, was it, that none of that academic research or simulated base testing occurred in the case of the OPEVAL?

MR WILSON: No, because it avoided the less than favourable conditions where the likelihood of a pilot becoming disoriented was not explored.

AVM HARLAND: Were you aware if the OPEVAL explored formation flying?

MR WILSON: Not to my knowledge.

AVM HARLAND: Just a question, just if I could, to clarify the CAT 2 to CAT 4, and I'll put this forward and if you could tell me whether it's correct or not. So, by your understanding, given the nature of the TopOwl symbology that was being tested, it's your opinion that it would've ordinarily been a CAT 2 flight test?

MR WILSON: Yes.

AVM HARLAND: The OPEVAL was conducted not as a CAT 2, and you understand, therefore, it would have been a CAT 4 because it doesn't fit any other categories? Or do you know categorically it was a CAT 4?

MR WILSON: I believe it was CAT 4. It was the source of quite a deal of conflict amongst – friction amongst the AATES' executive regarding the position we were dealing with at this stage. We knew the organisation was going to go there. I know that LTCOL Reinhardt was adamant that he tried to influence – maintaining safety during that exercise.

I was concerned that the exercise had the appearance of wanting to put a document forward that could be placed on the table next to the AATES report and say, "Well, I've got one flight test and another flight test, let's throw the AATES report out". So there was friction of that. So it was very troubling times for us.

AVM HARLAND: So if we accept it went forward as a CAT 4, is it ordinarily available to the organisation to give a general Service release without conditions based on the outcome of a CAT 4 flight test for this nature of change?

MR WILSON: No.

AVM HARLAND: It would ordinarily have to be done to CAT 2 to be able to generate a Service release?

MR WILSON: We would have to conduct testing within the standard configuration role – sorry, of the configuration within the role and operating environment of the MRH system. If we wanted to pair back that operating environment and place restrictions on it then you could go ahead because the AATES report, the Category 2 flight test report, said that the

"unacceptable" was the risk of a pilot becoming disoriented at low level in a bad DVE – in less than favourable conditions.

If you remove the less favourable conditions, then the likelihood of that problem manifesting in an accident has been reduced, in that you have got a good horizon, good visual cues, the pilot has sufficient cues to overcome the false information, the risk has been mitigated – that would be a fair outcome.

AVM HARLAND: And in that case, when the outcome of the testing was used for Service release of the aircraft to go into general Service, you would ordinarily attach conditions on that based on the flight test, so that you maintain safety for that capability. Is that correct?

MR WILSON: That's correct. The absent information from the OPEVAL report, by convention, as a test pilot would normally structure our reports in terms of the test method and test conditions and it's highlighted during our training as test pilots that the test method and particularly the test conditions provide context to the data gathered and then the conclusions and recommendations at the end of the report.

My recollection of the OPEVAL, it didn't detail the restricted nature of that report. So to an uninformed reader, they would look at that and believe that the aircraft was cleared to operate within its full role and environment, and that's not the case.

AVM HARLAND: But if I could just extend a little bit further. The OPEVAL report, I understand you've got that in front of you?

MR WILSON: Yes.

AVM HARLAND: It's Exhibit 41, Annex E. On page 8 of that report there's a warning. The warning reads:

> *The HMS/D LOS must be aligned, or line of sight, must align with a longitudinal aircraft axis when conducting an unusual attitude recovery using the HMSD symbology as an attitude reference. Alternatively, use the AFCSGA mode for automated UA recovery.*

MR WILSON: Yes.

AVM HARLAND: Your thoughts on that as a risk control?

MR WILSON: That is false. The idea that you can put a risk mitigator in there that deliberately exposing a pilot in a degraded visual environment to

false information it is a known hazard. And then say to the pilot in that critical place of flight, we're at low level, in a degraded visual environment, there's a false horizon there, I've only got potentially 50 feet to recover and tell the pilot, "just look to the front before you recover".

The likelihood that you're going to be in the ground before you actually get to the front is high. It's not a risk mitigator at all.

AVM HARLAND: And if you add to that the complexity of flying in formation where you have a responsibility to avoid other aircraft in the formation, how does that relate to the warning?

MR WILSON: It's absent of logic. If I'm sitting in formation and I get another aircraft coming across in front of me and I have to take avoiding action, I look across – it's going to be coming at me fairly quickly, I'm going to have to make a control input immediately to take avoiding action of that aircraft. The proposition that on detecting a threat of collision, I'm going to look away from that threat to the front, make an attitude change and then look back to see if it was appropriate – sufficient/appropriate to avoid collision is just devoid of logic.

AVM HARLAND: Okay, thank you.

MR WILSON: Do you want me to go on to talk about the go-around mode as well?

AVM HARLAND: Yes, please.

MR WILSON: Right. I saw that in this report, and I spoke to LTCOL Reinhardt about that. My understanding of the Flight Manual which should be shared amongst all MRH aircrew is that statement is not supported by the description of the system in the Flight Manual, so that it was put there should raise alarm bells straightaway.

At the flight test level, we would be aware of the system certification basis. It is not supported by the system certification basis. And the test pilots who wrote this, or endorsed this, should also have been aware that it's not part of the system certification basis. So they should have been aware that there is a problem with that straightaway.

The further problem is that the test plan made no mention of using of system outside its certification base because that would trigger a high level of test category. Then Military Permit to Fly did not authorise them to conduct testing to substantiate its use in that manner. When you go and look at the data gathered during that test activity, I can see no evidence of data being

gathered to substantiate that the system would perform that task.

I raised those concerns with LTCOL Reinhardt and we discussed putting some flights together to go and test that premises at a basic level. I tested it and had to intervene to prevent the – I pushed the autopilot go-around button in a terrain flight type environment and I had to intervene to prevent flight into terrain.

I also used it in another configuration where the aircraft – I had to intervene to departing control flight. So I think that may have been amended in response – or actually, I presented that to Standards Branch. Initially, I think it's detailed in my statement there that the SO1 Standards accused me of some kind of nefarious intent by raising that anomaly with him. It took LTCOL Reinhardt's intervention to cause him to listen to reason. This was extraordinary behaviour from a test pilot, I thought. Eventually, he accepted that the data I had gathered was correct, describing the system function. However, the statement wasn't changed. There was an amendment that if you were going to rely on the go-around mode you had to make sure that you pressed it whilst you were within the system limitations.

As a treatment, that seems a stark jump from logic, to say that a person's become disoriented and then to have the wherewithal or the spare cognitive capacity while they are disoriented to understand that they are within the Capture Zone of the Flight Control System. Well, that means you are sufficiently oriented to understand you are within the Capture Zone of the autopilot.

There is a logic gap in that statement. To my mind, that should have been deleted altogether. It is a further concern – sorry, Luke, I have to continue with this one, if you don't mind – it is a further concern because, to an unqualified person, when they are presented with that statement, it implies a risk has been identified, in that there is a risk of a pilot becoming disoriented. It implies that we have employed an engineering level risk treatment.

So in the hierarchy of risk treatments there would be avoidance. So we can't avoid operating in DVEs because that is part of the requirement, but it gives the appearance that there's a high-level engineering treatment available. If the pilot became disoriented, all they have to do is press the button and it solved them. It is a false statement.

AVM HARLAND: So, in summary then, how would you describe that warning in terms of an effective control for managing the threat of CFIT that you identified?

MR WILSON: I would say it is likely to exacerbate CFIT. If you push the go-around button while you're disoriented at 50 feet, the aircraft will fly you into the ground.

AVM HARLAND: Thank you.

MAJ CHAPMAN: And your evidence will go into more of that later. Though, just touching on your exchange with the Air Vice-Marshal there, I think your response to the warning that was included in the Standardisation Manual was it was false. I think another word was "it was a departure from logic". Can I just draw your attention to paragraph 120 of your statement where you directly address this.

And the last paragraph, the assertion that:

> *On detecting a conflict with a formation aircraft, the pilot should look away to the front to make an attitude change, then look back to reacquire the conflicting formation traffic is absurd*.

MR WILSON: Yes.

MAJ CHAPMAN: Thank you.

MR WILSON: Thank you.

MAJ CHAPMAN: Can I just return to paragraph 107 of your statement? And you make the point there that the OPEVAL activity that was conducted was not, in your view, a sanctioned process; is that right?

MR WILSON: With respect to the outcomes of the activity. At the start point, the intent of the AATES exec in approving a Category 4 test activity, I believe, was sound. But I think the way the organisation used it meant that the product now was no longer sanctioned.

MAJ CHAPMAN: To the extent that subsequent authorisations, including Service release, relied on these findings in the OPEVAL, were those authorisations of no effect or questionable?

MR WILSON: From a number of levels. In that the testing wasn't in compliance with the DASR requirements, and based on the falsehoods contained within the OPEVAL, in that the treatment measure, being the go-around button or use the autopilot, and the error by omission of the environmental constraints with respect to the data gathered – there are significant errors.

MAJ CHAPMAN: In light of the significant errors, are you suggesting that the ultimate Service release of the version 5.10 upgrade, relying as it did on the OPEVAL assessment, was flawed?

MR WILSON: Yes.

MAJ CHAPMAN: And you next make the point at paragraph 108 that:

> *Testing for airworthiness can, as is established, only be conducted by an approved Flight Test Organisation.*

MR WILSON: Correct.

MAJ CHAPMAN: And at 109 you set out an additional reason why the OPEVAL was, as you say, problematic. Do you see that?

MR WILSON: Yes.

MAJ CHAPMAN: And you say that:

> *In addition to it not being a DASR-sanctioned activity, it was not conducted by people who, at the time, had relevant or appropriate qualifications for the testing of that kind.*

Is that right?

MR WILSON: That's correct, yes.

MAJ CHAPMAN: And you identify at paragraph 109 a number of individuals involved in that testing who, to your understanding, were not appropriately qualified. Is that right?

MR WILSON: That's correct.

MAJ CHAPMAN: Although who were principally involved as assessing pilots on that activity. Is that right?

MR WILSON: That's correct, yes.

MAJ CHAPMAN: And played a role, to your understanding, in the production of the OPEVAL report and the outcomes.

MR WILSON: That's correct.

MAJ CHAPMAN: And you say that these people – and I'm not going to ask you identify them, they're in your statement – were not qualified in a number of senses. The first, they were not current test pilots at the time of the OPEVAL activity?

MR WILSON: So, to my recollection, one of them was not. The other, without going back and reviewing Defence documents, I can't confirm that. There was a question at the time. If I may? I included these examples as an indication of the freedoms afforded to people outside the Flight Test Organisation. So it highlights that within a Flight Test Organisation, I have burdens on myself to substantiate when I go to a Military Permit to Fly interview with the DoSA Flight Test to substantiate that I am a fit and proper person to conduct that testing. It means I have to maintain all of my qualifications. I can't just be basically current. I have to be highly proficient in all of the tasks that are relevant to the test activity.

The DoSA Flight Test, at the time, was not a particularly agreeable person. He was a very professional person and he was quite willing to reject an MPTF application based on interview alone. So this indicates the degree of freedom afforded to a low-level test activity verse a test activity undertaken within the bounds required by the test integrity and safety requirements of a Flight Test Organisation.

MAJ CHAPMAN: So is your point that to your understanding of their qualifications, the people you identified, if they were to go to the DoSA-FT for a Military Permit to Fly or to conduct this activity, it might likely to be rejected because they didn't have sufficient qualifications or experience?

MR WILSON: Correct. That is the case for the HSD 5.1 original testing. One of those persons was scheduled to do the activity. The Flight Test Engineer reviewed his flight logs as part of the disclosure that we have to make to the DoSA Flight Test and brought to attention of LTCOL Reinhardt, the state of his currencies.

LTCOL Reinhardt acted straightaway and removed him from the test activity and then put me in at the last minute. So it is a very real – something we take very serious within a test organisation, sure.

MAJ CHAPMAN: Because LTCOL Reinhardt was not satisfied this person had sufficient qualifications to conduct the Category 2 test flight - - -

MR WILSON: If we put the – not the individual, the flight logs of that individual in front of the DoSA Flight Test, it would cause embarrassment to us as a flight test agency because he would've withdrawn the Military Permit to Fly.

MAJ CHAPMAN: So was this individual who was withdrawn, effectively, by LTCOL Reinhardt, did they then appear as one of the testing pilots on the OPEVAL?

MR WILSON: That's correct, yes.

MAJ CHAPMAN: You set out at 100 – sorry, I withdraw that. I'll now turn to discuss the OPEVAL report in a little more detail. Do you still have that with you?

MR WILSON: Yes, I do.

MAJ CHAPMAN: Just before I do, you're aware that a number of your colleagues, specifically LTCOL Reinhardt and MAJ Lamb were involved in setting conditions for the OPEVAL activity. Are you aware of that?

MR WILSON: I'm aware of that, yes.

MAJ CHAPMAN: Is there some – or first of all, were you involved in that process at all in setting the conditions and the limitations for the OPEVAL?

MR WILSON: I was involved on the periphery. I discussed my concerns with LTCOL Reinhardt and MAJ Lamb regarding my belief about where the organisation was going to take this once the door was cracked. So, other than at the periphery, I wasn't involved in the detail of that planning.

MAJ CHAPMAN: So you took the decision, did you, to withdraw yourself from setting those standards or being involved in that process?

MR WILSON: LTCOL Reinhardt and I have a very good – a relationship. We respect each other. He respected my opinion and didn't draw me in to a situation where I would feel compromised.

MAJ CHAPMAN: Because you were concerned about giving some evidence about where this was heading, is that - - -

MR WILSON: Yes.

MAJ CHAPMAN: And you say at paragraph 110 that you have considered the OPEVAL report. So you've read it; is that right?

MR WILSON: That's correct.

MAJ CHAPMAN: At the time.

MR WILSON: But some years prior to writing this statement, yes, sir.

MAJ CHAPMAN: And so back before you retired?

MR WILSON: Yes.

MAJ CHAPMAN: And you make the observation at 110 that from (a) to (d), that in your view the OPEVAL report, despite being intended to respond to the AATES report, that it failed to do so in a number of respects. Do you see that?

MR WILSON: That's correct, yes.

MAJ CHAPMAN: And these included – and you list them at 110. And I'll just give four examples. The first:

> *The OPEVAL failed to refer to the DASR requirements for the system to meet airworthiness safety standards.*

Is that right?

MR WILSON: That's right. It was silent on that matter.

MAJ CHAPMAN: The second point is that, you say that:

> *The OPEVAL report failed to address specifically-identified airworthiness code/standard non-compliances.*

Is that right?

MR WILSON: That's correct. It seemed irregular that you would have one report identifying significant code defects; another report is being put forward to override, effectively, that report. You would have to address that upfront and explain why.

MAJ CHAPMAN:

> *There was a failure –*

your third point –

> *to address the principal conclusion reached in the AATES report that the off-axis error in the symbology could result in controlled flight into terrain.*

Is that right?

MR WILSON: Absolutely. Specifically, this is because the Category 4 OPEVAL avoided the conditions where that was likely to manifest. That's significant because we have got a body of people who have assessed themselves that if they operate in that area, it is too hazardous for them to operate. They then approve the system into Service for use by less qualified people in more demanding environment than they were willing to operate, but then when they do that – this is a Defence organisation – it's an order that you will go and do that. It seems very irregular to me.

MAJ CHAPMAN: And your fourth point concerning the OPEVAL report, that:

> *There was a failure in the report to identify any clear operational capability that could only be achieved through the introduction of 5.10.*

Is that right?

MR WILSON: Yes. This is significant because I think there is a line in DASR – which I can't quote line and verse – but it talks about achieving operational capability being used to offset against a – I think it was intended as a minor non-compliance, but that's my belief. Significantly, here is when we did the Special Operations approach testing. In fact, this all stemmed from the Special Operations approach testing we did where we did a workload assessment and we found that the average pilot could perform the Special Operations approach with an acceptable level of workload using the version 4.0 symbology set.

It did not have distance information displayed. The pilots had to scan inside to the Primary Flight Display to derive distance information. But it was an acceptable level of workload. There was no safety issues. There were no airworthiness compliance issues. It was a system that was adequate to achieve the operational outcome. It was not the best, so we made the recommendation that you could reduce pilot workload by placing distance information in the HMSD symbology set.

So the language used in that report is calm and measured. When we go to talk to the HMSD 5.1 symbology set, yes, it had distance information there, but it was not airworthy for use in the full environment we were going to use it in, and it implied a very high risk of death. The language between the two is very significantly different from a Flight Test Organisation perspective. That you could say that the provision of distance information

now overrides the high level of language used in the 5.1 report is not a logical conclusion to draw.

MAJ CHAPMAN: So just to summarise that, the iteration of the symbology prior to 5.1 was 4; correct?

MR WILSON: That's correct, yes.

MAJ CHAPMAN: 4 did not include distance to go indications?

MR WILSON: Yes. No, it did not.

MAJ CHAPMAN: One purpose, and a primary purpose, of 5.10 was to include distance to go information. Is that right?

MR WILSON: Yes.

MAJ CHAPMAN: And your point, is it – and correct me if I am wrong – that version 4, while it didn't have distance to go information, importantly, it also didn't – the issue of misleading attitude was not present with version 4.

