CORONER'S COURT OF THE AUSTRALIAN CAPITAL TERRITORY

Matter Title:	**Inquest into the death of David Wood**
Citation:	**[2026] ACTCD 1**
Decision Date:	12 February 2026
Before:	Chief Coroner Walker
Findings:	See [152], [156] – [158], [166] – [167], [171], [173] – [175], [194] – [197], [211], [218]– [221], [227] – [228], [230], [233], [236], [246], [250], [256].
Catchwords:	**CORONIAL LAW** – manner and cause of death – death in Australian Antarctic Division – helicopter pilot fell into crevasse – hypothermia sustained after prolonged exposure – coronial arrangements in Antarctica – whether elapsed time in rescue contributed to death – previously identified crevasse – lack of formal risk identification process contributing to incident – sling load regulations – adequacy of clothing – adequacy of search and rescue training – publication of findings after regulatory changes introduced – hearing not resumed following criminal proceedings
Legislation Cited:	*Australian Antarctic Territory Act* 1954 (Cth) ss 6(1) and 10 *Australian Antarctic Territory Criminal Procedure Ordinance 1993* (Cth) *Coroners Act 1997* (ACT) ss 13, 36, 43, 52 and 58(6) *Work, Health and Safety Act 2011* (Cth) s 32
Cases Cited:	*Commonwealth of Australia v Helicopter Resources Pty Ltd* [2020] HCA 2016 *Helicopter Resources Pty Ltd v Commonwealth of Australia (No 2)* [2018] FCA 991 *Helicopter Resources Pty Ltd v Commonwealth of Australia* [2019] FCAFC 25 *March v E & MH Stramare Pty Ltd* [1991] HCA 12; (1991) 171 CLR 506 *May v Commonwealth of Australia and Helicopter Resources Pty Ltd (No 2)* [2019] ACTMC 31 *May v Helicopter Resources; Commonwealth of Australia v May* [2021] ACTSC 116

	May v Helicopter Resources Pty Ltd; May v Commonwealth of Australia [2022] ACTCA 15 *May v Commonwealth of Australia* [2024] ACTCA 6
Texts Cited:	*The Australian Antarctic Division Field and Emergency Response Training Guideline 2023* volume 17.0 *Australian Antarctic Division Field Manual 2015* *Australian Antarctic Division Field Manual 2023* *Australian Antarctic Division Standard Operating Procedure* *Civil Aviation Order* 29.6 *Operations Manual 2015* *Pilots Operations Safety Manual*
File Number:	CD 009 of 2016

Note:	Amended by the Chief Coroner on 27 March 2026 pursuant to an application made under s57A of the *Coroners Act 1997* (ACT).

CHIEF CORONER WALKER:

Part 1 – Introduction

1. On 12 January 2016 in the course of carrying out his duties as a helicopter pilot with the Australian Antarctic Division (**AAD**), Captain David Wood died. He suffered hypothermia after a fall down a crevasse on the West Ice Shelf near Davis Station in the Australian Antarctic Territory (**AAT**). He was 62 years old at the time of his death. I will, with respect, refer to David Wood as Captain Wood throughout my findings.

2. On 19 September 2017, an hearing commenced in the inquest into the death of Captain Wood. At the opening of that hearing, Mr James Stewart, now Magistrate and Coroner of the Australian Capital Territory (**ACT**), appeared as Counsel Assisting, ably supported by Ms Sarah Baker-Goldsmith.

3. Mr Stewart, as he then was, opened most eloquently, introducing Captain Wood, the man, and the Antarctic environment:

> *David Wood was born on 6 June 1953 in Winnipeg, Canada. He was a husband, a father and a work mate when he died on 12 January 2016, aged 62. …*
>
> *He had been flying a routine flight and, unfortunately, had landed over the top of what was then a concealed crevasse. By all accounts, David Wood was a highly skilled helicopter pilot, an outdoors man, an intellectual, a surfer, a musician, a photographer, a Volkswagen aficionado, a builder and rebuilder of Volkswagens, and a builder and rebuilder of homes, machinery and equipment, and David Wood was a traveller of the world. He travelled the world as soon as he could and as far as he could from a young age.*
>
> *He worked and played in many places and made friends wherever he went. Captain Wood appears to have equally enjoyed solace and the company of others. He was the helper of many in many different ways. He brought music to the elderly, home repairs to the needy and friendship to those who wanted or needed it.*
>
> *He is reported to be a doer not a shirker. He was loved, cherished and admired. But on 12 January 2016, David Wood passed away at work. He died in a unique workplace that attracts unique people like David Wood. He passed away in Antarctica.*

Australia asserts sovereignty over a parcel comprising 42 per cent of the Antarctic continent. Our presence there is managed by the Australian Antarctic Division or AAD, led by Dr Nicholas and a band of merry passionate employees. The AAD headquarters are located at Kingston, a beach suburb on the western shores of Hobart's Stirling River.

Australia has a presence in Antarctica for two significant reasons: national security and scientific research. The Antarctic continent is our next continent to the south and whilst it would probably be the worst place on earth for a military engagement, it represents the southern key to Australia's strategic security. Our physical presence must remain to further our 42 per cent claim to it.