MR WILSON: That's correct.

MAJ CHAPMAN: So you have a situation where, with version 5.10, you're introducing something which provides a distance to go capability though attendant with that is significant risk associated with the misleading attitude information?

MR WILSON: That's correct. I would further put a point on that. The intent of putting distance information in the HUD symbology was to reduce pilot workload. The pilot workload is associated with a scan into the Primary Flight Display to derive distance information. If we're looking particularly at the Special Operations approach profile, the aircraft is in a decelerated shoot, I'm looking forward to my target and I have to break out that target from the background.

It is a busy profile. But if I take my line of sight during that sequence, I could then measure the angle between the line of sight down to the distance information of the Primary Flight Display and the angle between my line of sight to the distance information at the top of the HMSD symbology set.

It is a smaller angle within the HUD but it's not a convincingly smaller angle to my mind. I think if we did an assessment to look at how long it takes for the eye to scan to either information source, and the dwell time

required to interpret that information. We look at the information of the Primary Flight Display, it's a clear large font, colour image, which is easy to interpret versus in the HUD symbology it's a monochrome green which is a little bit harder.

I think if we did a study to see how long it took to derive distance information using both systems I don't think we actually would have achieved a reduction in pilot workload. I don't have the data to back that up. It's a theory I would put forward, and I think in the report we put forward, was that the distance information presented at the top of the HMSD symbology set in 5.1 should be moved closer to the line of sight during the approach to achieve the outcome of the actual operational need that we identified in the earlier AATES report regarding Special Operations approaches.

AVM HARLAND: Just approaches, if I could. What role is the non-flying pilot playing at this stage?

MR WILSON: So non-flying pilot is essentially backing up the flying pilot. So they will be calling distance run. We recommend that procedure as a stopgap or a catch in case the flying pilot missed the distance run cues. In testing that procedure as well, we have had – or the reason we test that procedure stemmed from earlier accidents.

And there was a BOI finding that Special Operations approaches had to be clearly defined by a Flight Test Organisation to understand the boundaries between the sequence being performed and the absolute manoeuvre of potentially the aircraft. So our testing stressed the aircraft's manoeuvre envelope and then we put in place bounds that a normal pilot would be able to respond within.

And then we put triggers or gates to cause the non-flying pilot to command a go-around or an abort of the approach by the flying pilot. So that will be the non-flying pilot's primary responsibilities, is to monitor the pilot is within the safe bounds of that sequence.

AVM HARLAND: So there are multiple layers of safety with respect to the distance to go for a Special Operations approach?

MR WILSON: Yes.

AVM HARLAND: The non-flying pilot has a part to play. There's a Primary Flight Display which is, as you said, quite clear to see in addition to what would have been on the HUD for version 5.1.

MR WILSON: Yes.

AVM HARLAND: Okay, thank you.

MR WILSON: That's all right.

MAJ CHAPMAN: And was it your evidence that version 4 – are you aware, version 4 of the symbology – I withdraw. Is it your understanding that prior to the introduction of 5.1 – so you were operating on version 4 – that there was access to distance to go information on the aircraft?

MR WILSON: Yes, in the Primary Flight Displays – in multiple places on the Primary Flight Displays.

MAJ CHAPMAN: So the only purpose achieved – well, not the only, but a purpose achieved by 5.10, the desire was to replicate or move the distance to go information from the Primary Flight Display to the visor?

MR WILSON: Yes.

MAJ CHAPMAN: But it's not the case, is it, that the introduction of the distance to go function on the visor, on the TopOwl visor, was essential in the sense that it was already a capability within the aircraft on the Primary Flight Display?

MR WILSON: To reinforce the point, there was earlier AATES testing by a licensed Flight Test Organisation defining that it was safe and within the bounds of a normal pilot to be able to achieve that task with using that system.

MAJ CHAPMAN: So, on one view of it, it was a "nice to have" on the helmet, but it wasn't necessary in terms of the information that was already on the Primary Flight Display.

MR WILSON: I think the language used in the Special Operations report was a little bit stronger than "nice to have".

MAJ CHAPMAN: Sure.

MR WILSON: But that would be approximate, yes.

MAJ CHAPMAN: So just to return to what we were talking about, at 110 you discuss the four failures to identify that the OPEVAL, you say, failed to engage with the AATES testing. So do we take it that it is your view the

OPEVAL report, it is fair to say, did not fully engage with the findings that had been made by AATES in terms of unacceptable risk to flight safety?

MR WILSON: Yes.

MAJ CHAPMAN: And while it didn't attempt to directly engage with the AATES position, do you agree with the statement that it sought, perhaps in a round-about-way, to minimise the perceived levels of risks associated with the 5.10 symbology?

MR WILSON: Sorry, say that again?

MAJ CHAPMAN: While you accepted that the OPEVAL report didn't engage with parts of the AATES position directly - - -

MR WILSON: Yes.

MAJ CHAPMAN: And I'm asking you whether you have a view, or you agree, that the OPEVAL was seeking to, in a round-about-way, minimise the risk associated with the 5.10 symbology by not engaging with the AATES report.

MR WILSON: It didn't minimise the risk. The risk were extant. It minimised the perception of the risk by presenting, as we discussed earlier, information was not correct.

MAJ CHAPMAN: Yes, so it was seeking, in your view – you agree that it was seeking to minimise the perception of the risk.

MR WILSON: Perception of the risk, yes. Sorry.

MAJ CHAPMAN: Chair, I see the time. Are we continuing?

MS McMURDO: I'm happy to finish off his evidence-in-chief if that is doable before having a break for lunch?

MAJ CHAPMAN: There is probably another 20 minutes or so of that.

MS McMURDO: Yes.

MAJ CHAPMAN: Chair, so - - -

MS McMURDO: Is that all right? Are you content? I think it would be a nice cut to finish his evidence-in-chief - - -

MAJ CHAPMAN: Certainly.

MS McMURDO: - - - before we break for lunch.

MAJ CHAPMAN: I am just going to turn now, Mr Wilson, to ask some questions about this workaround that was proposed, and this is touching on some matters that you had an exchange with the Air Vice-Marshal. We are at paragraph 114. At paragraph 114, and as perhaps seen as a principal control measure in the OPEVAL report, do you recall that it recommended that the Standardisation Manual be updated to include the warning that we have discussed?

MR WILSON: That's correct, yes.

MAJ CHAPMAN: And that warning was for the pilots to look forward and only make attitude adjustments when looking forward; is that right?

MR WILSON: That's correct.

MAJ CHAPMAN: And would you agree with the suggestion this was perhaps the principal response in the OPEVAL report, seeking to mitigate the issues that had been raised by AATES?

MR WILSON: Yes, it appeared to be.

MAJ CHAPMAN: Yes?

MR WILSON: Yes.

MAJ CHAPMAN: And you say at paragraph 115 that AATES was not consulted about this proposed change to the Standardisation Manual to include the warning; is that right?

MR WILSON: No, I would not support that statement.

MAJ CHAPMAN: You were not consulted – AATES was consulted?

MR WILSON: I was not consulted. I would not support that statement.

MAJ CHAPMAN: I think we are at cross-purposes.

MR WILSON: Sorry.

MAJ CHAPMAN: My proposition was, are you aware of whether AATES was consulted in relation to the proposal to update the Standardisation Manual?

MR WILSON: No, we were not.

MS McMURDO: Well, could you just look at paragraph 114 of your statement?

MR WILSON: Yes.

MS McMURDO: Is that correct, or do you want to modify that?

MR WILSON: I believe that's correct. The OPEVAL report included a recommendation - - -

MS McMURDO: I think that's what you were being asked by MAJ Chapman.

MR WILSON: Did I miss the point?

MS McMURDO: Yes, I think so. So you are happy with paragraph 114?

MR WILSON: Yes, I am.

MS McMURDO: Yes, thank you.

MAJ CHAPMAN: Thank you, Chair. And the Standardisation Manual, we have established, was not the Flight Manual in terms of the manufacturer's – how the aircraft is to be operated by reference to the manufacturer, it's how the ADF, as a general order, says that the aircraft needs to be operated in a particular way.

MR WILSON: That would be fair, yes.

MAJ CHAPMAN: And at paragraph 116 and 117 you're critical of the approach taken in the OPEVAL report and suggested that the Standardisation Manual could resolve that ambiguity issue; is that right?

MR WILSON: That's correct.

MAJ CHAPMAN: And you say at 117, and we've dealt in part with this, that your view is that:

This approach was fundamentally inconsistent with good practice

and that it was, in this particular instance, an astonishing departure from what I can consider to be safe practice.

Do you see that?

MR WILSON: Yes.

MAJ CHAPMAN: And just to be clear about that assertion, the "astonishing departure", as you say, "from safe practice" was the proposal to update the Standardisation Manual to require pilots to look ahead when making the attitude adjustments. Is that right?

MR WILSON: That's correct.

MAJ CHAPMAN: And that was astonishing because you did not consider that it was a viable or appropriate response; is that correct?

MR WILSON: Not through the full role and operating environment for the aircraft type.

MAJ CHAPMAN: And it was not a viable or appropriate response because it was not realistic to expect pilots, especially in these conditions, in formation, to look ahead to make these attitude adjustments?

MR WILSON: In formation and at low level as well.

MAJ CHAPMAN: And you then make the point at 118(c) that updating the Standards Manual with such a warning as a control assumed that all pilots or all levels of experience had the ability in all settings to make adjustments to the aircraft when looking out the front. Do you see that?

MR WILSON: Yes.

MAJ CHAPMAN: And that's not, in your experience, realistic, as was established. That's right?

MR WILSON: No. If I could provide some further context?

MAJ CHAPMAN: Certainly.

MR WILSON: Yes. The proposition of looking to the front when changing attitude, if I'm operating at altitude where I'm not concerned about clearance from other aircraft, or clearance from terrain or obstruction, is a perfectly reasonable and sound thing to do. But where we operate, that's not where we operate MRH on a Mission Flight Profile. We're

talking about 50 feet above ground level, up to speeds of 240 k's an hour, up to 45 degrees angle bank. It's a very demanding and unforgiving operating environment that deserves respect.

The idea that I can be at a 45 bank turn, detect an obstacle, and then require my pilots to return their eyes back to the front, make an attitude change without – make a bank change without incurring a pitch change, which could put me into the ground, and then come back, re-acquire the conflict and assess it's been resolved, in an extraordinary high workload requirement, and it is, as we said before, a departure from safe practice.

MAJ CHAPMAN: And you paint a scenario in paragraph 120 which I won't go to, but you make the important point that flying in formation in particular you're required to have an uninterrupted focus on the next ship in the formation for safe spacing?

MR WILSON: Yes, my primary focus will be on the aircraft and maintaining separation. I may be able to make a quick scan inside, but I'm focussing my attention on that aircraft.

MAJ CHAPMAN: Which is where you say that the idea of breaking focus for the purpose of making attitude changes is, as you said, absurd?

MR WILSON: Absolutely. The concept – all I'm available to do is an eye scan back inside. The idea of taking my entire head – moving it to the front, making an attitude change, re-acquiring the formation of the aircraft and reassessing the rate of closure, it - - -

MAJ CHAPMAN: Yes, and these are the three steps which you discuss at paragraph 122. You say to deal with spatial disorientation, you first need to recognise spatial disorientation. Correct?

MR WILSON: Correct.

MAJ CHAPMAN: Second, you need to acquire proper orientation. Correct?

MR WILSON: Correct.

MAJ CHAPMAN: And the third is, necessary and immediate corrective recovery actions.

MR WILSON: That's correct.

MAJ CHAPMAN: At 123 you say that you have, yourself, been involved in spatial disorientation episodes where emergency recovery action was required.

MR WILSON: Yes.

MAJ CHAPMAN: That incident occurred at around 500 feet, and reading from paragraph 125:

> *The aircraft was only just able to recover from spatial disorientation, even at that height.*

MR WILSON: That's correct. That's probably the most - - -

MAJ CHAPMAN: So do you agree that encountering an episode of spatial disorientation at a far lower attitude of perhaps 200 to 300 feet involves then higher risk of CFIT?

MR WILSON: Absolutely.

MAJ CHAPMAN: That's just simply a function of timing, in that the period of time required to identify and deal with, if you can, spatial disorientation?

MR WILSON: Yes.

MAJ CHAPMAN: Also at paragraph 126, you state that in all cases of spatial disorientation there's a degree of confusion which is generated by the nature of being disorientated.

MR WILSON: Yes.

MAJ CHAPMAN: And again, it takes time to address it, and it can, at paragraph 126, simply overwhelm all cognitive capacity in that scenario?

MR WILSON: Yes.

MAJ CHAPMAN: And that the confusion and the stresses that may attend recovery can be, in your experience, overwhelming, even to experienced aviators?

MR WILSON: Yes, specifically the case I recited there. My co-pilot was a highly experienced Special Operations flight lead. He was a very good pilot.

MAJ CHAPMAN: And experience comes with some more familiarity with seeing the signs of spatial disorientation, or identifying the signs of spatial disorientation?

MR WILSON: I think it's insidious in its nature, in that it's something that all humans are susceptible to. I think you can be alert to the risks of it, but it's a difficult situation to pilot an aircraft in.

MAJ CHAPMAN: Moving to 127 and following, you refer to the fact that both the AATES Flight Test Report and the OPEVAL determined there was an excessive risk when operating in less than favourable conditions. Do you see that?

MR WILSON: Yes.

MAJ CHAPMAN: And that those conditions included operating at night overwater and in formation?

MR WILSON: Yes.

MAJ CHAPMAN: At 129 you refer to your understanding that the OPEVAL test flights conducted by night-avoided conditions that were considered to be a risk to flight safety, including DVE conditions. Do you see that?

MR WILSON: Exactly, and it was omitted from the OPEVAL report.

MAJ CHAPMAN: Is it your understanding that the OPEVAL testing avoided the conditions by reference to controls that had been placed on the testing by AATES?

MR WILSON: That's correct, by LTCOL Reinhardt and MAJ Lamb. Yes.

MAJ CHAPMAN: Yes, and that a number of those conditions related in substance – and we've heard evidence about this yesterday – to avoiding testing of the 5.10 upgrade in less than favourable conditions?

MR WILSON: Sorry, say that again?

MAJ CHAPMAN: That a number of those conditions that were imposed were directed to avoiding the testing of 5.10 in less than favourable conditions?

MR WILSON: Avoiding – the safety risk implied by operating the

aircraft under those conditions were too high, and they were restrictions put in place during the OPEVAL.

MAJ CHAPMAN: The intent behind placing these restrictions was to not permit testing to be conducted in very poor conditions for - - -

MR WILSON: Yes.

MAJ CHAPMAN: And these included, for instance, not conducting testing lower than two millilux and without a discernible horizon?

MR WILSON: That's correct, to my knowledge. Yes. I hadn't had a chance to go and review them.

MAJ CHAPMAN: And, importantly, at paragraph 129 you make the point that despite these conditions being imposed – and this is something which you've engaged with the Air Vice-Marshal on – despite these conditions being imposed, the OPEVAL report ultimately was used to support the unrestricted use of 5.10 without any limitations?

MR WILSON: That's correct.

MAJ CHAPMAN: And you agree that this is an issue from a flight safety point of view because what was ultimately being released into Service and into the MRH fleet at the time of the accident, was an upgrade without any limitations being placed on its use?

MR WILSON: That's correct.

MAJ CHAPMAN: And that is despite the numerous limitations being imposed by AATES on the OPEVAL activity?

MR WILSON: That's correct, yes.

MAJ CHAPMAN: And that from a DASR perspective, is it fair to say that any significant upgrade, such as 5.10, should have been exposed to full comprehensive testing prior to Service release?

MR WILSON: Absolutely.

MAJ CHAPMAN: Though it appears that in the case of 5.10, would you agree with the statement that the only substantive control, if it was a control at all, was this updating of the Standardisation Manual?

MR WILSON: Yes, and there was an education package that was

released. The education package included the OPEVAL report. The OPEVAL report, as we said earlier, contains falsehoods which I think would mislead pilots as to the severity of the issue and the option of using the go-around function as a risk mitigator.

MAJ CHAPMAN: To your understanding, what has been released into Service was not the subject of complete testing by either AATES, or even in the OPEVAL, because it included those limitations?

MR WILSON: That would be correct. Yes. Testing in the desired operating environment, performing the operational representative roles in the full environment that we would expect the aircraft to operate in.

MAJ CHAPMAN: But not beyond the limitations imposed in the testing?

MR WILSON: Of course. To achieve Service release we have to go and test throughout the flight envelope. What has happened is we haven't even looked at that area. We know it is going to be a hazard, and it has been released for Service.

MAJ CHAPMAN: To be clear, we know precisely what was not tested because by reference to the limitations that are imposed on the testing?

MR WILSON: Yes.

MAJ CHAPMAN: For example, we know that there was no testing in conditions lower than two millilux, nor any testing of the symbology where there was no visual horizon?

MR WILSON: Yes.

MAJ CHAPMAN: Finally – and Chair, I am getting close to the end here – you referred at paragraph 131 to breaking the chain of command by briefing SO1 and SO2 Standards. Do you see that?

MR WILSON: Yes.