We first explored Antarctica between 1911 and1914 in an expedition led by Sir Douglas Mawson and today we maintain three stations on the continent, Davis, Casey and Mawson. Mawson Station was established as the first permanent Australian station in 1954. It is over 5400 kilometres from Hobart. Davis Station was established in 1957, but for a four-year temporary closure between 1965 and 69, it has been continuously occupied. It is 4800-odd kilometres from Hobart and, importantly, 637 kilometres from Mawson Station.

Casey Station is the closest station to Hobart geographically, being about 3400 kilometres away. Casey Station is 1400 kilometres from Davis Station and 2037 kilometres from Mawson Station. Casey Station opened in 1969. To reiterate those different distances, from Mawson to Davis is 637 kilometres, Davis to Casey, 1400 kilometres, and Casey to Hobart, 2037 kilometres. That sets out, in my submission, a tyranny of distance.

In 1959 Australia and 11 other nations became founding signatories to the Antarctic Treaty, which provides for peaceful occupation and coexistence, preservation and cooperation between nations. There are now 53 signatory nations. Antarctica is one of a few remaining frontiers on the earth. It is not a place for the unfit, the unhealthy, the faint of heart or faint of spirit and David Wood was none of those things and, thus, he was a great fit for Davis Station.

The climate is extreme in the Antarctic. The risk of death and severe injury is ever present and real. Some expeditionists have been lucky to survive a simple walk between buildings, others have paid the supreme price for even a

short journey outside. The continent is unforgiving and hostile to human survival.

For those who choose to work for or with the AAD in Antarctica, the three main survival issues are the extreme cold, the harsh and fickle nature of the weather and the sheer isolation. Our 42 per cent piece of the Antarctic pie is nearly the same size as the Australian continent and Davis, Casey and Mawson Stations are many hours flying time apart, if the weather allows safe flight.

Davis Station has about 100 to 120 expeditioners over summer and 20 or so hunker down in winter. Suffice to say, that the station doctor and the helicopter pilots are crucial to survival. The risk to those who suffer injury or illness in Antarctica is extreme. Air evacuation to Australia is impossible for many days of the year; sea voyages take weeks if ships can escape the ice.

One Russian doctor was famously forced to remove his own appendix in Antarctica in 1961. He survived to retell the legend, but many others have not been so lucky. For the summer season of Christmas 2015 to 2016, the key staff at Davis Station were as follows:

Bill De Bruyn was the Davis Station leader. He had held over 40 years' experience as a Victorian police officer and retired a commissioned officer of that service. It was not Bill's first season as station leader and he was an experienced leader and commander.

Sharon Labudda was the operations commander. Sharon is a highly experienced Antarctic expeditioner with nearly 20 seasons under her belt.
Dr David Parker was the Davis Station doctor. He was, and is, a highly experienced frontier doctor. He has travelled the world healing people and dealing with disease.

Michael Eccles was the communications officer in charge at Davis Station. As one might imagine, communications with other bases, with staff outdoors and the Australian mainland are crucial to survival and operational success in that type of environment.

Helicopter Resources is a Tasmanian based company that is contracted to provide air support to the AAD. In the 2015-16 summer season they had three Squirrel helicopters based at Davis. Much like their namesakes,

Squirrels are small and nimble, however they are not spacious, and they are not designed to be cargo aircraft in the sense of a massive payload …

Like all aircraft, Squirrels have a limited payload that can be shared by variations of six passengers and physical loads, thus the more cargo, the less people you can fly in a Squirrel.

The two helicopter pilots for Davis Station were David Wood and Paul Sutton. The pilots had worked together in the Antarctic the previous summer, but this season Paul Sutton had become the senior pilot and he was being mentored by David Wood. Between them, they had had thousands and thousands of hours in what they would call stick time, that is being behind the controls of the helicopter….[1]

Part 2 – Jurisdiction

Application of the *Coroners Act 1997* (ACT)

4. The *Coroners Act 1997* (ACT) (**the Coroners Act**) applies to deaths in the AAT by virtue of section 6(1) of the *Australian Antarctic Territory Act* 1954 (Cth) (**the AAT Act**). ACT Courts have jurisdiction in relation to the AAT by virtue of section 10 of the AAT Act.

5. Section 6(1) of the AAT Act provides:

> (1) Subject to this Act, the laws (other than the criminal laws) in force from time to time in the Australian Capital Territory (including the principles and rules of common law and equity so in force) are, by virtue of this section, so far as they are applicable to the Territory and are not inconsistent with an Ordinance, in force in the Territory as if the Territory formed part of the Australian Capital Territory.

6. Section 10 of the AAT Act provides:

> (1) The courts of the Australian Capital Territory have jurisdiction in and in relation to the Territory.
> (2) The *Australian Capital Territory Supreme Court Act 1933* and the practice and procedure of each court of the Australian Capital Territory in force from time to time apply in the Territory as if:
>
> …

[1] *Inquest into the death of David Wood*, tn hearing dated 19 September 2017, pg. 4-7.

(b) in any other case—the Territory formed part of the Australian Capital Territory.

7. Relevantly, section 13(1) of the Coroners Act provides:

> (1) A coroner must hold an inquest into the manner and cause of death of a person who—
>
> …
>
> (g) dies after an accident where the cause of death appears to be directly attributable to the accident…

8. There were no objections to the jurisdiction of the ACT Coroners Court.[2]

Appointing a Coroner

9. Deputy Coroner appointments may be made pursuant to section 8 of the Coroners Act. Prior to Captain Wood's death, such appointments were made by the Chief Coroner of the ACT at the request of the Head of the AAD.

10. Mr William (**Bill**) De Bruyn, station leader at Davis Station during the 2015-2016 Antarctic summer season, held such an appointment. Bill De Bruyn wore many hats for the summer season, including being appointed as a special constable pursuant to the *Australian Antarctic Territory Criminal Procedure Ordinance 1993* (Cth).

11. As Station Leader, Bill De Bruyn knew Captain Wood. Bill De Bruyn was responsible for arrangements at the Davis Station, including the formation of the rescue team for Captain Wood on 11 January 2016.

12. On 12 January 2016, Captain Wood's death was reported to the ACT Policing Coroner's Team by Dr Roland Watzl, Acting Chief Medical Officer of the AAD. Wearing his special constable hat, Bill De Bruyn was then required to commence an investigation into Captain Wood's death. Wearing his Deputy Coroner hat, Bill De Bruyn was also immediately seized of jurisdiction in the inquest into Captain Wood's death.

13. ACT Police assisted Bill De Bruyn to complete ACT Policing coronial reporting forms. Bill De Bruyn independently completed a comprehensive "Report for the Coroner". That report was referred to ACT Duty Coroner, Magistrate Dingwall between 12 - 13 January 2016.

[2] *Inquest into the death of David Wood*, Transcript of hearing dated 19 September 2017, pg. 4-7.

14. On 2 April 2016, Ms Mary MacDonald, Captain Wood's wife, wrote a letter to Magistrate Dingwall formally requesting an inquest hearing into Captain Wood's death.

15. On 18 April 2016, in my capacity as Chief Coroner of the ACT, I took carriage of the inquest. I requested a police investigation into Captain Wood's death independent of the AAD on 2 May 2016. As a result of my concern about the difficult position the wearing of the two hats put him in, being a potential perceived conflict of interest, I subsequently directed Bill De Bruyn to cease performing functions as Deputy Coroner on 27 May 2016.

Part 3 – Scope

16. The Coroner's power to enquire is not at large. The scope of an inquest is circumscribed by what is identifiable as a material and proximate contribution to the death under consideration applying the 'common sense' test of causation affirmed by the High Court of Australia in *March v E & MH Stramare Pty Ltd* [1991] HCA 12; (1991) 171 CLR 506.

Required Findings

17. Section 52 of the Coroners Act sets out the findings I am required to make. Relevantly, that section of the Act provides:

> 52 Coroner's findings
>
> (1) A coroner holding an inquest must find, if possible—
>
> (a) the identity of the deceased; and
>
> (b) when and where the death happened; and
>
> (c) the manner and cause of death; and
>
> (d) in the case of the suspected death of a person—that the person has died.
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>
> (4) The coroner, in the coroner's findings—
>
> (a) must—
>
> (i) state whether a matter of public safety is found to arise in
>
> connection with the inquest or inquiry; and
>
> (ii) if a matter of public safety is found to arise—comment on the
>
> matter; and

(b) may comment on any matter about the administration of justice connected

with the inquest or inquiry

Issues Identified Prior to the Hearing

18. The following issues were identified and will be addressed in my findings:

- What was the cause of Captain Wood's death?
- When did Captain Wood die?
- Were there any suspicious circumstances surrounding Captain Wood's death?
- Did the time which elapsed between Paul Sutton discovering that Captain Wood had fallen in the crevasse and his extraction contribute to Captain Wood's death? In particular, were any of the following time intervals unduly prolonged:
    - the time between Paul Sutton discovering that Captain Wood was in the crevasse and the arrival of the rescue crew;
    - the time between the arrival of the rescue crew and Captain Wood being extracted; or
    - the time between extraction from the crevasse and arrival at the Davis Medical Centre?
- What conclusions may be drawn as to whether any inefficiencies are identified which contributed to Captain Wood's death?
- Are any non-temporal factors identifiable as having contributed to Captain Wood's death, including:
    - the adequacy of reconnaissance or appreciation of risks of the fuel cache site;
    - the adequacy of Captain Wood's clothing for the conditions, including any policy, rules or enforcement thereof in relation to appropriate environmental protective clothing;
    - the adequacy of rescue training and procedures on a mission generally and for Paul Sutton;

- Paul Sutton's decision to leave Captain Wood in order to secure assistance;
- the adequacy of the arrangements for the attending rescue team, including sufficiency of number, qualifications and of personnel, aircraft and equipment required; and
- the adequacy of liaison arrangements with other bases for involvement in a rescue?

- Could any aspect of the medical assistance provided to Captain Wood have contributed to his death, including:
  - first aid provided at the scene;
  - medical assistance during the evacuation process, and
  - medical treatment at the Davis Base?

19. Although not the subject of required findings, throughout the inquest questions arose as to the adequacy of:
    - communications with next of kin in relation to reportable deaths by the AAD; and
    - existing coronial arrangements in the AAD.

Issues Arising

20. As a result of evidence received in the hearing, the question arose as to whether it was appropriate to require the assistance of a Field Training Officer (**FTO**) for operations of the type being conducted on 11 January 2016, that is sling loading. As at 11 January 2016, the AAD general policy was that an FTO accompany every expedition. However, flight operations in Antarctica are governed by the Civil Aviation Safety Authority (**CASA**) orders. *Civil Aviation Order* 29.6 was interpreted by AAD staff in Antarctica as preventing passengers, including FTOs, from being on board helicopters transporting goods by sling line.