MAJ CHAPMAN: And they sat outside of your chain of command in AATES; correct?

MR WILSON: That's correct, yes.

MAJ CHAPMAN: You briefed them regarding their obligations under the *Workplace Health and Safety Act*; is that right?

MR WILSON: Yes.

MAJ CHAPMAN: Out of concern with the implications of a Service release of this upgrade; is that right?

MR WILSON: That is correct.

MAJ CHAPMAN: Just so we have this correct in time, you are referring, are you not, to briefing these individuals at around the time of the release of the OPEVAL report in perhaps March 2020?

MR WILSON: I would have to check my records. It was subsequent to that. There were a number of issues that AATES were dealing with; 5.1 was just one of them. We were quite concerned within the AATES organisation. We'd tried a number of approaches, you know, to be conciliatory and collaborative. They were not working. We escalated our language.

In one particular meeting, I escalated the language to the point where I was threatened with disciplinary action. We backed off, and I then prepared that brief. It's a brief that's saved on Army records with notes covering the specific topics of discussion. And I was laughed at by delivering that brief. You'll see before – I understand you don't want to go into exactly what was covered in this forum in that brief.

MS McMURDO: Well, I think perhaps if we mention the role rather than the name, it might be fairer at this time, where there's likely to be a significant gap between any response by the person. And also I note I don't think you've dealt with 113 either. But if we dealt with that by name – by the position rather than the name, that might be a better way of doing it.

MAJ CHAPMAN: Yes. I may be wrong, Chair, but I think in response to the Air Vice-Marshal's question, I think paragraph 113, there was a response to that effect - - -

MS McMURDO: Was there? I missed that.

MAJ CHAPMAN: - - - that you were accused of disreputable conduct. Do you recall giving that evidence?

MR WILSON: That's correct, yes.

MAJ CHAPMAN: You have given that evidence?

MR WILSON: Yes.

MAJ CHAPMAN: By the SO1 Standards Branch at the time?

MR WILSON: Yes.

MAJ CHAPMAN: But this is a separate occasion?

MR WILSON: Yes.

MAJ CHAPMAN: We're now talking about post the OPEVAL report being released. You went outside of your chain of command to SO1 Standards to brief them with respect to obligations under the *Workplace Health and Safety Act*. Is that right?

MR WILSON: And that his behaviour was potentially criminal.

MAJ CHAPMAN: I'm sorry?

MR WILSON: And that his behaviour, I felt, was potentially criminal.

MAJ CHAPMAN: I was trying to just establish the timing. That you went to the SO1 Standards within, say, six months of the OPEVAL being produced?

MR WILSON: I couldn't say.

MAJ CHAPMAN: You couldn't say?

MR WILSON: Yes.

MAJ CHAPMAN: But in any event, it was well prior to obviously the accident on 28 July 2023 because you'd left in 2022.

MR WILSON: That's correct. The breaking of the chain of command was subsequent to that. I saw that as a forceful statement of position. We discussed the outcomes of that meeting amongst the AATES executive, and at that point we were certain that we were going to be sitting here in this forum, and we had to do everything we could to try and prevent that.

We decided that if the organisation broke the chain of command, that that would have long-term effects for the organisation's standing, so I then made approaches to DASA, to the Director of Safety - sorry, the Director of Flight Safety personally. I outlined my concerns across a number of aspects regarding MRH airworthiness. He made the comment at the end that we should send someone to gaol, that he did not have the power to compel

Army to act. He could only use his position to influence the decision-makers.

I left that some time, and there was no change in Army's behaviour. We still continued to operate with these defects in the MRH. I then felt compelled as a worker under the WHS Act to take this to Comcare. That didn't seem to have any change, and now from the perspective of looking at the information, how it's presented in the OPEVAL report, I can see how a Comcare investigator, presented with this document, would formulate the opinion that the risk had been properly treated. The problem is the document contains falsehoods, but - - -

MAJ CHAPMAN: And you - sorry.

MR WILSON: Sorry. Approaching Comcare didn't result in a change in behaviour. I then took further action, which is protected. I'm happy to discuss it with you, ma'am, out of - not in open forum.

MS McMURDO: Well, it can't be - - -

MAJ CHAPMAN: Not in this forum.

MS McMURDO: It can't be in this forum, so we'll - - -

MR WILSON: Yes, but I did take it further. I exhausted every possible line of action I could.

MAJ CHAPMAN: Your evidence just moments ago was that you took this decision to break the chain of command because, in your view, you were certain, I think were your words, that the situation would end up before a forum such as this?

MR WILSON: Based on my experience, the flight profile we talked about where my co-pilot became disoriented, that is the closest I've come to crashing. I was quite alarmed by that. As an indication, I have significant experience as a formation low-level aerobatic display pilot. I don't become alarmed easy. That was a very alarming incident. I was convinced that someone would crash because of that.

MAJ CHAPMAN: Thank you. I will just now - you conclude your statement - - -

MS McMURDO: Well, just what you actually said in 131, is that correct, what's in your statement there? You first briefed the SO1 and SO2

Standards regarding their obligations under the *Workplace Health and Safety Act*, and that:

> *Should anyone die as a result of their actions it would, in my mind, be industrial manslaughter.*

MR WILSON: I didn't want to say that in this forum because I thought it would be alarmist, but yes, that is correct.

MS McMURDO: Well, that's your evidence.

MR WILSON: That is correct. Yes.

MS McMURDO: Yes.

MR WILSON: If I may make a minor correction?

MS McMURDO: Yes.

MR WILSON: The briefing I delivered to the SO1 was in person. The briefing I delivered to the SO2 Standards was via email.

MS McMURDO: And the reaction by the SO1 Standards was?

MR WILSON: He laughed at me.

MS McMURDO: Yes, thank you.

MAJ CHAPMAN: Finally Mr Wilson, can I conclude by asking you to look at paragraph 132, which I might describe as an overall summary of your evidence, and I'm just going to read that onto the record? It's short. Where you say:

> *The MRH-90 TopOwl night-vision system, including the version 5.10 upgrade, was assessed as being unairworthy by Army's only approved Technical Airworthiness Flight Test Agency, AATES. It was formally reported that the system had multiple defects which could lead to spatial disorientation, resulting in controlled flight into terrain. As I have outlined above, and despite these warnings, individuals used their authority to compel the use of a system which was assessed as being unairworthy and unsafe by its own Flight Test Agency. The risk predicted in the AATES reports has now tragically materialised.*

Do you agree with that statement?

MR WILSON: Yes.

MAJ CHAPMAN: Finally Mr Wilson, that being the end of your evidence, I understand you wish to direct some remarks towards the families.

MR WILSON: Firstly, if I may, you will hear the term "pilot error". I would like to offer some explanation of that term. It doesn't necessarily lay the blame squarely at the feet of your loved ones. The term "pilot error" operates in the human machine interface, and on the night in question we had an interface between the environment, a machine, being TopOwl, and the humans, and then the humans had to interact with the aircraft itself. There are significant deficiencies in the machine element of that human interface.

The other element I'd like to share with you is that, having escaped losing my own life and that of six of my crew members in very similar circumstances, I knew with certainty this accident was going to happen. I had a moral obligation to your loved ones. I did the best I could, and I failed them. I'm so sorry for your loss.

MAJ CHAPMAN: That's the evidence, Madam Chair.

MS McMURDO: Thank you. Could I just ask one thing? If I could take you to paragraph 109 on page 23, at the end of that paragraph in (d) you say:

> *This knowledge provided context for the role, relationship and relative necessity of the distance display. Unfortunately, Army paid for the upgrade prior to assessing if it was fit for the purpose identified during AATES testing.*

What was your source of information about that?

MR WILSON: Sorry, ma'am. Can you repeat that?

MS McMURDO: You said there that:

> *Army paid for the upgrade prior to assessing if it was fit for the purpose identified during AATES testing.*

MR WILSON: This came from the Project Office. I can't independently - so I can't verify it by reference to documents. It's based on conversations.

MS McMURDO: Conversations, yes.

MR WILSON: My understanding is that the system was ordered, paid for, prior to AATES conducting testing to see if it was fit for purpose or it met the operational requirement outlined in the earlier AATES Special Operations testing.

MS McMURDO: Who told you that, or could you tell us the role of the person who told you that, or don't you recall?

MR WILSON: I'm sorry, I can't recall.

MS McMURDO: It was just something you gleaned from conversations that you had with various people at the time?

MR WILSON: Yes.

MS McMURDO: Is that the best you could say?

MR WILSON: That's the best I can provide, sorry.

MS McMURDO: All right then. Thank you. We'll, of course, have an adjournment now. Thank you.

HEARING ADJOURNED

HEARING RESUMED

MS McMURDO: You've got nothing further, MAJ Chapman?

MAJ CHAPMAN: Nothing further.

MS McMURDO: Applications to cross-examine?

LCDR GRACIE: Yes, ma'am. About 30 minutes.

MS McMURDO: Yes?

MR MEEHAN: May it please the Inquiry, Simon Meehan for Thales Australia. Five minutes is my estimate.

MS McMURDO: Yes, thank you. Any other applications to

cross-examine?

LCDR TYSON: Yes, ma'am. No more than 10 minutes.

MS McMURDO: Thank you.

MAJ BARNES: Ma'am, I expect I'll be about 10 to 15 minutes.

MS McMURDO: Okay, that gives us some idea. Any other applications to cross-examine? No. Thank you. Right, LCDR Gracie.

LCDR GRACIE: Thank you, ma'am. We just need a witness.

MS McMURDO: We do need a witness. That's even beyond you, LCDR Gracie.

LCDR GRACIE: I've got some answers I can provide. Ma'am, just – no, I'll wait for the witness.

<CROSS-EXAMINATION BY LCDR GRACIE

MS McMURDO: Yes, we've got some applications to cross-examine. There are about four or five people who want to cross-examine you now. Thank you.

MR WILSON: I was expecting that.

MS McMURDO: Yes. LCDR Gracie, thank you.

LCDR GRACIE: Thank you. As you know, I'll call you MAJ Wilson, if you don't mind? It's just how I've been reading your statement. I represent the interests of CAPT Danniel Lyon. Before I start, I just want to thank you on behalf of Mrs Lyon and her family for that powerful and very heartfelt statement that you made, and since she's not here, I have passed on to her – and sorry, it really did have quite an effect on me, so I apologise, ma'am.

MS McMURDO: No, are you right?

LCDR GRACIE: Yes, I'm okay.

MS McMURDO: Are you sure? Do you - - -

LCDR GRACIE: Yes. No, no.

I just want to summarise a couple of things with the system interface. It's got the three components you've talked about?

MR WILSON: That's correct.

LCDR GRACIE: We've got the symbology on the visor. We've got the IITs mounted on either side of the helmet.

MR WILSON: Yes.

LCDR GRACIE: And then there's the FLIR, the Forward-Looking Infrared camera - - -

MR WILSON: That's correct.

LCDR GRACIE: - - - which is on the nose of the aircraft. Really, I'm wanting to look at the combined effect of those three things working together, because your statement identifies each of the individual components; I understand that. I just want to see if you've got the symbology, and it's displaying an incorrect or misleading attitude, that's one issue with it. The second issue I think you've identified is that it hasn't gone through the proper certification airworthiness process to be utilised. That's your second issue with it?

MR WILSON: Yes.

LCDR GRACIE: Then with the IIT, you've talked about it having a 50 per cent loss of visual acuity relative to other night-vision devices, such as ANVIS?

MR WILSON: A comparative device, yes.

LCDR GRACIE: Comparative. And do you have the same concern there about the lack of airworthiness certification in respect of that aspect of TopOwl?

MR WILSON: AATES reported as much. The report language was there was "insufficient data to substantiate compliance with airworthiness code requirements". You may notice, if you review the AATES reports over time, we initially expected we were writing to a sophisticated audience, in that they were pilots who, as a baseline, who were familiar with the DASR regulatory and airworthiness construct. And we believed that the gravity of a statement such as "not complying with airworthiness code requirements", would imply the level of risk without us having to actually go to the extent

of ramming the message home. So over time you'll see the language in the AATES reports gets stronger and blunter in order to make sure there was no opportunity to miss the point.

LCDR GRACIE: In relation to the FLIR, I'm not sure if your evidence was as strong as this, but my understanding is it was prohibited by the manufacturer for use as a primary pilot flying aid?

MR WILSON: That is correct. If you studied the approval process for the FLIR, you would find very similar parallels to the case in point with 5.1.

LCDR GRACIE: And again, it hasn't had, or the FLIR hasn't had, the testing to put it into Service by Flight Test Organisations, such as a licensed one by AATES?

MR WILSON: No, we did test it. We found that it had significant airworthiness deficiencies, that it's use in the manner approved by the Standardisation Manual implied a very high risk of death.

LCDR GRACIE: But it wasn't part of that trilogy of systems that underwent any approval or acceptance regime by AATES with Category 2 testing?

MR WILSON: It was tested by AATES. It was not approved by AATES, yet it was put into Service.

LCDR GRACIE: That's the - - -

MR WILSON: That's the – okay. Sorry.

LCDR GRACIE: Am I right in understanding that of the three components of TopOwl, each of those had some deficiency, in your view, and the view put by AATES, but still made its way into Service?

MR WILSON: I think what you're hedging around here is the term "aggregate risk". I've tried briefing colleagues in an attempt to understand this, by talking in terms of if we took an [redacted].

MS MUSGROVE: I'm sorry to interrupt you. I need the feed cut, please, because there's some material that's just been aired.

MS McMURDO: Yes, it may be [redacted]. Okay. Yes, cut the feed, please.

MR WILSON: Okay.

MS MUSGROVE: It's just in relation to the naming of [redacted].

MS McMURDO: [redacted]

MR WILSON: [redacted]?

MS MUSGROVE: Excuse me. I'll just take this.

MS McMURDO: Yes, please clarify what needs to be cut.

UNIDENTIFIED SPEAKER: [redacted].

MR WILSON: Yes.

UNIDENTIFIED SPEAKER: So the product is well known?

MR WILSON: Yes.

UNIDENTIFIED SPEAKER: [redacted] - - -

MS McMURDO: [redacted].

UNIDENTIFIED SPEAKER: - - - [redacted].

MR WILSON: I understand.

MS MUSGROVE: Thank you. If that could be struck?

MS McMURDO: [redacted].

MR WILSON: I understand, ma'am.

MS McMURDO: That would be all right? [redacted]?

MS MUSGROVE: [redacted]

[redacted]

MR WILSON: Why is that?

MS MUSGROVE: [redacted] – if you would like to close the hearing then I don't believe there'd be any issues in relation to that.

MS McMURDO: I'm just trying to understand. Is there an issue by saying that one is considerably more expensive than the other?

MS MUSGROVE: I'm just taking instructions, if I may?

MS McMURDO: Sure.

MS MUSGROVE: My instructions are that relative cost differences is not necessarily an issue, [redacted].

MAJ CHAPMAN: Fair enough.

MS McMURDO: So we've got that now. Thank you. Well, we've cut the livestream and that will be deleted. That part of the evidence will be deleted, and we can resume now with the knowledge of what you can and can't ask, and how far you can go.

LCDR GRACIE: Thank you, ma'am.

MS McMURDO: Thank you.

LCDR GRACIE: Could you just recap on that, appreciating what's just been said, and discuss the relative cost differences between ANVIS NVDs and the TopOwl system?

MS McMURDO: You know, in a very general way, without mentioning any particular sums.

MR WILSON: I understand. Yes, ma'am.

MS McMURDO: Thank you.

MR WILSON: So I think in understanding aggregate risk, you have to take into consideration a cost comparative dimension. If we take the Harris L3

NVD, which is a very high performing NVD – it's a world standard, I would suggest – if we take that NVD, we pay a fraction of the cost of TopOwl. I'm talking maybe around 10 per cent, okay. And we take that NVD. We (indistinct) pay more money to take the operative components from that NVD, being the ITT tubes, and install them in the TopOwl system.

By doing that, when we take that signal and bounce it through a series of mirrors onto the dichromatic patch, we lose 50 per cent performance. We also generate an optic defect, I think as I spoke earlier of, across the dichromatic curved patch. We then overlay that with an HMSD symbology set which provides false attitude information to a pilot, and we then have a FLIR system which is being used by Army as a primary pilotage aid, be it on and off. But it's use in that manner is prohibited by the manufacturer. AATES conducted two reports warning of the risk associated with that, and we still continued to operate using that system.

The options available would seem to be fairly obvious, in that you could get a direct view system, approach an organisation to develop a direct view HUD, and then you would have a system which is high performing, and has a HUD system. From an aggregate risk perspective, it seems – I can't put a logical explanation as to why you would go down that path.

LCDR GRACIE: When you said that AATES assessed the TopOwl as being unairworthy, or words to that effect - - -

MR WILSON: Components – the individual components, yes.

LCDR GRACIE: That's what I need to know. Are you talking about the three components as TopOwl, or each three?

MR WILSON: Individually. We've discussed the 5.1 symbology set. The language used in our assessment of the IIT was that we had insufficient data to substantiate compliance with the Airworthiness Code requirements. The FLIR, the manufacturer says it's not airworthy for use as a primary pilotage aid. AATES did its independent assessment, and verified the manufacturer's assessment.