Part 4 – Procedural History

21. The procedural history is as follows.

22. On 23 February 2017 I appointed Mr Stewart as Counsel Assisting.

23. The inquest hearing was listed for first directions hearing on 23 February 2017 and second directions hearing on 31 March 2017.

24. Evidence was heard over 12 days between 19 September 2017 and 20 December 2017.

25. On 20 December 2017, the court was advised that Comcare, the Federal work health and safety regulator, had laid criminal informations against the Commonwealth of Australia and Helicopter Resources (**HeliRes**) under section 32 of the *Work, Health and Safety Act 2011* (Cth).

26. A number of parties sought the opportunity to make submissions as to whether the court could continue to receive evidence in that circumstance. However, further hearing dates of 1 through to 3 May 2018 were reserved for the remaining evidence.

27. Submissions were received by 30 March 2018.

28. HeliRes applied to have the inquest adjourned, pursuant to sections 36 or 58(6) of the Coroners Act, pending the determination of the criminal proceedings.

29. I refused that application and issued a subpoena for David Lomas, a senior HeliRes employee, to attend to give evidence pursuant to section 43 of the Coroners Act.

30. HeliRes sought a direction that the examination of David Lomas not extend to matters arising in the criminal proceedings. I refused to make that direction.

31. I delivered my decision to the effect that the inquest would proceed on 12 April 2018.

32. HeliRes filed an interlocutory application in the Federal Court of Australia on 24 April 2018.

33. On 30 April 2018, this court was restrained on an interlocutory basis from proceeding further. The reserved hearing dates were vacated.

34. The interlocutory application was dismissed by Bromwich J on 29 June 2018 (see: *Helicopter Resources Pty Ltd v Commonwealth of Australia (No 2)* [2018] FCA 991.

35. An appeal from Bromwich J's decision was allowed by Rares, McKerracher and Robertson JJ on 15 February 2019 (see *Helicopter Resources Pty Ltd v Commonwealth of Australia* [2019] FCAFC 25). The inquest was temporarily stayed. That decision was appealed to the High Court.

36. The criminal proceedings were heard in the Industrial Court by Magistrate Theakston between 17 Jun 2019 and 3 October 2019. His Honour delivered his decision on 6

December 2019 (see *May v Commonwealth of Australia and Helicopter Resources Pty Ltd (No 2)* [2019] ACTMC 31). The Commonwealth was found guilty and HeliRes acquitted.

37. On 24 April 2020, the High Court allowed the Commonwealth's appeal and set aside the Federal Court decision (see: *Commonwealth of Australia v Helicopter Resources Pty Ltd* 2020] HCA 2016 on 24 April 2020).

38. In an, as it transpires, misguided attempt to expedite resolution of the hearing, I gave directions for the parties to provide submissions in relation to the admission of relevant aspects of the transcript from the criminal proceedings into evidence by 21 August 2020.

39. However, a prosecution appeal was lodged in the ACT Supreme Court against Magistrates Theakston's findings. This was determined by Elkaim J on 10 June 2021. His Honour dismissed the prosecution appeal but upheld the Commonwealth's appeal against conviction (see *May v Helicopter Resources; Commonwealth of Australia v May* [2021] ACTSC 116).

40. The prosecutor appealed Elkaim J's decision. Objections to the competency of that appeal were dismissed on 30 March 2022 by Mossop and Thawley JJ and McWilliam AJ (see *May v Helicopter Resources Pty Ltd; May v Commonwealth of Australia* [2022] ACTCA 15).

41. Between 8 and 11 May 2023, the prosecution appeal was heard.

42. On 16 June 2023, I formally appointed Mr Sam McLaughlin as subsequent Counsel Assisting. Over a number of months, Mr McLaughlin undertook a very extensive review of the available evidence.

43. On 1 March 2024, the Court of Appeal dismissed the appeal (see: *May v Commonwealth of Australia* [2024] ACTCA 6). The effect of this decision is that both the Commonwealth and HeliRes were acquitted of any criminal liability surrounding the circumstances of Captain Wood's death.

44. Mr McLaughlin communicated extensively with parties as to how the hearing should complete. After some months of back and forth communications, in part complicated by the Antarctic season which limited the availability of witnesses to communicate with the court or present for a resumed hearing, a way forward was achieved.

45. Having considered the submissions made by the parties concerning how this matter ought to progress, I determined that:

- Dr Gale's evidence from the criminal prosecution would be tendered in the inquest;
- David Lomas' statement and his evidence in the criminal prosecution would be tendered in the coronial proceeding; and
- David Lomas would be called to give further evidence and be subjected to cross-examination.

46. All parties agreed that the inquest could now proceed to finalise the matter on the basis of evidence and witness statements received at the hearing in 2017, supplemented by evidence given by David Lomas and an aspect of the evidence of Paul Sutton, in the criminal proceeding. It was agreed, and I was satisfied, that Dr Gale would no longer be required to give oral evidence.

47. On 17 October 2024, I received submissions on behalf of Counsel Assisting. I then issued a timetable for closing submissions. The provisional hearing dates on 6 and 7 November 2024 were vacated as they were no longer required.

48. The last of those submissions was received on 12 December 2024.

49. I have no doubt that the excruciating delay in resolution of this matter has impacted significantly on Captain Wood's family and those involved in this most unfortunate incident. I apologise for that delay and deeply regret any further distress experienced by all who have been affected.