LCDR GRACIE: At one stage in your evidence – I lost the context rather a little bit, but you said, "The findings by AATES were verified by the manufacturer". Was that only in relation to FLIR?

MR WILSON: Sorry, with the HMSD symbology set, when we described the off-axis representation of attitude that was confirmed by the manufacturer. With the use of the FLIR, the FLIR was prohibited for use

as a primary pilotage aid by the manufacturer, which was consistent with the AATES independent assessment of the system.

LCDR GRACIE: So the AATES test report, or the conclusions in it, were forwarded to the manufacturer?

MR WILSON: No.

LCDR GRACIE: Okay.

MR WILSON: No, because they are specific – so it's all about the role and environment. So a manufacturer can produce a product, use it in a different role and environment, and it can be perfectly acceptable. The role and environment we have is quite demanding, and we test specifically for Army's requirements in that role and environment.

LCDR GRACIE: I want to ask you something about evidence that we've heard about the symbology washing out. You've dealt with it a little bit in your statement, but in reference to the symbology washing out when you looked off-axis, did you understand what was referred to by that term?

MR WILSON: I don't like the term "washing out". I think it implies that the symbology fades or disappears. If we have two data points or we look to the front, pitch is pitch and roll is roll. When we look to the side, roll is pitch and pitch is roll. So the indications are reversed. We haven't properly characterised what happens in between, but we know what happens at the extremes.

LCDR GRACIE: I just want to talk a little bit about – perhaps it's meant in the context of washing out, but a loss of peripheral vision. I think you said that there was a linear change, reaching a point where - - -

MR WILSON: No. So AATES conducted a preliminary study to try to characterise the loss of acuity across the field of view. That study indicated that the loss of acuity – if you could describe a performance curve, you could describe it as a linear reduction, a curved reduction, or a parabolic reduction, in that the rate of loss increases as you get further from the centre. We identified a potentially parabolic reduction in acuity as you move towards the edge of the field of view.

LCDR GRACIE: Is that at all to do with the fact that you're producing a flat image on a curved surface?

MR WILSON: Yes, exactly.

LCDR GRACIE: Is that what it is?

MR WILSON: Yes.

LCDR GRACIE: I just want to come through to another aspect of this. It seems that the on balance assessment was that the distance to go information that was provided on the software upgrade to 5.1 was desirable, but it was a better trade-off than the risk that AATES identified with the symbology reversing pitch and roll?

MR WILSON: Sorry, if we can just go back? "Desirable" has a specific meaning in the Flight Test Organisation. Can you just rephrase the question?

LCDR GRACIE: One of the benefits that was identified in the upgrade in the OPEVAL, was that the distance to go information was of benefit to reducing pilot workload.

MR WILSON: Yes.

LCDR GRACIE: The trade off though was that you had this incorrect attitude information and it seemed that while on the one hand you're trying to reduce pilot workload, if you've got incorrect attitude information, you're losing that benefit because it's increasing the pilot workload?

MR WILSON: That would be one way to look at it. I believe I discussed that earlier when the language used in the AATES report was placing the distance information in the HMSD display would reduce pilot workload, whereas the false attitude information conveyed an unacceptable risk to flight safety. There is no balance between the two. You can't trade one against the other.

LCDR GRACIE: Yes, I understand. During your evidence, you mentioned during your personal experience, leading to a statement saying that you don't rely on audio warnings once you're spatially disorientated. Can you just expand on that a little bit, please?

MR WILSON: Well, as an example, the incident I had, my co-pilot, I first detected a rate of descent. As part of the normal crew procedures, I called "Rate of descent". I had no response to him. I then commanded "Climb". There was a complete change in tone. It went from an instruction to an order, and he was still unresponsive at that point in time.

So when a person is working at the limit of their cognitive capacity – which you would be if you're spatially disoriented – you don't really have control

over the things you do respond to or don't. So it's a bit of a variable-type environment as far as human performance is concerned, and I would suggest that the audio channel gets cut out at some point.

LCDR GRACIE: Just touching into that area, we've had some evidence, I'd just ask you would accept for present purposes, that the mission profile height was 200 feet?

MR WILSON: Okay.

LCDR GRACIE: That the Regulations or the Standards Manual required the decision height warning to be set at 10 per cent of that, so 180 feet.

MR WILSON: That's correct, or of the authorised height.

LCDR GRACIE: Authorised, is it?

MR WILSON: Well, that's a specific term and it's important.

LCDR GRACIE: So authorised height of 200 feet. That gives you a decision height requirement, is it, of 180 feet, 10 per cent?

MR WILSON: Yes.

LCDR GRACIE: There's been some questions asked in relation to the RADALT hold. Can you explain what that is?

MR WILSON: The RADALT hold works via the collective axis. Normally, in that type of mode of flight you can – and what that allows you to do is to allow the – sorry, command or ask the autopilot to maintain your height with reference to the RADALT or BARALT.

LCDR GRACIE: There was some reference to that 200-foot RADALT hold as being the upper limit. Is it an upper limit or a lower limit, the 200 foot?

MR WILSON: So as part of the authorisation process, the Authorising Officer would look at the crew composition, the mission profile, and they would define a minimal authorised height you're allowed to operate in. So are we talking about – the authorisation was not below 200 feet above obstacles. Is this the - - -

LCDR GRACIE: Yes. So it's not below 200. That's what I mean, it's set with an upper limit, 200 foot is your upper limit.

MR WILSON: No. If I'm flying along and there's an obstacle, I have to maintain 200 feet between that obstacle and my aircraft. That's the minimum height I'm allowed to descend to. I can't go over that obstacle at 100 feet. So not below 200 feet above obstacle or height of obstacles would be the authorisation term.

LCDR GRACIE: So your decision height is then referable or why do you have the decision height warning?

MR WILSON: It's to alert of an undetected transgression below the minimum authorised height.

LCDR GRACIE: So if you're wanting to climb in an unexpected scenario above 200 feet and you've got the RADALT hold on, what do you do with the collective?

MR WILSON: On the collective, we would have a control for the RADALT, the height that the RADALT is coupled to hold, and you could adjust that height and the collective, or the autopilot would automatically move the collective to achieve the height that you've set on the RADALT.

LCDR GRACIE: So if you want to break away from the hold at 200, you'd disengage the RADALT hold?

MR WILSON: The RADALT hold will maintain you at 200 feet.

LCDR GRACIE: Yes.

MR WILSON: If I wanted to climb, I would have the option of decoupling from the RADALT completely.

LCDR GRACIE: By doing what?

MR WILSON: You would push the trim button.

LCDR GRACIE: Push the button?

MR WILSON: Yes. So the other option would be to move the RADALT hold bug to the newly desired height and allow the autopilot to fly you there. Does that answer the question?

LCDR GRACIE: Yes, it does, thank you.

MR WILSON: It's a little hard to do it without going through the TAC and trying to keep it.

LCDR GRACIE: That's all right. There's been some assumptions put to various people about the decision height warning being set by one of the pilots at 45 and one at zero. Can you explain what process goes into that decision height warning being set below 180 feet?

MR WILSON: Okay. So I think there's two parts to the question there. If you have both RADALT warnings set at approximate altitudes, say one was at 50 feet, one was at 45, while you're on approach, you would have one warning going off and then the next warning going off in succession.

So in a busy phase of flight, you now have the decision height audio chiming in over the aircraft intercom, which is a problem, I would suggest, from a crew resource management perspective, in that we can't communicate effectively because we're getting this warning. So I would suggest it would be an accepted and normal practice to have one decision height set to zero, so that it doesn't give you that – it's not a false alert but a nuisance alarm, and the other one to be set as required.

LCDR GRACIE: The second part – yes, go on.

MR WILSON: Was that the question about whether it was set at 45 feet when they were authorised for 200 feet?

LCDR GRACIE: Yes.

MR WILSON: That's a difficult one to understand. I can't speak to what's in the mind of another person. I know that I, myself, when I was setting the aircraft up, it would be an error of just repetition that I would get used to normally being authorised not below 50 feet and winding the button to 45 feet would be just a normal practice. It may have just been an error of just repetition. I can't explain what was in his mind though. That's all I can offer.

LCDR GRACIE: But does that 45 have reference to anything that you can talk about in those open forum to Special Operations environment?

MR WILSON: Not especially. My understanding is they weren't doing Special Operations approaches on that serial; is that correct?

LCDR GRACIE: Yes.

MR WILSON: Okay. They were authorised to not below 200 feet above the height of obstacles for the mission. Is that - - -

LCDR GRACIE: Yes.

MR WILSON: Yes. I can't then explain why that would be – why he would set it at 45.

LCDR GRACIE: Tell me if you do or don't know this but in the knowledge that you have in relation to some of the circumstances of this incident, it was at about 200 feet perhaps, and climbed up to 300 or something, and then a sudden pitch down, possibly to the right into the water, somewhere between six and 10 seconds. In that scenario, what role would the decision height warning have for a pilot?

MR WILSON: It's very hard to say. I think as we've spoken of before, your response to audio inputs in a time when you're in a high-stress or a stress-overload situation, it would be – I doubt it would effectively contribute. The decision height warning is more a case of you're transiting out over changing terrain, and you lose awareness of how high you are. It's just a minor descent occurs, an unintended descent, and it just alerts you to an unintended descent. It's not necessarily a case of a recovery treatment for an unusual attitude or anything like that. It's more, as I said, an unintended descent.

LCDR GRACIE: So if Bushman 83 was undertaking a recovery for an unusual attitude, that decision height warning is not going to be one of the primary factors taking into consideration what recovery steps you take?

MR WILSON: I would suggest if you are disoriented and fighting with control of the aircraft – I understand fatigue was an issue as well – that your cognitive capacity at that stage would be probably maxed out and the reliance on an audio alert from the RADALT would be not reliable. In fact, I believe the other aircraft issued a command to climb as well but there was no response to that. That would be further evidence that an audio alert from the RADALT decision height would be ineffective as a prompt to recover. It's just a minor descent occurs, an unintended descent, and it just alerts you to an unintended descent. It's not necessarily a case of a recovery treatment for an unusual attitude or anything like that. It's more, as I said, an unintended descent.

LCDR GRACIE: Thank you. Moving on to another topic, with the AATES testing, does AATES provide a risk register that goes to the Airworthiness Boards for their review?

MR WILSON: No, that's managed separately.

LCDR GRACIE: Who manages that though?

MR WILSON: That would be the Director of Operational Airworthiness.

LCDR GRACIE: So would you expect there to be a risk register relating to the AATES findings in relation to TopOwl that would make its way to an Airworthiness Board?

MR WILSON: I would expect that, yes, and I would expect disclosure at Airworthiness Boards?

LCDR GRACIE: All right, thank you. We've talked about the Image Intensifier Tubes. I just want to ask whether or not you had any dealings with Dr Maria Gavrilescu?

MR WILSON: I have, yes.

LCDR GRACIE: All right. Was she involved in doing some of the laboratory testing for the adverse – the Harris L3?

MR WILSON: Yes, the L3 upgrade, yes.

LCDR GRACIE: Also, the IITs as applied to the TopOwl system?

MR WILSON: That was the Harris L3, or the IIT upgrade is the method she used within Army. Maria Gavrilescu would be one of the pre-eminent academics in that field, and does fantastic work out of DSTG with characterising system performance. So she did the laboratory studies and then provided assistance to us with the flight testing, or the earlier flight testing, where we would characterise system performance in the cockpit environment because it differs from the laboratory, in that you've got instrument lighting. You're looking through a windshield.

So it's important to understand – take the device out of the laboratory, put it actually in the cockpit and provide an assessment there and assess if there's going to be any problems with that before you get airborne.

LCDR GRACIE: So did some of those exchanges with the doctor precede your physical testing or was it all part of that test report?

MR WILSON: Our test report would have made reference to DSTG test report and it rolled from DSTG laboratory testing. We would consult with Maria as to the results of that testing and then we'd roll then into ground testing. Once the ground testing was complete, there would be a control date where we would get approval to proceed to flight testing, and then

flight testing would proceed through high-lying levels down to low-lying levels.

LCDR GRACIE: Moving to another topic, you mentioned that you were given a bit of a heads-up by AMAFTU, the Navy test equivalent of AATES, about the TopOwl.

MR WILSON: Yes.

LCDR GRACIE: Can I ask you what you know about the testing that AMAFTU did in relation to TopOwl? You talked about it being in a maritime environment.

MR WILSON: Yes.

LCDR GRACIE: What are the differences there?

MR WILSON: So the AMAFTU testing was specifically sought to assess helicopter/ship interface. So AMAFTU was within their field of expertise to take the aircraft out to a ship, fly an approach, land on the ship, take off, come back around and repeat that process. It's a bit more complicated than that, but that's what it boils down to.

The significance there is that that's AMAFTU's field of expertise is the embarked operations. The assessment AMAFTU makes is limited or constrained to being valid only within that operational environment. So it doesn't take into account the wider role and environment that Army operates in which would be low-level NVD formation, overwater, terrain flying, all those aspects.

LCDR GRACIE: All right, thank you.

MR WILSON: Sorry, I misspoke there, of course. Navy, we would consider overwater.

LCDR GRACIE: I think Navy participated – or someone from Navy, participated in the OPEVAL?

MR WILSON: Yes, however, the OPEVAL did have significant constraints placed on it.

LCDR GRACIE: Understand. There's been some evidence, it's not clear of the nature of it, but that some other countries, maybe European, utilise the TopOwl system. Do you know anything about that?

MR WILSON: There is specific direction from – I believe it was DASA to the military air operators, providing or emphasising that we can't take an approval from a foreign organisation as being evidence to being – the system being airworthy under the Australian system. Foreign organisations operate to different legal and regulatory requirements and different airworthiness requirements. So that if another country uses a device, it doesn't necessarily mean it's suitable for use in Australia.

That's why we have the Flight Test Organisation construct because we will then go and test in the specific role and operation environment that we intend to use the device. So you'll hear a number of comments about foreign countries do something.

But unless you go and look at the specifics of what they do, it could be different crew construct, a different operating environment, particularly Europe where there'd be a very different degree of cultural lighting that you would get in Australia. It means that the lower light environments we would experience may be less than they would in Europe. So there are so many variables there that it makes the comparison – at the surface it may seem logical, but when you dig into the details, that's where it starts to become problematic.

LCDR GRACIE: And perhaps even a different software version?

MR WILSON: Could be.

LCDR GRACIE: I want to touch on the evidence you gave about illumination. You were taken by counsel assisting to the test plan that required a night sortie to be greater than two millilux at terrain flight levels. If the full symbology was used not in its "uncluttered" mode, I think you described it, then it could only be used with both a visual horizon and in conditions that are greater than two millilux? Do you recall that?

MR WILSON: I didn't describe "uncluttered". I do recall that being one of the constraints. We're getting into a field now where I would need access to the document and I think time to properly become familiar with the document before I can provide an answer, I think, on that. But if you can put it more in maybe general terms, I might be able to help.

LCDR GRACIE: That's no problem. It was just really a background question. Can you explain in lay terms what two millilux is and how pilots assess what two millilux is?

MR WILSON: Short answer is pilots assess it poorly.

LCDR GRACIE: "Appalling", did you say?

MR WILSON: Poorly.

LCDR GRACIE: Poorly.

MR WILSON: Yes. Sorry, I'm being a little flippant there. Two millilux would be starlight on a clear night. Once you start getting cloud cover, you will start going below that. Illumination though is one factor of NVD performance. You would also be looking at terrain contrast and atmospheric obscuration.

So illumination, as I said, there is the one aspect. The other question was how pilots assess it. So we do have an assessment – predictive assessment tool which we can put in a number of variables like the moon phase, the expected cloud cover. But as soon as you start getting out in the operating environment, things change, and that tool is just predictive; it's not accurate at the time.

When we conduct testing, we actually have an ANVIS light meter which measures light in the spectrum that the NVDs operate which is visual into the near infrared and we often find the pilot perception of the illumination is quite a bit different from the actual one. So all our test data is gathered with reference to a truth source, which is the ANVIS light meter that we take with us.

LCDR GRACIE: There's also been some evidence before the Inquiry in relation to the illumination of the moon and it's been put in percentage terms as 30 per cent illumination from the moon, or 50 per cent, or 60 per cent. How does that correlate? Is it referable to a full moon? Is it referable to 30 per cent illumination of what?

MR WILSON: You're asking a difficult question now. I'm not sure what's in the minds of the people who are making that and there's quite a big variation, I imagine, between 30 and 50 per cent. That's why as a tester we take our truth source which is the light meter. We measure it and it's a defined number.

LCDR GRACIE: If there was let's say a crescent moon on 28 July '23, whether it was waxing or waning it probably doesn't matter.

MR WILSON: Yes.

LCDR GRACIE: But at some point, if that moon is not obscured by clouds, you would have, I'd imagine, a greater than two millilux illumination?

MR WILSON: That would be a fair assumption, yes.

LCDR GRACIE: Then with cloud cover obscuring the moon and flying under that cloud, what would be the effect on that range of millilux?

MR WILSON: It would be an inexact statement. I couldn't give you anything. But you would certainly be – it would result in a reduction in the illumination. It would depend on the thickness of cloud; how widespread the cloud cover was. If there's cloud present, then you'd be worried about rain or mist forming, atmospheric obscuration with the NVD system. They would all have to be taken into account to try to properly characterise the performance of the NVD in that environment.

LCDR GRACIE: So how does a pilot then make an assessment if it falls below two millilux in those conditions?

MR WILSON: It would be somewhat subjective.

LCDR GRACIE: So it could go below two millilux, depending on the thickness of the cloud?

MR WILSON: Thickness and amount of cloud cover, yes.

LCDR GRACIE: And rain?

MR WILSON: Well, rain would affect the NVD performance. It wouldn't affect the illumination level.

LCDR GRACIE: Yes, thank you. You talked about your own experience in a loss of situational awareness. I won't go back over that. But my understanding is that you have also participated in some AATES testing with respect to the egress from the pilot seat during a rollover, or underwater rollover?

MR WILSON: Yes.

LCDR GRACIE: What can you say about what AATES did there in relation to the sort of processes that you've undertaken with the TopOwl? Was there a full test report?

MR WILSON: Yes, there was.

LCDR GRACIE: Did you undertake it?

MR WILSON: Yes, I did.

LCDR GRACIE: Did you do any of the HUET training as part of that, the helicopter underwater evacuation training at Nowra? How did you go about doing that test?

MR WILSON: Okay. The underwater egress had not been tested with the TopOwl system. That gave rise to a number of – or across the aircrew community, a number of different ideas about what was the best way to egress the aircraft. AATES was given the task to assess all these ideas. To do that, we had to go and use the – there's a full-scale cockpit lockup which we use in Townsville. That's lowered on a crane into a pool, rotated upside down. As the test body myself, I had the full aircrew ensemble on with ballistic protection, survival vest, a TopOwl simulator that we had commissioned ourselves which is printed up and attached to the aircraft but, importantly, using the two cables.

We tested all the proposed methods of egress. As I was in the water upside down, we'd start taking the helmet off and we would truncate testing at the point where we identified there was a significant snag hazard. The safety team would remove the snag hazard and then I would egress, and we would go and repeat the next sequence. I think I know what you mean. The dead man's seat, the right seat, yes.

So the last time we did this, I thought we'd actually found a process that worked. We – sorry, I egressed the aircraft successful, was swimming to the surface and one of the cables became snagged. I kept swimming. I started getting short of breath. My chest was convulsing through loss of oxygen or lack of oxygen. I kept struggling, almost a bit of a panic state at this stage, I would suggest. I started to get – the edge of my field of view was starting to go dark. That's from a lack of oxygen in the brain degrading the optic nerve performance. I kept struggling and eventually the snag broke free and I got to the surface.

I discussed that then with the test engineer, or we decided that was probably not a good thing. The next serial was to test the inclusion of a fusible link in the cables between the TopOwl and how they're connected on to the aircraft. That fusible link was compliant with the standards for connection of a pilot to an aircraft to enable egress. It's basically to pull away with a minimum breakaway force.

We went back in and tested that as a proof of concept because we didn't actually have that breakaway link. What we achieved then was what I would call a system which was demonstratable. It was repeatable and, most importantly, it would be repeatable by others as a means of egressing, reliably egressing the aircraft without implying a snag hazard. We put the report together.

During the review committee meetings, I relayed my experience of becoming fouled. The reason I relayed that experience at that meeting was to impress that the margin between being under water and trying to egress an aircraft, the margin between success and being stressed to the point where you're no longer able to think reasonably or panic, it's limited. Once you get to the point where you're stressed and panicked, the idea of performing some sort of intricate manoeuvre which involves removing gloves, removing helmet, the options open to me at the time would have been to – I couldn't remove the helmet. It seems like it was stupidly simple.

I could have recovered from that situation by simply taking the helmet off. But I was at the point where I was now in a panic situation and I was just not thinking clearly. I made that point to highlight that we need systems in place to, as I said, allow a reliable and repeatable means of getting out of the aircraft underwater. The report was tabled, it stood, and, to my knowledge, no treatments have been put in place by Defence until – at all.

LCDR GRACIE: Why was that training not undertaken at HMAS *Albatross* in the HUET environment? Is that because it's not geared up to TopOwl?

MR WILSON: It was a matter of convenience at the time to use the Townsville facility over there. The Nowra facility, they're basically parallel facilities.

LCDR GRACIE: Do you know if there is any training at HUET in relation to underwater egress with TopOwl on?

MR WILSON: The underwater egress training takes place with like a caving helmet on. It's not representative of the TopOwl helmet.

LCDR GRACIE: Okay, thank you.

MR WILSON: So I have to clarify that. I'd spoken to a colleague earlier this year and, to his awareness, there was no treatment in response to that AATES report for underwater egress, so I'd have – and I'm not part of the

organisation, so I don't have a means to verify it, but that was my understanding at that time.

LCDR GRACIE: I appreciate this is probably a difficult question, not just because it's hypothetical but there's a lot of variables. If it was the case that Bushman 83, or CAPT Lyon in this case, and the other aircrew, survived the crash and remained conscious, and it wasn't as catastrophic as it was, was there a reduced risk on at least the pilots being able to egress safely from that aircraft?

MR WILSON: Sorry, would you just repeat the question, please? Sorry.

LCDR GRACIE: If the four aircrew survived and remained conscious.

MR WILSON: Yes.

LCDR GRACIE: But I'm particularly focusing here on the pilots because they've got the TopOwl system.

MR WILSON: Yes.

LCDR GRACIE: If they survived the crash and were conscious, was there a reduced chance of them being able to safely egress that aircraft?

MR WILSON: Yes.

LCDR GRACIE: Was that based on just your experience or other experiences elsewhere in the world?

MR WILSON: I'm aware that very shortly after I completed the testing, that a – I believe it was Norwegian - - -

LCDR GRACIE: Dutch.

MR WILSON: Dutch, thank you – aircraft MRH-90 crashed and both pilots died. I need to cautious about leaping to make a link between the two situations. They have different crews, different gear, different training.

LCDR GRACIE: That's all right. The real point of the question was were you aware of that incident involving the Dutch aviators before you did your AATES testing?

MR WILSON: No. It occurred – it was shortly after we tabled our report.

LCDR GRACIE: Thank you. I'm nearly finished. I just want to check a couple of things. Your evidence is to the effect that you, on behalf of AATES, established that TopOwl did not meet ADF Airworthiness Standards.

MR WILSON: Yes.

LCDR GRACIE: It posed an unacceptable risk to aircrew?

MR WILSON: Yes.

LCDR GRACIE: There was a likelihood of the use of that system causing a lack of situational awareness leading to a controlled flight into terrain.

MR WILSON: Yes.

LCDR GRACIE: I think your words were "multiple deaths"?

MR WILSON: Yes.

LCDR GRACIE: The OPEVAL, you've said, contained falsehoods and omissions?

MR WILSON: Yes.

LCDR GRACIE: And the system – the TopOwl system has been allowed to be put into Service without a Flight Test Organisation approving its airworthiness for use in the conditions that were utilised by the aircraft on 28 July 2023?

MR WILSON: Speaking specifically to the degraded flight environment, the DVE, that you had described as far as the overcast, potential for rain, no, it wasn't tested in that environment.

LCDR GRACIE: Rain formation?

MR WILSON: No.

LCDR GRACIE: Low flight overwater?

MR WILSON: No.

LCDR GRACIE: And then the other degraded visual environment of cloud and rain?

MR WILSON: Yes.

LCDR GRACIE: It'd be fair to say, wouldn't it, that all Army aviators utilising the TopOwl system and those dependent upon their pilots using that system, would have been utilising that system on that night in the expectation that it was safe and certified for use?

MR WILSON: Yes.

LCDR GRACIE: Thank you, ma'am.

MS McMURDO: Thank you. Yes, LCDR Tyson.

<CROSS-EXAMINATION BY LCDR TYSON

LCDR TYSON: Thank you, ma'am.

My name's LCDR Matthew Tyson, I represent CPL Alex Naggs's interests. I just have a very short scenario to put to you. So in some of your answers today you've talked about not responding to audio cues.

MR WILSON: Yes.

LCDR TYSON: So I just want to explore that scenario with you. So the overall scenario is the one that you're well familiar with, you've got a four-ship formation, you're flying at 200 feet and there's a turn. Let's assume – you're number 3 in the formation. Let's assume that you lose situational awareness and – so then the aircraft then goes into a steep descent. Then there are three audio cues that you receive.

Let's say the decision height has been set at 45 feet. So you're in a steep descent. You get the audio cue from the decision height set at that upper level. You get a call from within the cabin, "Pull up", and you get the Air Mission Commander behind you saying, "Come up". So you've got three audio cues. And then the pilot actually reacts to the audio cues. So the pilot engages the collective, raises it from 17 per cent to 56 per cent and increases torque in the engines from 500 to 620 newton-meters. So did you understand the scenario, Major? So you've actually - - -

MR WILSON: I'm trying to follow you. Yes, okay.

LCDR TYSON: So you've lost situational awareness at 200 feet.

MR WILSON: Yes.

LCDR TYSON: There's then a descent.

MR WILSON: Yes.

LCDR TYSON: You then get three audio cues, and assume that the evidence suggests that you actually responded to the cues.

MR WILSON: Okay.

LCDR TYSON: By applying collective.

MR WILSON: Yes.

LCDR TYSON: You've massively applied collective and you've increased torque.

MR WILSON: Yes.

LCDR TYSON: That's the scenario. Now, you've given some evidence of a situation you were in where there was a loss of situational awareness at 500 feet. And I think you recovered it by the time you got to 50 feet.

MR WILSON: Yes.

LCDR TYSON: In this scenario where you've done this rapid descent from 200 feet, but you've actually – you've responded to one or other of three audio cues that you've got. With your knowledge of the flying characteristics of the MRH-90, are you likely in that situation to be able to fly out of the dilemma that you're in? Or the chances are that you're going to hit terrain?

MR WILSON: That's a very complex question. I couldn't give you an answer unless I got access to flight telemetry data, that there'd be computer modelling. There's so many variables in there, I couldn't give you a meaningful answer. I would say it's going to be very difficult.

LCDR TYSON: There'd be a high chance, just upon your knowledge, that even though you responded to the audio cues, you're so low that the chances are that you're going to fly into terrain.

MR WILSON: 45 feet is very low. It would depend on the rate of descent, the amount of corresponding up cyclic, the weight of the aircraft, environmentals. There's a lot of variables there. But it is very low.

LCDR TYSON: What would you do if you were in that scenario, where all of a sudden you get down to, say, 45 feet and then you get audio cues perhaps from the decision height going off or someone within the cabin saying, "Pull up", or the Air Mission Commander saying, "Come up"? What would your reaction as a pilot be in that emergency situation?

MR WILSON: Generally, it would be to try to roll wings level, apply as much power as I could and pull the nose up.

LCDR TYSON: So certainly applying collective in a major way would be a natural response in that situation?

MR WILSON: Absolutely, yes.

LCDR TYSON: Thanks, ma'am. Thanks, sir.

MS McMURDO: Thanks. Yes, next?

MAJ BARNES: Ma'am, I no longer need to cross-examine.

MS McMURDO: Thank you.

COL GABBEDY: I have a couple of short matters. I'm happy to go last, or I can go next.

MS McMURDO: Well, you're on your feet. Yes.

COL GABBEDY: I'll go next.

MS McMURDO: Thanks, COL Gabbedy.

<CROSS-EXAMINATION BY COL GABBEDY

COL GABBEDY: Mr Wilson, I'm COL Nigel Gabbedy. I appear on behalf of the Commander of Aviation, MAJGEN Jobson. Could I take you to paragraph 113 of your report – sorry, 131.

MS McMURDO: Of the - - -

COL GABBEDY: Sorry, if your statement, rather. I just want to have a piece of paper handed to you, if that's okay? You say in paragraph 131 that

you made a representation to DASA, the then Director of Flight Safety. Would you mind writing that person's name down, please?

MR WILSON: The Director of Flight Safety?

COL GABBEDY: Yes.

MR WILSON: Sure.

COL GABBEDY: Could I have a look, please?

MR WILSON: Sure.

COL GABBEDY: I won't approach.

MR WILSON: I didn't realise there's a protocol.

COL GABBEDY: Thank you. Yes. Could I tender that?

MS McMURDO: Yes, all right. The name of the then Director of Flight Safety referred to in paragraph 131 of Exhibit 87, is Exhibit 88.

#EXHIBIT 88 - NAME OF THE THEN DIRECTOR OF FLIGHT SAFETY REFERRED TO IN PARAGRAPH 131 OF EXHIBIT 87

COL GABBEDY: Thank you. Do you know the rank of that person?

MR WILSON: Sorry, I can't recall.

COL GABBEDY: Do you know when it was that you had this conversation?

MR WILSON: That'd be in records that I've saved on Defence on the Objective system.

COL GABBEDY: Are you able to say what year it was?

MR WILSON: Be '22, I think.

COL GABBEDY: Pardon?

MR WILSON: It would either be late '21 or early '22.

COL GABBEDY: It wasn't shortly after the AATES testing?

MR WILSON: No. I thought I explained earlier that it was a result of – sorry, the AATES testing – multiple lines of AATES testing. The level of concern was raised within AATES because of the multiple reports we'd produced. It got to the point then where we believed that there was no further option for us but to take action outside the chain of command.

COL GABBEDY: Although you can't remember the rank of the Director of Flight Safety, was that a senior officer?

MR WILSON: Yes.

COL GABBEDY: Within the Military?

MR WILSON: Yes.

COL GABBEDY: Are you able to say which Service?

MR WILSON: Air Force.

COL GABBEDY: Thank you. And do I understand you correctly to say that that person indicated to you that there was absolutely nothing that they could do about your concerns?

MR WILSON: No, he didn't say there was absolutely nothing. He said that – it's some time ago and it's based on my memory of a phone conversation. I believe it was words to the effect of he had no power to compel Army to take an action. That he would approach people and try to use his influence. I think it was something along those lines.

COL GABBEDY: And reading from your statement, I think you say that this person said to you, "This should send someone to gaol." Is that the evidence you're giving?

MR WILSON: That's my recollection of the conversation, yes.

COL GABBEDY: It was a telephone conversation with him?

MR WILSON: Yes.

COL GABBEDY: Did you receive any follow up from him in terms of what action he had or hadn't taken to address your concerns?

MR WILSON: He spoke to me about engaging in some meetings. He didn't say who it was with. And then I lost contact with him. I was in the process of separating from Defence around that time and didn't have the opportunity to follow up.

COL GABBEDY: Thank you, ma'am, sir, they're my questions.

MS McMURDO: Yes, thank you. Yes.

SQNLDR SCHMITT: Ma'am, sir, when I announced my appearance yesterday, I neglected to inform you that I'm SQNLDR Schmitt.

MS McMURDO: Thank you. SQNLDR Schmitt, thank you.

<CROSS-EXAMINATION BY SQNLDR SCHMITT

SQNLDR SCHMITT: Thank you. Mr Wilson, I represent the Director of Operational Airworthiness, as you mentioned in your statement. You understand who I'm talking about?

MR WILSON: Yes, I do.

SQNLDR SCHMITT: Now, in the period of your test reporting, correct me if I'm wrong, but the testing that you conducted, that was between 7 June 2019 and 11 June 2019. Is that correct?

MR WILSON: I can't quote to the dates. I haven't had access to the documents.

SQNLDR SCHMITT: Do you have a copy of the report still there in front of you? Can you just have a look at page (iv), under the Executive Summary.

MR WILSON: 7 to 11 June?

SQNLDR SCHMITT: Pardon?

MR WILSON: 7 to 11 June.

SQNLDR SCHMITT: Yes.

MR WILSON: Yes.

SQNLDR SCHMITT: You agree with that?

MR WILSON: Yes.

SQNLDR SCHMITT: And that report's signed 14 June 2019?

MR WILSON: Yes.

SQNLDR SCHMITT: So in late April 2019, so a couple of months before this testing, would you agree that AATES was experiencing a period of high organisational tempo?

MR WILSON: That would be correct, yes.

SQNLDR SCHMITT: In your view, did AATES have the capacity to complete its current workload as at April 2019?

MR WILSON: Yes.

SQNLDR SCHMITT: In your view, did AATES, at that time, have good mechanisms to assess capacity in accepting or completing tasks?

MR WILSON: I think we're going to the organisational demand of flight test. There was a large demand for flight test activities. Is this to my workload particularly or is it to the organisation's?

SQNLDR SCHMITT: The organisation.

MR WILSON: The organisation had a large workload. We were concerned in our ability to accept and reject tasks or to manage tasks. That workload management was shifted to higher.

SQNLDR SCHMITT: Those issues, your high tempo and your workload, was that still the case in June 2019 when this testing was done?

MR WILSON: Yes.

SQNLDR SCHMITT: If I can just take you to your statement at paragraph 82. You describe that:

> *AATES determined that the version 5.10 presentation of attitude information failed to meet the minimum of the DASR safety standards.*

Was that because you'd considered it to be unacceptable?

MR WILSON: No.

SQNLDR SCHMITT: No.