Part 5 – Facts and Circumstances

Fact Finding

50. Throughout the inquest, much of the evidence was not disputed. Mr McLaughlin spent months reconstructing a factual history from the documentary and oral evidence received at hearing. I have not sought to duplicate that effort. I gratefully adopt Mr McLaughlin's detailed record of the facts. Insofar as they are not contested and accord with my recollection and understanding of the evidence, these are my findings.

51. I note, however, that some aspects of the factual matrix, or counsel assisting's interpretation of the facts elicited from the evidence, have been challenged in submissions. I resolve those contested factual issues as they arise in my findings below.

Background

52. Australia has long had a presence in Antarctica, dating back to expeditions in the early 1900s and solidifying with the establishment of Mawson Station as a permanent

station in 1954. Today, Australia maintains three stations in Antarctica: Mawson, Davis, and Casey.

53. Australia maintains its presence in Antarctica for geopolitical and scientific research purposes.[3] An array of intrepid expeditioners attend the stations. They come from a variety of backgrounds and bring a range of skills. Some stay for relatively short periods while others stay for many months. Needless to say, life in Antarctica's hostile environment has its challenges, transportation being an example.

54. The distances and conditions in Antarctica dictate that, for many endeavours, air travel is the only feasible option. For many areas, and particularly those that are less frequently visited, travel by helicopter has significant advantages. Paramount among those advantages is the lack of need for a runway. For decades, the AAD[4] has utilised helicopters in Antarctica, with HeliRes being contracted since 1975 (aside from a five-year period) as the supplier.[5] In the years leading up to the 2015-2016 season, HeliRes provided two crews (pilots and engineers) who changed over part way through the season.[6]

55. As was usual, in the summer season of 2015-2016, those stationed at Davis had an assortment of projects to further. One such project was the 'King Project' which sought to use GPS and seismic installations as well as geological samples to establish east Antarctica's contribution to sea level change. Placing of the devices and collection of the samples necessitated travel to remote locations in the 'deep field'.

56. To facilitate travel to remote locations, fuel needed to be cached at waypoints so that helicopters could be refuelled. Such caching of fuel is not uncommon, and a site had been established in 2012 on an area known as the West Ice Shelf.[7] Such caching of fuel is routinely done by means of a sling line[8] whereby drums of fuel are suspended from the underneath of helicopters and transported to the desired location. The amount of fuel (or other personnel or goods) which may be transported is dependent on the payload of the helicopter used.

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[3] See per Gales at Crim tn796.1-26.

[4] The AAD is currently a division of the Department of Climate Change, Energy, the Environment and Water. At the relevant time, the AAD was a division of the Department of Agriculture, Water and the Environment.

[5] CB249 (*Statement of English*) at [7]. Note that HeliRes was originally known as Vowell Air Services. The name was changed in 1986 – see CB249 (*Statement of English*) at [3].
In relation to the AAD's long-term use of helicopters, see per Gales at Crim tn805.32-38.

[6] Helicopters were only operated during the summer season.

[7] Note that the area of the incident was adjacent to, but not directly on, the West Ice Shelf – see per Dr Allison at tn192.19-23; see also per Benavente at tn679.18-20 and tn702.4-9. However, for ease of reference, this area will be referred to as the 'West Ice Shelf'.

[8] Owing to their length (100ft), they are often referred to as 'long lines' – see per English at tn87.1-19.

57. For the 2015-2016 season, HeliRes stationed three helicopters at Davis Station. However, aside from a brief period when the two HeliRes crews changed over, it was only planned to have two helicopter pilots on the station at any time.[9] The third aircraft was present to provide for rotation and as a source of spare parts given the remoteness of the location.[10]

Relevant Personnel for the 2015-2016 Summer Season

58. For the 2015-2016 summer season, the relevant personnel at Davis were:

- Station Leader Bill De Bruyn. The Station Leader has ultimate responsibility for the activities of Davis. Bill De Bruyn was accountable to his superiors at the AAD for progress in relation to the various projects (set out in Service Level Agreements) assigned to him for the season. Additionally, he fulfilled a number of other roles, including as a Special Constable and Deputy Coroner;
- Operations Coordinator Sharon Labudda. The Operations Coordinator is responsible for the day-to-day administration of the various projects. Amongst her responsibilities, Sharon Labudda often provided taskings to the pilots;[11]
- Communications Operator Michael (Mick) Eccles. The Communications Operator is responsible for maintaining the AAD radio networks in support of any science projects. Relevantly, that includes communications with, and logging of, aircraft activity;[12]
- Medical Officer Dr John Parker. The Medical Officer is responsible for the health of the station. The Medical Officer is assisted, where appropriate, by a team of four lay people who are trained to assist in surgery;[13]
- The Field Training Officers ('FTOs'). The FTOs fulfil various functions including administering a range of training to the various expeditioners, dependent upon the needs of each expeditioner. Amongst this, they are responsible for training a Search and Rescue team. Until a Search and Rescue team is trained, the FTOs are the Search and Rescue team.[14] At the relevant time, a Search and Rescue team was yet to be trained. FTOs are also trained to 'prove' areas to ensure that they are safe. Stationed at Davis at the relevant time were Senior FTO Marty

[9] Following the death of David Wood, further pilots attended to aid in the recovery of the helicopter flown by David Wood.
[10] De Bruyn at tn743.17-19; CB13 (*Interview with Lomas*) at Q&A649-651; English at tn95.12-26; Strutt at tn182.38 to 1n183.6; Labudda at tn483.26-33.
[11] For a description of the role, see per Labudda at tn364.35-44.
[12] CB266 (*Statement of Eccles*) at 1.5.
[13] As to the lay surgical team, see tn745.37-38 per De Bruyn.
[14] Per De Bruyn – tn835.32-34.

Benavente and FTO James Hamilton. Also present was FTO Anthea Fisher who was coincidentally at Davis at the relevant time;[15] and

- HeliRes employees. For the 2015-2016 season, HeliRes rostered two crews who were scheduled to change over in December 2015. The first crew consisted of Bryan Patterson (senior pilot), Hayden Anderson (pilot), Kimba Rudeford (engineer) and Wayne Terry (engineer). The second crew consisted of Paul Sutton (senior pilot), Captain David Wood (pilot), Rowan Strutt (engineer), and Angus Hardwick (apprentice engineer).

59. It is noted that Captain Wood and Paul Sutton had been deployed to Antarctica together in the 2014-2015 summer season. On that occasion, Captain Wood was the senior pilot.[16] In the 2015-2016 summer season, the arrangement was for Captain Wood to oversee Paul Sutton who was engaging in his first deployment to Antarctica as senior pilot. This was done as a means of ensuring that HeliRes had a succession plan as some of their more experienced pilots neared retirement.[17]

The Helicopters

60. In the 2015-2016 summer season, HeliRes stationed three Airbus AS350B3E helicopters at Davis.[18] These helicopters are also referred to as 'Squirrels'.[19] They are regarded as a small helicopter and have a seating capacity of six, inclusive of the pilot.[20] Seats were able to be removed, allowing larger items to be placed within the helicopter. As with all aircraft, the Squirrels had payload capacities, limiting the overall weight of goods and fuel they could carry depending on a range of factors.

61. The pilot sits on the starboard side of the aircraft. Relevantly, there is a small window at the lower starboard side of the aircraft, immediately beside the pilot's right side.[21] Pilots utilise this window for sling load operations to view the load. The position of this

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[15] Per De Bruyn – tn836.17-22.
[16] Per Sutton at tn222.17-22.
[17] CB157 (*Email correspondence 16/6/15*) (note that in CB157 the term 'Air Crew Leaders Position' is used but English confirmed that this is the same as 'senior pilot' – tn106.26-29); CB158 (*Email Correspondence 21/12/15*); CB13 (*Interview with Lomas*) at Q&A60-63, 98-123, 312-315; English at tn106.15-42; Sutton at tn222.26-27, tn223.30-39, tn331.21-36. Lomas at Crim tn1279.7-13.
Note CB13 (*Interview with Lomas*) at Q&A105-107 in relation to it being Lomas' decision to have Sutton as the senior pilot but that the decision was made in consultation with English.
Note English at tn108.6-19 in relation to the arrangement for Wood to step in if there was a safety concern. Note that Labudda was not aware of this arrangement – see at tn463.15-19.
[18] This followed a tender process whereby a number of models were put forward by HeliRes and the AAD selected this particular model – English at tn79.13-17.
[19] English at tn79.13-26. As to the model number, at tn79.17 English suggested they are AS350B3, however at tn145.33-39 Patterson said that they are AS350B3E. Note also at tn94.9-10, English referred to a 'B3E'.
[20] English at tn92.38 to tn93.6. Note that English referred to AS350BA (but then indicates that all variations are basically the same).
[21] Sutton at tn297.11-21; CB263 (*Photos of UUG annotated by Sutton*); Patterson at tn138.14-16.

window means that, if the pilot wears bulky clothing (particularly on their arms), visibility is obscured.[22]

62. There is an externally accessible storage compartment (or boot) towards the rear on the port-side of the helicopter.[23] This area is commonly used for stowing the drum hooks and longlines used in sling line operations.

63. The two helicopters which were in use at the relevant time had registrations 'VH-UUG' and 'VH-UUI'.[24] On 11 January 2016, Captain Wood flew 'VH-UUG' and Paul Sutton flew 'VH-UUI'.

Clothing Worn by Helicopter Pilots

64. The position of the lower window in the Squirrel helicopters, as well as the potential for the inside of the helicopters to heat up,[25] meant that pilots tended to wear regular-type clothing.[26] There was no specific direction by HeliRes as to what pilots in Antarctica must wear,[27] and the requirements of the AAD were that pilots must take (but not wear) the contents of their AAD issued survival bag.[28] That survival bag was usually kept in an externally accessible compartment of the helicopter, a convenient and secure location.[29] The survival bags contained a balaclava, socks, goggles, boots, mittens, boot chains, woollen thermals, polar fleece and an outer layer/freezer suit.[30]

65. On 11 January 2016, Captain Wood wore a pair of 'Carhartt' trousers, a polar fleece top, a pair of 'Jobber' boots, a t-shirt, fingerless gloves, socks, a belt, underwear, and his helmet.[31]

Training and risk management

Training by the AAD

66. All Antarctic expeditioners are mandated to have a degree of training, dependent upon their requirements.[32] A matrix laid out the level of training (Untrained, Survival Trained, Field Travel Trained, Trip Leader) against the areas of travel (Station Limits, Extended Station Limits, Recreation Area, Station Operating Area) and therein sets out