MR WILSON: No, we considered it to have not met the airworthiness safety standards which was the airworthiness code requirements. That was an assessment against the code requirements laid down by the FAA.

SQNLDR SCHMITT: Yes, thank you. Further you say that:

> *Contrary to the DASR requirements, I understand that the Director of Operational Airworthiness approved Service release of the version 5.10 upgrade.*

MR WILSON: Yes. I used the term "I understand" because I believe it either went – that approval process either went through him or to him.

SQNLDR SCHMITT: And when you say, "Contrary to the DASR requirements", is that in terms of it was contrary to your findings earlier and that's why it was contrary to the DASR requirements?

MR WILSON: The DASR requirements, it was either in the DASRs themselves or the Airworthiness Design Requirements Manual, there is a phrase in there that the systems must be assessed against airworthiness standards laid down by a defined – sorry, by a recognised airworthiness body, and it goes on to list the airworthiness bodies; the FAA and the CASA being two examples.

SQNLDR SCHMITT: So when you say, "Contrary to the DASR requirements", that's in respect of the OPEVAL activity wasn't at the required level to recommend or approve that version into Service. Is that what you suggest?

MR WILSON: As a start point, the requirement for it to meet airworthiness code requirements had not been satisfied.

SQNLDR SCHMITT: Yes. So then at 83, you speak about the Director of Operational Airworthiness's method of advancing the upgrade. And there you describe an oversimplified risk treatment measure. What are you referring to there?

MR WILSON: Well, that would be issuing pilots a training package to make them aware of the performance of the HMSD 5.1 symbology set. When we say "overly simplified", it did not appear to properly characterise

the system performance. That training package also contained the OPEVAL report as a reference, which appeared to simplify the recovery procedures down to a push of a button, using the autopilot, which was not certified for.

SQNLDR SCHMITT: So your criticism there is with respect to the measure that was introduced, rather than the risk management process adopted within the OPEVAL; is that correct?

MR WILSON: Adopted within the OPEVAL or as a result of the OPEVAL.

SQNLDR SCHMITT: Yes, within the OPEVAL.

MR WILSON: No. So the risk treatments within that were in force covering the conduct of the Operational Evaluation, I believe, were reasonable with respect to the findings of the earlier AATES report, in that it prohibited use in a less than favourable environment using the HMSD 5.1 symbology set. The concern was that the HMSD 5.1 symbology set was then transferred into Service without recognition of that restricted flight envelope.

SQNLDR SCHMITT: Understood. You then, at 83(b), describe your concern:

> *Regarding the amendment being made to the Standardisation Manual to include a warning, the latter itself represents a breach of the DASA-recognised technical airworthiness requirements.*

In what way was that a breach of the technical airworthiness requirements?

MR WILSON: It was articulated – again we go back to the FAA airworthiness code requirements. There was a code requirement saying that you cannot present – it's words to the effect of – attitude or information that is compelling and then put a label on it and saying "Disregard it". So in the specific application of the HMSD 5.1 symbology set, we would talk to the term of compelling.

So the NVD image is a green monochrome. When you start pushing into low light and degraded environments, particularly in the presence of rain, you'll get a lesser signal-to-noise ratio. So you'll start getting scintillation of the – if you think about an old school TV screen, how it gets the bright sparkles across it. That's what happens on the NVD image. So that image, in that environment, is not crisp, is not clean. It's difficult to break out the detail. If you overlay that with a HUD symbology which is brighter, it's

crisp, it is clear and it's in a digital format, overlaid with the layers of training we put on our pilots to say to trust your instruments, the false attitude information presented in that HUD symbology becomes compelling compared to the visual imagery presented by the IITs.

SQNLDR SCHMITT: I appreciate that. But the point you're making in 83, isn't it, is that it's the Director of Operational Airworthiness's method that you had concern about.

MR WILSON: Well, yes, by putting a pilot in that situation and saying to them to ignore that information and look to the front.

SQNLDR SCHMITT: I understand. If you could go to 102 of your Statement, please. You say there:

> *In response to the "unacceptable" finding reached by AATES, I understand the then Director of Operational Airworthiness commissioned an Operational Evaluation Report to support planned Service release of the 5.10 upgrade.*

So when you say "in response to the "unacceptable" findings reached by AATES", you're speculating there as to that was the reason for the OPEVAL, aren't you?

MR WILSON: Well, the OPEVAL wouldn't have gone ahead if we didn't have an "unacceptable" finding.

SQNLDR SCHMITT: Well, the OPEVAL did not merely concern the "unacceptable" finding of the – in respect of the issue that you identified as being unacceptable. It considered other parameters of version 5.10 outside of that, didn't it?

MR WILSON: Sorry?

SQNLDR SCHMITT: Not only did the OPEVAL deal with the "unacceptable" concern that you had raised in the test report, it dealt with other aspects of version 5.10.

MR WILSON: Such as?

SQNLDR SCHMITT: Well, each of the other matters that are raised in the report. So, for example, distance to go indication, it deals with attitude presentation, symbology brightness and display mode adjustment, symbology DC air modes, et cetera. So it deals with other matters aside from those that you raise in your test report, is my point.

MR WILSON: Yes. And some of those matters are fair and reasonable. You'll notice that the AATES report was truncated at a point where we would – we have a test plan with a series of data points we go through when we're conducting a test activity and we start to identify system behaviour which is beyond our knowledge of the system performance. It would be prudent to truncate at that point and reassess to try and understand.

Foremost in our minds at that stage was that we had received a dataset which had been corrupted at some point, so we needed to verify that it was in fact performing as the manufacturer intended. So the testing was incomplete at that point. It was sufficiently complete to draw the conclusions we had made in our report.

SQNLDR SCHMITT: I understand. So then just in respect of your reporting, if you can just take that document up and at paragraph 26 – I won't take you to that directly. But might I suggest to you that the reporting that you completed was incomplete in terms of the assessment of version 5.10 and further information could be obtained as to whether that version could be put into Service?

MR WILSON: No, not without the restrictions that were put in place for the OPEVAL. I felt those restrictions were a reasonable treatment to prevent pilots operating that system in a flight regime where it was unsafe.

SQNLDR SCHMITT: Let me put it another way. The OPEVAL went into additional information outside of the information that you were able to obtain during your test flights and contained within the test report. Do you agree with that?

MR WILSON: Yes.

SQNLDR SCHMITT: So I suggest to you that the purpose of the OPEVAL was not in response to an "unacceptable" finding, it was in order to obtain further information which had not been included in your test report, albeit because it was truncated. Do you agree with that?

MR WILSON: Sorry, the intent?

SQNLDR SCHMITT: I'm suggesting to you when you say that the report was commissioned in response to the "unacceptable" findings, that is not in fact the case. It is commissioned in order to obtain additional information which could not be obtained through your reporting because you'd truncated the testing.

MR WILSON: If you simply wanted a little more information, we could have achieved that within the Flight Test Organisation.

SQNLDR SCHMITT: If you'd go to 114 of your statement, please. You were taken to this earlier, about the recommendation that was made in the OPEVAL report concerning the warning to be included in the Standardisation Manual. And then you were taken to 115 concerning the fact that AATES were not consulted about the proposed change and, despite this, the Standardisation Manual was amended to include that change. When you say AATES was not consulted about that proposed change, do you say not at all, or prior to the OPEVAL report recommending that?

MR WILSON: Well, to my knowledge it was never discussed with me as the lead MRH test pilot within AATES.

SQNLDR SCHMITT: Are you aware that AATES prepared a response to the OPEVAL report?

MR WILSON: Yes.

SQNLDR SCHMITT: Are you aware that within that, it dealt with the proposed warning and AATES's response to it?

MR WILSON: That was a response drafted by LTCOL Reinhardt.

SQNLDR SCHMITT: Yes.

MR WILSON: He discussed aspects of that with me, but he wanted that response to be at his signature. So I did not see that response.

SQNLDR SCHMITT: So insofar as AATES being consulted about it, you'd accept that there was some consultation insofar as AATES provided a response to the OPEVAL report.

MR WILSON: That would be fair, yes.

SQNLDR SCHMITT: At 114 you also talk about the warning as being some form of workaround. What do you mean by a workaround?

MR WILSON: A workaround, a treatment.

SQNLDR SCHMITT: Are you suggesting that the introduction of the warning into the Standardisation Manual was something that was less than formal policy? Or are you suggesting that by the use of quotations, that this was somehow deficient?

MR WILSON: That it was deficient.

SQNLDR SCHMITT: Workarounds generally are some response to an unexpected problem, they're temporary in nature. Would you agree with that?

MR WILSON: If you've worked around something, whether it's a permanent workaround or a temporary one, I don't think that implies that.

SQNLDR SCHMITT: In the Aviation industry, in the military space in particular, a workaround might be in response to some unexpected operational issue which you need to find a quick solution to, and you find a workaround to get back on operation, or back on mission, whatever it is. Would you agree with that?

MR WILSON: I think I understand where you're going. Like a workaround, in the context of we're going to take a restricted flying envelope and use it until we get a new system. That would be fair. But to then use that as an excuse to go and operate a system that's not airworthy in a full range of flight envelopes and full range of operational tasking, well, that becomes questionable.

SQNLDR SCHMITT: Can we then go to 127 of your report – sorry, of your statement rather. You say there:

> *Based on my own interactions with staff within Army Aviation in response to the AATES testing of the 5.10 upgrade, I am aware that a number of individuals, including the Director of Operational Airworthiness, sought to justify rejecting the AATES testing based on the argument that it was conducted by day, whilst the OPEVAL was conducted at night.*

So based on your interactions with staff, that did not include any interaction with the Director of Operational Airworthiness, did it?

MR WILSON: No. So throughout all of the testing and I produced a lot of reports at that stage, at no stage did I even receive a phone call from anyone in the chain of command in response to adverse findings I made in the report.

SQNLDR SCHMITT: So when you say based on your own interactions with staff, you're aware, insofar as the Director of Operational Airworthiness was seeking to justify rejecting the report on a particular basis, that's based on hearsay?

MR WILSON: I'd agree with that, yes. The reason I include those types of comments within this statement was there's a lot of information that has to be digested by the panel. It's intended to direct a line of enquiry to where you may find an answer and it's based on my understanding of the situation at the time. If it's proven to be incorrect, I'll happily retract it, but that's where I would start looking for a source of the path for this problem.

SQNLDR SCHMITT: Thank you. Finally, at paragraph 131, you've levelled the accusation at the Director of Operational Airworthiness that he was overwhelmingly reckless. I want you tell us, particularly in respect of the OPEVAL and any recommendations that you're at least aware of, of the Director of Operational Airworthiness, how it was that he was overwhelmingly reckless in respect of this matter?

MR WILSON: Well, we have systems which are not airworthy. They were reported as being a very high risk of causing multiple deaths. The risk treatments that were put in place were ineffective or inconsequential. The procedures – the systems were cleared into Service. We told our aircrew via the Standards Manual to operate in the full range of missions and role environments. That constitutes a lawful order.

So we're commanding our subordinate pilots to take unairworthy systems into an area where we know they're unsafe. That's what I would call reckless. I suppose reckless in terms of – I understand there's two types of definitions – one is that there is a regulatory requirement that you normally regard complying with which I would suggest is the airworthiness requirements. I think the more common English language would be with reckless disregard to the hazard you're applying to other people. That would be the context I would use it there.

SQNLDR SCHMITT: Is that evidence you just gave based upon an assumption that the Director of Operational Airworthiness was the one who approved version 5.10 into Service?

MR WILSON: The point is at some point someone has to make an assessment that it's cleared for release into Service. So that approval would have to either go to him or through him as the Director of Airworthiness. He had the option to intervene. As I said earlier, the point of including those names there was to direct the Inquiry to a start point for further enquiries as to how this occurred.

SQNLDR SCHMITT: Thank you. That's the cross-examination.

MS McMURDO: Thank you.

AVM HARLAND: I just have one question, just regarding the interim flight test report on the HMSD version 5.10 dated 14 June 2019, which I understand you have in front of you. It was exhibit 41. To your knowledge, did AATES intend to convey this as their final position on TopOwl version 5.10 and that you didn't intend to do any further testing?

MR WILSON: The position taken by the Flight Test Organisation led by LTCOL Reinhardt was the report stands. The contents of this report have never been retracted. We stand by the findings in the report. If we didn't find this deficiency, the test plan had a range of data points we had to go through to clear that system for use as to the full range of mission-task elements and operating environments. So, yes, it was truncated. If we were to approve it for release into Service, we would have to go back and revisit that to make sure we cleared out all those missed test points.

AVM HARLAND: Yes. I guess the point I'm trying to get to here is whether AATES had left the opportunity open to do more testing, to do more research, to find out more to effectively advance the report and advance their findings?

MR WILSON: Certainly. I think there was – we were somewhat taken aback by the system performance. Initially, we thought it may have been, as I said, an error with the code that went into the aircraft. So we sought to verify that. We went back to the manufacturer and were seeking more information about the configuration that we tested and make sure it actually was performing correctly. There was pressure on me from the organisation to get the report out.

So we would like to have taken more time to enquire as to how the system performed and then to properly understand how that would impact flights in a degraded visual environment because all the indications we had at that stage was a very high risk. But if we were going to go in there, we want to make sure we're properly informed about what the risks were, how the humans would – how a standard human would behave in that environment in response to this type of information. It would be a big task. So that's why it was truncated, so it would give us a chance to go back and reassess when we had proper knowledge.

AVM HARLAND: So the intention from AATES was that you'd reached a culmination point for this testing because of what you had found in initial flights?

MR WILSON: You could correct me, but my understanding at the time was that there were constraints on me, as the test lead, that I had to – there

was a gate (indistinct) to night flying. I can't remember the specific constraints there, but I imagine an "unacceptable" finding would have triggered the gate, but I don't know what the level was set at, whether it was lower than that or at that. But an "unacceptable" finding by day would cause you to not be able to pass the gate to go into night flying. That would be a problem with our Military Permit to Fly.

AVM HARLAND: So if I'm looking at that finding from the Army's point of view, would I then assume that AATES is no longer having anything to do with TopOwl or would this be a process where you continue to explore options to further the testing to find out more?

MR WILSON: Absolutely. This would be exactly the sort of thing that AATES would get involved with. It would be an opportunity to engage with peer test agencies, wider industry, engage with DSTG, human factor specialists, to properly understand it. At the time, that was the extent of our knowledge. It is exactly the type of role you would give to a Flight Test Organisation to go and examine this properly.

AVM HARLAND: Yes. So it would be ordinary that you'd continue to do research to try and find a way ahead to understand better and potentially bring a system into Service with appropriate limitations?

MR WILSON: Well, not only a way ahead but to further examine options available under the risk protocol. One of the key things you'd want to do is to understand what are the actual risks you're exposing yourselves to. More importantly, rather than trying to force through an area that is a high risk, you'd want to understand the options you had available to you to uphold alternate paths which would offer you risk treatments.

AVM HARLAND: Okay, thank you.

MR WILSON: Thanks.

MS McMURDO: Anything arising out of that?

SQNLDR SCHMITT: No, thank you, ma'am.

MS McMURDO: Yes, thanks, SQNLDR Schmitt. Yes, MAJ Barnes.

<CROSS-EXAMINATION BY MAJ BARNES

MAJ BARNES: Thank you, ma'am.

Mr Wilson, my name's Michelle Barnes. I'm representing SO1 Standards, and who was SO1 Standards at the relevant time. You know who I'm talking about?

MR WILSON: Yes.

MAJ BARNES: I want to take you to your statement, and in particular paragraph 65. Do you have that there? In that paragraph you deal with, essentially, how it came about that you became the test pilot for the test that resulted in the AATES report. Am I right about that?

MR WILSON: That's correct.

MAJ BARNES: Now, you speak there about SO1 Standards not having achieved basic night currency, and in your evidence you indicated that it was your understanding that LTCOL Reinhardt pulled him off. I just want to explore that with you. Were you actually told that by LTCOL Reinhardt, that he'd pulled him off or used those words?

MR WILSON: I don't think he said "pulled him off", but he was removed from testing.

MAJ BARNES: Is this what actually happened: that SO1 Standards had a planned flight just before the AATES test which would have got him his night currency and that was cancelled due to an aircraft not being available? Did you know about that?

MR WILSON: I don't know about that. The contention that you could go to the then Director of Safety for Flight Testing, having only achieved one sortie, to achieve the minimum standards to achieve flight currency for night as being appropriate to go into test a new device under night conditions across the full range of an operating spectrum, I don't think that would be well received by the DoSA.

MAJ BARNES: Well, I'll take that back a step again.

MR WILSON: Sorry, I wasn't aware that he had a sortie planner, but the bottom line is that we were going for a permit at the time. The state of his logbook was presented to the SO1 Flight Test and the decision rests at his level.

MAJ BARNES: So not your level?

MR WILSON: No, I can't tell a half Colonel what to do.

MAJ BARNES: You weren't involved in that decision-making?

MR WILSON: I was aware that it was happening. I was aware the Flight Test Engineer was quite concerned because no one within the AATES organisation would be able to present, even if that sortie did go ahead, would be able to present that to the DoSA-FT and still be issued a permit to fly. So he was quite concerned as the engineer to present that at that interview. I offered to LTCOL Reinhardt as an option that I would do the task.

MAJ BARNES: I just want to go back a step because when this was originally planned, it was LTCOL Reinhardt that was doing the planning, including deciding who would be the test pilot. Is that right?

MR WILSON: It was a workload management issue at that time. My workload was quite high. It was intended to – to manage my workload, the SO1 Standards was going to stand in and do this testing because we expected it to be a relatively straightforward task.

MAJ BARNES: That was something that was organised by LTCOL Reinhardt?

MR WILSON: Yes, to my knowledge.

MAJ BARNES: LTCOL Reinhardt was the person at that time that had formed a view and made a decision that he would ask SO1 Standards to undertake this flight testing?

MR WILSON: Yes. I wasn't involved with that decision.

MAJ BARNES: Would you agree with me about this then, that it was LTCOL Reinhardt's responsibility to determine whether or not SO1 Standards was current and whether it was appropriate for him to undertake this testing? What I'm getting at, Mr Wilson, is it wasn't your role to assess whether SO1 Standards was current and able to fly in this sortie on this testing, was it?

MR WILSON: Well, currency is defined by the SI Avn Ops. There's a minimum standard to get airborne. As a Flight Test Organisation, we can't present to the DoSA having just achieved minimum standards. It's not my job to assess that Colonel's currency or proficiency. That will be done at a Colonel's job. Sorry, I'll stop there.

MAJ BARNES: Yes. So you agree with me that that wasn't your job to assess whether SO1 Standards was current at that time?

MR WILSON: No.

MAJ BARNES: If I want to suggest to you that there had been a plan, such that he was going to be current and that was a plan that LTCOL Reinhardt was happy with, you don't know anything about that?

MR WILSON: That seems to be a disconnect there because if LTCOL Reinhardt was happy with it, he would have approved him on to the sortie, but he's been removed.

MAJ BARNES: So I'll come back to what I suggested to you before was, what I'm suggesting to you and you tell me whether you're aware of this or not, but what I'm suggesting to you was that there had been a plan for SO1 Standards to undertake some flying time, such that would make him current. That then didn't occur, but LTCOL Reinhardt was aware of that intention and aware of that process. That's what I'm suggesting. Do you know anything about that?

MR WILSON: It's not supported by the outcome. So if LTCOL Reinhardt was happy with the plan, why did LTCOL Reinhardt take him off the test. There's a logic out there. I don't understand what you're asking.

MAJ BARNES: Well, I want to make it clear to you so that you understand but what I'm suggesting is that there had been a plan which would have seen SO1 Standards current so that he could undertake the AATES testing. You don't know about that plan, that's what I'm suggesting to you?

MR WILSON: Okay, yes.

MAJ BARNES: You then took on this role at the request of LTCOL Reinhardt?

MR WILSON: Yes.

MAJ BARNES: You're not suggesting, of course, are you that - - -

MS McMURDO: So do you understand it's being put to you so that you can comment on it? The suggestion is that it's not quite as you said it in your paragraph 65 that the SO1 and LTCOL Reinhardt had discussed a plan for the SO1 to get currency to conduct the testing, and it was only when that

didn't happen that you were invited to do it. That's what's being suggested to you, a slightly different scenario than is in paragraph 65. Do you understand the difference?

MR WILSON: My understanding of - - -

MS McMURDO: That's all. It's just so that you can give your version and MAJ Barnes can put her version for her client to you so that you have the opportunity to say yes or not to that.

MR WILSON: Okay, thank you.

MS McMURDO: That's what this is about. So that's what's being suggested to you.

MR WILSON: Okay, thank you. So we were in a meeting. The Flight Test Engineer was preparing for the interview with the DoSA Flight Test for the Military Permit to Fly. He came in and presented the SO1 Standards logbooks to the SO1 AATES. There was quite a deal of consternation over the state of his currency and recency. It wasn't just a case of currency; it was a case of being sufficiently proficient to undertake this task. It was at that point that I became aware of the situation and that's when LTCOL Reinhardt asked me to do the job.

MAJ BARNES: But you weren't involved in any discussions between LTCOL Reinhardt and SO1 Standards about his currency?

MR WILSON: No.

MAJ BARNES: You're not suggesting, of course, that SO1 Standards wasn't a qualified Test Pilot at that time, are you, not currency, qualification?

MR WILSON: I don't know if he had a Test Pilot Qualification at that stage. He may not have. We would have to speak to – I don't have access to the documents but I would confer that. There was question over that though. I believe that as – we'd have to go and review the documents. If that's a mistake, well I'll have to correct that as matter of fact.

MAJ BARNES: Well, what I want to suggest to you, and you tell me whether you know this or not, but what I want to suggest to you is that at that particular time, SO1 Standards had maintained Category A Flight Instructor rating. Do you agree or disagree with that? Did you know about that?

MR WILSON: I would expect that as the case.

MAJ BARNES: You would expect that?

MR WILSON: I would expect it, yes.

MAJ BARNES: Would you accept that also at that time he had maintained his Qualified Test Pilot rating? Do you accept that that was the case?

MR WILSON: If he states that, that's fine. But based on - - -

MAJ BARNES: You didn't go and check yourself?

MR WILSON: Based on conversations with the SO1 Standards, I believe that was not the case. But if he has, then fine, that will be a matter of fact.

MAJ BARNES: Do I understand what you said a moment ago, Mr Wilson, it's not like you went and checked the PEX for yourself or the logbook yourself about SO1 Standards?

MR WILSON: No. There would have to be sufficient cause for the SO1 AATES to remove him from the flight.

MAJ BARNES: Can I take you then – still on the same topic but you deal with this issue in relation to SO1 Standards qualifications and currencies again at paragraph 109 when you come to talk about the OPEVAL.

MR WILSON: Yes.

MAJ BARNES: At 109, you set out there your concerns about the pilots that were involved in the OPEVAL, or at least two of them. Do you see that?

MR WILSON: Yes.

MAJ BARNES: I want to ask you specifically about SO1 Standards, who you deal with at paragraph (a), and you've said there that – expressed the view that SO1 Standards was not a current MRH-90 Test Pilot at the time of the testing serials. Was that your belief or did you have any basis to make that statement?

MR WILSON: That was based on a conversation with the SO1 AATES.

MAJ BARNES: So not anything once again that you, yourself, had seen by reviewing a logbook or PEX or your own experience with SO1 Standards?

MR WILSON: No. The intent of those paragraphs was not necessarily to cast a question on individuals but more to highlight the freedoms afforded to those individuals for the level of activity they were undertaking. They're quite a bit looser than the constraints placed on me as a test pilot as part of AATES. So when I go to apply for Military Permit to Fly, I have to sit a Board with the DoSA Flight Test.

He is looking not just for minimum currency or qualifications standards; he is assessing that I have a suitable level or a high level of proficiency in all the defined tasks that we're going to undertake. It highlights the constraints that I have as a Test Pilot because I then have to take that device into the full range of operating environments.

To put a finer point on this, we're talking academically here, and we sort of lose track of what we're really talking about. I mean the MRH, you can be operating it up to 250-odd kilometres per hour. I don't know if anyone has seen a race car travelling at those sort of speeds. Well, try to imagine a dump truck that weighs 10 tonnes travelling at those sorts of speeds. That's the degree of inertia that we have.

You then load that with up to 22 people, maybe two tonnes worth of aviation fuel and fly it around at 50 feet with up to 45 degrees angle of bank. 50 feet would be below the level of some of these buildings out here. It is a demanding operating environment and it's something you can't take lightly. So the freedoms afforded to these individuals in the activity they undertook was to go and play in a nice, safe area. My job - - -

MAJ BARNES: But the point that I'm making though, Mr Wilson, is simply this: that you did not know at the time that the OPEVAL was conducted, whether or not SO1 Standards was a current MRH-90 Test Pilot or not. Despite the fact that you've put that in your statement, you didn't know that, did you?

MR WILSON: As I said for the statement, the whole statement is predicated upon me not having access to any Defence documentation. It is based on the best of my knowledge of the situation surrounding this quite complex environment and I've been separated for a number of years.

MAJ BARNES: I understand the limitations that you have.

MR WILSON: Excuse me. If it's a matter of fact, I'm quite happy to correct a matter of fact. Is that where we're at?

MS McMURDO: To be fair to the witness, it does say "I believe that".

MAJ BARNES: That's all I'm seeking to clarify.

MR WILSON: If it's a fact - - -

MS McMURDO: You believe that, but if it's proved otherwise by the records, you accept that?

MR WILSON: I'm quite happy to, yes.

MS McMURDO: All right. Thank you.

MAJ BARNES: Thank you, ma'am.

Is that the same in relation to the position that you've put at (c) about neither officer, and that is both SO1 Standards and the other pilot mentioned in (b)? You say:

> *Neither officer was qualified to conduct Special Operations on any aircraft type.*

Is that the same; that is, that's your belief, but you don't know that from going and checking any specific records yourself?

MR WILSON: That's correct. Was he?

MAJ BARNES: Similar to what you said before - - -

MR WILSON: Was he qualified, SO qualified?

MAJ BARNES: Well, I'm just going to suggest that to you. Yes, so if I suggest to you that SO1 Standards was Special Operations qualified, would you accept that, or is that something you simply don't know?

MR WILSON: If it's supported by facts, I'd accept that, yes. But I think the point goes to the Special Operations qualified at the time on the MRH.

MAJ BARNES: Well, if I was to suggest to you that he was, do you accept that?

MS McMURDO: Well, I think his evidence is that was his belief but if there are records that establish otherwise, he accepts that. Is that correct?

MR WILSON: Absolutely, yes. There's no problem at all with that, yes.

MS McMURDO: Is that a correct statement of your evidence?

MR WILSON: (No audible reply).

MS McMURDO: Yes.

MAJ BARNES: I just want to cover off on this topic. Is that the same in relation to (d) where you have indicated there that neither took part in the Special Operations SO1 test campaign. So that's a particular test campaign that you were involved in?

MR WILSON: Yes.

MAJ BARNES: You understand that. And they weren't involved in that?

MR WILSON: Yes.

MAJ BARNES: But you don't know, do you, whether they might have been involved in other Special Operations test campaigns run previously or when you were not involved. Is that fair?

MR WILSON: The specific MRH Special Operations test campaign, I led that campaign. They did not take part in it. Is this fishing?

MAJ BARNES: No. All I'm suggesting to you is that you don't know whether SO1 Standards took part in another - - -

MR WILSON: I do know.

MAJ BARNES: I'll put it to you this way. There was training done. Were you aware of training done involving Commonwealth Test Pilots and 6 Aviation Special Operations Qualified staff? Are you aware of training that was run by those people?

MR WILSON: The specific reason I talk to the Special Operations test campaign as a dedicated activity is because that is where we defined the operational need for "this is go" information. It provides context to why we wanted this information in the HUD. It also provides context to the full parameters of the Special Operations approach profile. It would be – to conduct testing for a system that's going to be used in there, from a test

perspective, you would need to develop proper understanding of the constraints of that profile.

MAJ BARNES: All I'm suggesting to you, Mr Wilson – I'm not suggesting that you are incorrect about where you say that SO1 Standards didn't take part in particular training that you've just been talking about. But really what I'm suggesting to you is that you don't have oversight about what sort of training he might have done, including whether he has done some Special Operations training outside of the training that you conducted. That's all I'm suggesting. Would you agree with that?

MR WILSON: Yes.

MAJ BARNES: Can I come to the OPEVAL report, and I really just have a couple of questions about your understanding about that? Now, you accept, of course, don't you, that the OPEVAL was conducted over a much broader range of environments than the AATES testing?

MR WILSON: That would be correct, yes.

MAJ BARNES: You tell me if I've got this wrong, but my understanding is that the AATES testing, you did two flights, both at night?

MR WILSON: No, by day.

MAJ BARNES: By day. Sorry, that's my error. So you did two flights by day and then the OPEVAL obviously was after that. That's right, we've established that.

MR WILSON: That's correct, yes.

MAJ BARNES: The OPEVAL, and if you need to have a look at the – do you need to look at the report?

MR WILSON: I do because I'm not overly familiar with the documents. Sorry, if you could direct me to a paragraph, I'll have a look.

MAJ BARNES: Well, what I want to suggest to you is that the OPEVAL was 10 sorties. Do you agree with that? It's at paragraph 9 of page 5?

MR WILSON: I'll take it as read if it's in the document.

MAJ BARNES: It involved 12 aircrew participating, including Navy and 5 Aviation and 6 Aviation pilots?

MR WILSON: Yes.

MAJ BARNES: And Standards Officers and Flight Test crew. Do you agree with that?

MR WILSON: If it's in the document, yes.

MAJ BARNES: So agree, of course, then that were a number of pilots involved in the OPEVAL, not just SO1 Standards and the other member that we've been speaking about?

MR WILSON: Yes.

MAJ BARNES: Did you check whether any of those people were Special Operations Qualified?

MR WILSON: If those persons were from 6 Regiment, it's highly likely that they would be.

MAJ BARNES: But you haven't gone and done that sort of – you haven't looked into that yourself?

MR WILSON: (No audible reply).

MAJ BARNES: You've made a point in your statement about making some comments about the qualifications and the currency of SO1 Standards. What I'm suggesting to you is, you haven't done a similar evaluation of the other pilots involved in the OPEVAL?

MR WILSON: No. The reason I talked about this in this statement was more looking retrospectively from where the organisation took that system and what would be required in a compliant fashion to achieve that. So, it's more to highlight the constraints placed on me not what those individuals were able to do.

MAJ BARNES: And with a focus, it appears, if it is fair to say, on SO1 Standards?

MR WILSON: Yes. Because he was a test pilot involved in that activity.

MAJ BARNES: Can I take you page, sorry, to paragraph 113 of your statement, please, Mr Wilson? And what I understand you're talking about there is that's a meeting or a discussion that occurred after the AATES testing, after the OPEVAL and after you'd gone and done some of your own testing. Is that right?

MR WILSON: Correct. It was a phone conversation.

MAJ BARNES: And the further testing that you had done was – am I right about this, it was to do with the autopilot ability to recover from unusual attitude?

MR WILSON: That's correct.

MAJ BARNES: And was it those results that you were reporting to SO1 Standards in this conversation?

MR WILSON: Yes.

MAJ BARNES: Was LTCOL Reinhardt also a party to this conversation?

MR WILSON: No.

MAJ BARNES: Was there a conversation about that topic involving both LTCOL Reinhardt, SO1 Standards and yourself at a later stage or just this - - -

MR WILSON: Yes.

MAJ BARNES: There was, right. Now, at that later conversation, was there anyone else there present apart from yourself, SO1 Standards and LTCOL Reinhardt?

MR WILSON: I can't recall.

MAJ BARNES: And what I want to suggest to you is that SO1 Standards at that meeting listened to the brief that you delivered about this issue?

MR WILSON: Yes.

MAJ BARNES: Yes. And he asked you to write it up and provide him with some further information, which you did?

MR WILSON: It was already documented. It was already provided to him at the first phone call. Yes.

MAJ BARNES: And he took on board, as far as you can tell, what you were saying in that brief?

MR WILSON: No.

MAJ BARNES: Well, he discussed the brief with you?

MR WILSON: Yes.

MAJ BARNES: Took away a copy of the brief?

MR WILSON: Yes.

MAJ BARNES: And from there, do I understand that it was after that that there were some changes made to the Standards Manual?

MR WILSON: Yes.

MAJ BARNES: And those changes, is it your understanding that they were made as a result of this – at least some of this information that you provided in this brief?

MR WILSON: Yes. As I said earlier, the changes to the Standards Manual said that you could rely on the go-around function to recover from pilot disorientation within the Capture Zone of the autopilot. The Capture Zone or the – I think it's the zone of the autopilot is not properly defined with respect to its ability to do a go-around.

Sorry, ability to an unusual attitude recovery. But more specifically in the documents I provided to the SO1 Standards it showed that in a nose up attitude, which was within the Capture Zone, the aircraft would generate a tail slide and potentially departure from control flight which would probably not be recoverable if you became disoriented at 50 feet and pushed the button before the aircraft hit the ground.

MAJ BARNES: Now, I understand from hearing your evidence that your view is – and I'm probably paraphrasing here – that what you thought should have been done wasn't done. But what I'm suggesting to you is simply this, is that after this meeting we've just been discussing, there was a change and that was the change to the Standards Manual?

MR WILSON: The document still stands. This was an airworthiness and training reference document. The change to the Standards Manual still didn't take into account the performance that would – the risks associated with pushing that button at a terrain flight altitude when a pilot becomes disoriented. It wouldn't recover it.

MAJ BARNES: I understand your view and your evidence about that. But I'm just simply putting this proposition to you and that is that after

this meeting there was a change. And there was a change to the Standards Manual.

MR WILSON: Yes, there was.

MAJ BARNES: And what I want to suggest to you is that that must indicate that you were being listened to at that meeting because there was an outcome from that meeting wasn't there?

MR WILSON: No.

MAJ BARNES: You don't agree with that?