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[22] Sutton at tn225.17-24, tn297.11-13; Patterson at tn126.9-29, tn138.14-23, tn157.12-14.
[23] Sutton at tn336.22-33; CB263 (*Photos of UUG annotated by Sutton*).
[24] These registrations were often referred to as 'UUG' or 'UG' and 'UUI' or 'UI' respectively.
[25] Regarding the inside of the helicopters heating up - English at tn97.10-16; Sutton at tn293.33-38.
[26] Patterson at tn126.9-13, tn138.14-23. Note also CB248 (*Statement of Brock*) at pp10-11.
[27] English at tn97.4-27, tn102.31-33, tn102.18-33.
[28] De Bruyn at tn740.39 to 741.7, tn825.33-35; CB11 (*Interview with Clifton*) at Q&A265; Labudda at tn404.18-36,tn461.8-10; Sutton at tn225.29-31. Note that the 'AAD Standard Operating Procedure Operations Manual' volume 5 (CB223) at pg17 imposed some requirements for flights over water.
[29] Patterson at tn170.10-19.
[30] CB205 (*Photos of survival bag contents*).
[31] CB203 (*Photos of Clothing Worn by Wood on 11.1.16*); Sutton at tn276.34-38.
[32] CB38 (*De Bruyn Report for Coroner*) at 1.4 (pg8).

requirements that an expeditioner must fulfil in order to travel to particular areas.[33] In addition to those requirements, if a person wished to travel into the 'deep field' (all areas beyond the Station Operating Area), the Station Leader was required to seek approval from the AAD. That requirement did not apply to pilots.[34]

67. The training that each expeditioner had completed, was required to complete, and was not required to complete were recorded.[35] Notably, the *AAD Field Manual 2015* describes 'Survival training'[36] in the following terms:

> The common level of field training for all expeditioners, survival training, consists of the minimum number of units required for predominantly station-based personnel. This is all the field training required for some summer project personnel.

68. In turn, the *AAD Field Manual 2015* describes 'Field travel training'[37] in the following terms:

> Prepares survival-trained expeditioners to travel in the surrounding station operating area. It is required for winter personnel and summer personnel who will be operating regularly in the field.

69. Under 'Content', 'Field travel training' includes "dealing with field emergencies".[38]

70. The content of 'Search and Rescue training' is described in the following terms:[39]

> includes station search, land search techniques, personal skills, systems, vertical and slope rescue, glacier travel and crevasse rescue and a LAST exercise.

71. Each of the helicopter pilots for the 2015-2016 were recorded as having completed 'Survival Training' but were marked as not requiring certain other training, including 'Field Travel Training' and 'Search and Rescue training'.[40]

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[33] CB38 (*De Bruyn Report for Coroner*) at 1.4 (pg12); Clifton at tn535.3 to tn540.21.
[34] De Bruyn at tn755.9-43, tn756.40-44, tn766.19-35; CB220 (*AAD 2015 Field Manual*) at pp9-10 (noting it does not mention arrangements for pilots in the 'Deep field' section).
[35] CB51 (*Antarctic Field Training Status*).
[36] CB220 (*AAD 2015 Field Manual*) at pg4.
[37] At pg4.
[38] At pg5.
[39] At pg7
[40] CB51 (*Antarctic Field Training Status*). See also per Sutton at tn224.29 to tn225.6 (note that Sutton references 'field training' but given the logs this would appear to be 'survival training'), tn269.15-18; De Bruyn at tn766.11-17. Note also that the 'Station Induction' required expeditioners to confirm that they had received briefings on a number of matters, including crevasses – see CB258 (*Statement of Gales*) Annexure 40.

72. Outside of the prescribed and documented training system, there was a practice by FTOs to provide some on-the-job training by way of 'familiarisation flights' and ad-hoc discussions between FTOs and pilots when they flew together. This training included such topics as identifying features (including crevasses) on the ground, using the angle of the sun to see crevassing, and familiarisation with the general area. In this regard, pilots were trained to land on blue ice (see below).[41]

Training by HeliRes

73. The responsibility of ensuring appropriate training (and records thereof) within HeliRes rested with the Chief Pilot, David Lomas.[42] David Lomas had been employed with HeliRes since January 2015[43] and became Chief Pilot in August 2015.[44] As Chief Pilot, David Lomas had oversight of HeliRes' operations (including in Antarctica) although some responsibilities were delegated to the Senior Pilot.[45]

74. In relation to HeliRes' training, part 7.14 (in volume 2) of the *Pilots Operations Safety Manual* discusses 'Antarctic & Sub-Antarctic Operations'.[46] That part included a section titled 'Special Hazard Focus' which outlined hazards relevant to Antarctica, including whiteout, crevassing and ice build-up on equipment. In the 'crevassing' portion, it noted that:

> Crew must be thoroughly briefed as to the dangers of working in a crevassed area and it is preferrable to carry an FTO (field training officer).