MR WILSON: Well, listen to implies comprehension. The message I sent was that it's unsafe to push the button and tell a pilot who is experiencing disorientation to rely on that go-around function at terrain flight attitudes. It simply won't do a recovery, you'll fly it into the ground. He may have taken the document but if he doesn't comprehend the document what are you putting to me?

MAJ BARNES: What I was suggesting to you was that there was some action undertaken after that meeting. And I think you've agreed with me about that. Although, you would, of course, say that it wasn't the action that you thought should have been taken. Is that fair?

MR WILSON: It didn't display comprehension of the situation.

MAJ BARNES: You said in your evidence a bit earlier that SO1 Standards said you had nefarious intent. He never used those words, did he?

MR WILSON: No, I used that as a – I don't think he would use those words, actually. He was accusing me of some kind of behaviour. Remember this is a phone conversation that happened some time ago. I can't remember the precise words he used but the intent was clear.

MAJ BARNES: But when you used those words, "nefarious intent" that was your perception rather than - - -

MR WILSON: Yes, it's some years past. I don't - - -

MAJ BARNES: - - - exactly what he had said.

MR WILSON: I can't – as I said, it's not an exact word for word. No. Should I put "words to the effect of"?

MAJ BARNES: And can I come to paragraph 131 of your statement. And you've just been giving some evidence about this just before I stood up to ask you some questions, and this is where you've put it under the header of, "My Own Subsequent Actions".

MR WILSON: Yes.

MAJ BARNES: Now, you've indicated there that – and it's six lines down – that the SO1 Standards laughed in response to the presentation. That didn't happen, did it?

MR WILSON: It did.

MAJ BARNES: He never laughed?

MR WILSON: It did.

MAJ BARNES: In fact, what happened was that he listened to your presentation, and once again, he asked for it and kept a copy of it. Is that what happened?

MR WILSON: I don't recall him asking for a copy of it. But the laugh or the chuckle, there was definitely an event similar to a laugh or a chuckle at the conclusion or a scoff.

MAJ BARNES: I'm sure I understand, this was a formal meeting that you had requested?

MR WILSON: It was a video presentation – sorry, an online presentation.

MAJ BARNES: So it was online?

MR WILSON: Yes, by phone and PowerPoint.

MAJ BARNES: And you were present?

MR WILSON: Yes.

MAJ BARNES: Obviously, SO1 Standards was present.

MR WILSON: Yes.

MAJ BARNES: LTCOL Reinhardt was present?

MR WILSON: Yes.

MAJ BARNES: Who else was present? I think you told us - - -

MR WILSON: MAJ Lamb.

MAJ BARNES: MAJ Lamb was present. Anyone else present?

MR WILSON: I don't believe so.

MAJ BARNES: And you said a moment ago that it was like a chuckle. At what point do you suggest there was a chuckle?

MR WILSON: At the conclusion of the brief.

MAJ BARNES: He didn't say anything to you negatively at that point about the brief though, did he?

MR WILSON: Not to my recollection.

MAJ BARNES: And you can't be sure if he did, indeed, chuckle that it wasn't about something else?

MR WILSON: No.

MAJ BARNES: No, thank you. Just one further topic that I just wanted to ask you about. It was something you mentioned this morning, and you mentioned about taking SO1 Standards on a sortie – and tell me if I've got this right, but where you intended to demonstrate to him the symbology set?

MR WILSON: That's correct.

MAJ BARNES: And that was before the AATES testing that resulted and the report was done. Is that right?

MR WILSON: No.

MAJ BARNES: That was after?

MR WILSON: The testing had been completed. It was - - -

MAJ BARNES: That's what I wanted to ask you about. What stage was it that you took SO1 Standards on this sortie?

MR WILSON: We'd completed our test sorties. The SO1 AATES asked me to do a familiarisation flight with the SO1 Standards so that he could see the error firsthand.

MAJ BARNES: And just so I'm clear about that. In between the testing but before the report had been written?

MR WILSON: Correct.

MAJ BARNES: And he came along and went on the sortie with you and you demonstrated the concerns to him. Is that what happened?

MR WILSON: Yes.

MAJ BARNES: And I think you said that you asked him to come back and he didn't come back.

MR WILSON: Yes.

MAJ BARNES: Did he tell you that he couldn't come back because he had other work commitments at that time that prevented him from coming back?

MR WILSON: I don't recall.

MAJ BARNES: You don't recall what the reason was?

MR WILSON: It would be normal to have some interaction. I received no interaction with him subsequent to that.

MAJ BARNES: And you suggested then that you believe that after that sortie where you demonstrated it to him, that he went and lobbied against the report. Do I take it that you don't have any direct knowledge yourself of that. That's hearsay or something that you understand?

MR WILSON: You could say "hearsay", yes. Yes.

MAJ BARNES: But you certainly didn't observe - - -

MR WILSON: No.

MAJ BARNES: - - - him doing that.

MR WILSON: No.

MAJ BARNES: Yes, thank you.

MS McMURDO: Thank you, MAJ Barnes. Yes, Ms Musgrove.

MS MUSGROVE: Thank you, Ms McMurdo. The Commonwealth doesn't have any questions for this witness at this time. But as with LTCOL Reinhardt, we offer to provide names of potential witnesses to provide evidence to the Inquiry to assist it to have a complete and balanced factual understanding of the circumstances. So I just repeat that offer again.

MS McMURDO: Yes, thank you. And do you intend to provide those names to Counsel Assisting?

MS MUSGROVE: Yes, we have provided some. But we are certainly working with Counsel Assisting.

MS McMURDO: Yes, thank you. Re-examination?

<RE-EXAMINATION BY MAJ CHAPMAN

MAJ CHAPMAN: Just four short matters arising please, ma'am.

The first in reverse order dealing with Mr Wilson some questions you were asked by MAJ Barnes. I just want you to go, if you will, to the first page of your statement. And do you recall being asked some questions concerning your precise recollection of qualifications, et cetera about SO1 Standard. Do you recall that line of questioning?

MR WILSON: Yes, I do.

MAJ CHAPMAN: And you made the point that these were your recollections alone and just based on what you recall?

MR WILSON: Yes.

MAJ CHAPMAN: And that's reflected at paragraph 2 and 3 of your statement, isn't it? Where you say:

> *The statement is true and correct to the best of my knowledge and belief and in preparing this statement I have relied on my own recollection of documents as opposed to having access to those documents.*

MR WILSON: That is correct, yes.

MAJ CHAPMAN: You were next asked some questions by SQNLDR Schmitt, or a question regarding the organisational workload of AATES.

MR WILSON: Yes.

MAJ CHAPMAN: And you gave an answer, as I recall, that it was relatively high workload.

MR WILSON: Correct.

MAJ CHAPMAN: And that's, again, just your own perspective of the demands on the organisation at that time?

MR WILSON: I don't believe it was my perspective. I think my workload was being tracked at Flight Test Airworthiness Board level.

MAJ CHAPMAN: So when you gave the answer that there was a high workload, were you giving an answer about your own workload or in answer to the organisational work?

MR WILSON: There was concern about the amount of flight test activity that I was required to perform. Individually, I was very happy with the way my workload was being managed within AATES. I didn't feel overtasked or stressed. I had sufficient time to do all the duties that were required of me.

MAJ CHAPMAN: I understand that. I think the question, as I recall it from SQNLDR Schmitt was asking you to express a view on the organisational workload of AATES at the time. Do you recall that?

MR WILSON: Yes.

MAJ CHAPMAN: And all I'm suggesting to you is that you provided a view about that from your own perspective - - -

MR WILSON: Yes.

MAJ CHAPMAN: But not, for example, as the SO1 AATES, such as LTCOL Reinhardt?

MR WILSON: No. No.

MAJ CHAPMAN: You didn't have full visibility in the same way that LTCOL Reinhardt might have?

MR WILSON: No.

MAJ CHAPMAN: Thank you. That's all. COL Gabbedy for MAJGEN Jobson asked you a question concerning a telephone conversation that you had with a person identified in the exhibit. Do you recall that?

MR WILSON: I do.

MAJ CHAPMAN: And I think your evidence is that there was some records that are on the Defence system concerning those conversations. Is that right?

MR WILSON: There will be, yes.

MAJ CHAPMAN: And what's the nature of those records? Are they file notes or - - -

MR WILSON: I sent him a document outlining the number of areas of concern I had regarding the management of the airworthiness of the MRH. It would be likely via email I would suggest. But I would have kept a copy on the AATES file directory.

MAJ CHAPMAN: So, you are suggesting that there are documents sent to this individual prior to or after your telephone conversation?

MR WILSON: I made a submission using the confidential – it's a confer process. It's a confidential safety reporting process which is a mechanism which allows me to go direct to the – it's a formal mechanism. It was via that system and probably followed up with a document. I can't recall exactly. But the records will be there.

MAJ CHAPMAN: Thank you. And just finally, in relation to some questions you were asked and, sort of, hypothetical by LCMDR Gracie. You gave some evidence in response to him concerning possible DVE conditions on 28 July 2023. Do you recall that evidence?

MR WILSON: Yes.

MAJ CHAPMAN: And you agreed with him that the DVE conditions that he described could have resulted in illumination falling below two millilux?

MR WILSON: Yes, in the context of it was a hypothetical, if there was sufficient cloud and - - -

MAJ CHAPMAN: Correct. Yes - - -

MR WILSON: - - - it's plausible.

MAJ CHAPMAN: In the conditions that he described.

MR WILSON: Yes. Yes.

MAJ CHAPMAN: And do you agree from your earlier evidence that operating in conditions lower than two millilux was a control imposed by AATES on the OPEVAL testing?

MR WILSON: Yes.

MAJ CHAPMAN: So, in other words, that they were not to test in conditions lower than two millilux, I think is your evidence?

MR WILSON: That's my understanding of the constraints placed at the time, yes.

MAJ CHAPMAN: But that control in terms of restriction not to fly below two millilux was, as established in your earlier evidence, not a control which was carried through to Service release?

MR WILSON: My understanding is there were no effectively controls transferred into Service release.

MAJ CHAPMAN: So then you would agree, would you, that had that been included as a control to Service release and assuming that illumination fell below two millilux, at that point, the sortie would have had to have been terminated or they not proceed in those conditions?

MR WILSON: That would be correct, yes.

MAJ CHAPMAN: Thank you. They are my questions.

MS McMURDO: Thank you. Thank you very much for your courage and your determination in coming forward to give evidence to this Inquiry. It's greatly appreciated. They've been very distressing events for you to have to recall.

MR WILSON: Thank you.

MS McMURDO: And giving evidence must have been quite a distressing process for you.

MR WILSON: Thank you.

MS McMURDO: I know you've got support people present but a welfare officer, the Inquiry's welfare officer will also speak to you when you leave the Inquiry room if you'd like to.

MR WILSON: Thanks, ma'am.

MS McMURDO: So, thank you. You are free to go. We will let you know if you are required further.

MR WILSON: Okay.

MS McMURDO: It's greatly appreciated.

<**WITNESS WITHDREW**

MS McMURDO: COL Streit, did you want to say something at this point? I'm sorry, yes.

LCDR GRACIE: Sorry, I'm just moving in from my seat. I don't want to write my copy book for this week, there is just one thing I do want to raise before Counsel Assisting does. On Wednesday night, ma'am, there was a news grab and a main piece on Channel Nine 6 pm news. The nature of it, I think, requires me, in the interests of at least my client and perhaps all four of the deceased crew to put on the public record the fact that at least in my client's case, his family were very distressed and concerned about the way the information of Dr Smith's evidence was presented.

It wasn't just in the news grab, it was in the main piece. But the news grab went something like this:

> *Flying at hazardous fatigue levels – why the crew involved in the deadly Taipan crash were so tired it was like they were drunk.*

Now, that sort of reporting, aside from being sensationalist, was inaccurate. It wasn't a proper reflection of the evidence of Dr Smith which was very considered, and I just want to put on the record there that there was no evidence of drunkenness.

There was a biomathematical modelling done to replicate the level of fatigue to what was called a normative level that people could understand. It wasn't a finding of drunkenness, and I think even the main piece said that they were almost over the double limit – over the legal limit.

MS McMURDO: Yes, it wasn't even a finding that they were at that level, but rather that it was likely they may be at that level.

LCDR GRACIE: Based on an assessment of the general population's level of risk.

MS McMURDO: What do you want done about it? The Inquiry does have a Media Officer who could liaise with Channel 9 about it to see if a correction could be published. I mean, that could be asked for. Whether it happens is a different matter.

LCDR GRACIE: Of course. Ma'am, if that is one avenue, that would be welcome.

MS McMURDO: All right. Well, I might get her to speak to you about that, and you can liaise with her about what would be required. Are you content with that approach, COL Streit?

COL STREIT: I am.

MS McMURDO: Yes, all right. We'll see what can be done.

COL STREIT: I also note that the actual evidence that's given by all witnesses in this hearing will be published as soon as possible on the website.

MS McMURDO: Yes. Ms Musgrove?

MS MUSGROVE: Sorry, I was just going to add to what my friend – the evidence wasn't that specifically based upon the tools that were used, that the aircrew were at those levels of fatigue.

MS McMURDO: No.

MS MUSGROVE: It was an assessment, and it was an evaluation of a possible population outcome with those factors input.

MS McMURDO: That's right. That's true.

MS MUSGROVE: And so the reporting – I agree with my friend's position, that the reporting was factually incorrect, and if a retraction could be published?

MS McMURDO: Well, we can ask. That's all we can do.

MS MUSGROVE: Then that would certainly be appreciated. And I just also reiterate that the findings of the DFSB report have not yet been released, and so whilst all this evidence is obviously useful and of interest to the Inquiry, certainly the final report is going to be of particular assistance to the Inquiry, moving forward.

MS McMURDO: We look forward to it. Thank you. Yes, COL Streit?

COL STREIT: Thank you. First, can I join with my colleagues at the Bar table to respectfully request at all times accurate reporting in the news. The news is important. It is how members of the Australian public and wider audience become aware of particular matters, and accuracy in reporting is a hallmark of professional journalism, and I would hope that those newsagencies listening on or observing these proceedings would echo those comments, and take all reasonable and practical steps to ensure accuracy in reporting.

Can I say in response to a matter Ms Musgrove just raised – I don't know how many times I've said it now, but I'll say it again at the risk of repetition – the DFSB report, when delivered, will be important, but it is but one part of the evidence that will be considered by this Inquiry, and indeed the evidence that has been led in all hearings is relevant and probative for the Inquiry's consideration, and looks at matters that the DFSB is not looking at. If you think about notification processes, search and rescue, those types of things. So it's just important to keep that in mind.

Can I also say what I said, and echo my comments in my opening remarks at the start of this hearing? The Inquiry process is dynamic, and we don't know where the evidence will go, nor can we always anticipate where it will go. And evidence this week, like in other hearings, on occasions has been confronting for individuals, and I imagine, Madam Chair, you will be saying something about that shortly.

But everyone should understand that evidence given by witnesses is just a piece of the puzzle, or something that might be a piece of the puzzle, and evidence will continue to unfold as the Inquiry continues on this inquisitorial process.

Having said that, can I turn and just remind those interested persons that the hearing in November will occur on 18 to 22 November. There are 15 witnesses. The witness list is largely settled and the majority of notices have been issued to witnesses. They're in the process of preparing statements. There are four witnesses who will give evidence concerning TopOwl. There are witnesses who will give evidence, senior Aviation Commanders, who will give evidence about their roles and responsibilities at the time of the crash of Bushman 83.

There will be further evidence from Queensland Police in the form of an Assistant Commissioner. There will also be evidence from senior Air Force and Navy Officers regarding their Service structures and training for junior pilots up to the Major, Lieutenant Commander, Squadron Leader level.

There will also be some evidence given by the Headquarters Aviation Command psychologist about her observations concerning issues relating to fatigue as well.

So the Inquiry process continues importantly to another hearing in November, and people should just be mindful of that matter without leaping to pre-emptive and very early judgments about things. Thank you.

MS McMURDO: Quite so, yes. Well, as I've said earlier, there has been some very harrowing evidence, particularly the evidence from the last witness, which is likely to cause considerable distress to many people, obviously particularly the families and loved ones of the deceased. But I understand, and hope, and trust that they have well-established support mechanisms, which I'm sure they will call on as needed.

But the evidence is probably also likely to distress other members of the ADF and their families, and other people who were either in the hearing room or watching the livestream. So to everyone concerned, could I remind you all that help is available, and the support services are on the livestream screen, and also available on the Inquiry website.

Could I also remind Counsel representing of those matters, and also invite them to keep an eye on those they represent to make sure that they are sufficiently supported at this time?

As COL Streit has alluded to, there is still a lot more evidence to be heard in this Inquiry before we conclude our hearings, and as we've heard this afternoon, some of the evidence given by Mr Wilson is apparently disputed, and we may hear contrary evidence in the future, so certainly the Inquiry is keeping an open mind, and the Inquiry invites the media and the public to also bear that in mind.

Our next hearing is on Monday, 18 November for one week in Brisbane at the Pullman Hotel, and more details about the time of that hearing will be available closer to the date on the website. We can adjourn now until 18 November. Thank you.

PUBLIC INQUIRY ADJOURNED UNTIL MONDAY, 18 NOVEMBER 2024