75. While pilots received practical training to prepare them for whiteouts,[47] such training was not provided in relation to crevasses, with reliance instead being placed on conversations with experienced pilots and on-the-job training.[48] The difficulties for

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[41] CB247 (*Statement of Benavente*) at [21]-[29] (and note [30]-[35] re Wood); Benavente at tn621.15 to tn622.22; CB254 (*Statement of Patterson*) at [7]; Patterson at tn135.25, tn147.38 to tn148.4-24; Clifton at tn544.27 to tn545.3; CB256 (*Statement of Sutton*) at [68]; Sutton at tn291.7-14, 324.37 to tn325.1; Lomas at Crim tn1355.21-29 (use of sun angles), Crim tn1374.1-3 (familiarisation flight), Crim tn1374.8-11 (dialogue with FTOs) and generally at Crim tn1262.24 to Crim tn1263.1-7. See also per Gales at Crim tn809.38-42, Crim tn810.6-17, Crim tn811.1-7.

[42] CB13 (*Interview with Lomas*) at Q&A25 and at Q&A67-68 (to the effect that, David Wood received the same training as other pilots despite being on a contract as opposed to a full-time employee); Lomas at Crim tn1250.37 to tn1251.6.

[43] CB13 (*Interview with Lomas*) at Q&A40; Lomas at Crim tn1247.3-5.

[44] CB13 (*Interview with Lomas*) at Q&A20; Lomas at Crim tn1250.20-22.

[45] CB13 (*Interview with Lomas*) at Q&A52-53. See also Lomas at Crim tn1253.26-27 regarding risk management being a key role of a senior pilot.

[46] CB232 – see part 2 pp16-67. Note the discussion of this passage by Lomas at Crim tn1288.43 to tn1289.2 and Crim tn1289.29-33.

[47] CB13 (*Interview with Lomas*) at Q&A177-187; Lomas at Crim tn1278.5-9; Sutton at tn224.17-22.

[48] See CB213 (*Helicopter Resources Qualifications & Training – Wood*); Sutton at tn223.17-27; CB13 (*Interview with Lomas*) at Q&A177-202 (particularly at 192); Sutton at tn240.4-12; Lomas at Crim tn1260.28-37, Crim tn1261.22-40. See also CB13 (*Interview with Lomas*) at Q&A192-193 in relation to HeliRes not providing training to identify crevasses and this instead being administered by the AAD, but note also Q&A199-202 (field training included looking at crevasses but did not involve identifying them).

HeliRes, a company based in Australia, to provide thorough briefings in relation to crevasses are significant. In this regard, the comments of FTO Anthea Fisher are pertinent:[49]

> …I don't know how you do a training course in crevasse identification, because everywhere you go looks different, and my own judgement of that comes from years of being in mountain environments. It's not like you can go and do a one week course and you've got it sort of for every situation you're going to come across. It comes from years of being exposed to a wide variety of mountainous areas, and then, you know, spending the time walking around in them and flying over them…

Communication between AAD and HeliRes regarding training

76. It was the expectation and understanding of Bill De Bruyn and Sharon Labudda that the helicopter pilots who were sent to Davis were experienced Antarctic pilots with the training and ability to fulfil their intended role.[50] Indeed, on occasion when it was advised that a pilot was not experienced in Antarctica, limited on-the-job mentoring/training was facilitated.[51] It was assumed that the pilots could suitably carry out the anticipated taskings for the season, including the establishment of fuel cache sites.[52] Bill De Bruyn and Sharon Labudda were, however, unaware of what, if any, training had been provided by HeliRes.[53]

77. The disconnect in training for pilots and the sparsity of information about their training which was shared between the AAD and HeliRes was summarised by Bill De Bruyn:[54]

> The pilots are not part of my training regime. I have every expeditioner and scientist on station trained under my care or under my supervision. The pilots and only the pilots are trained off site and deal with the aviation section. I only get the, I see the pilots on one occasion prior to departure for a two hour chin

[49] CB7 (*Interview with Fisher*) at Q&A902
Note also per Benavente at tn623.43 to tn624.4 in relation to the lack of crevasses in Australia.
Note also CB13 (*Interview with Lomas*) at Q&A248-261 which includes comment about how hard it is to replicate the Antarctic environment.
See also per Lomas at Crim tn1366.31-37.
See also per Labudda at tn366.22-30.

[50] De Bruyn at tn747.18-39, tn757.8-12; Labudda at tn468.32-34, tn409.39-42, tn473.21 to tn474.1 (noting that at tn473.32-41 Labudda indicated that she was not really aware of what training they had in this regard), tn482.19-22. See also per Clifton at tn544.23-29.

[51] De Bruyn at tn747.41 to tn748.6.

[52] De Bruyn at tn876.24-35, 758.17-35 (noting that in this passage De Bruyn suggested that he had been briefed as to the capacity to fulfill such jobs. However, in the context of his other evidence, this is perhaps best read as reflecting a generic briefing that they were experienced Antarctic pilots).

[53] De Bruyn at tn766.11-15, tn840.23-24, tn876.17-22; Labudda at tn473.32-41.

[54] Tn839.43 to tn840.4.

> wag to see who's coming and who's not coming. I have no input into their training or have no knowledge of their training until they get on the ship.

78. The resulting position was that there was limited, semi-formal training in the detection of crevasses provided to the helicopter pilots. The pilots relied upon the short (and generalised) 'familiarisation' flights and informal discussions with other pilots and FTOs. Similarly, relevant AAD documents were not routinely brought to the attention of helicopter pilots in a timely manner.[55]

Risk Management

79. Each day that pilots were to fly, an 'Air Task – Risk Assessment' form was completed. A single form would be used for all taskings on a single day.[56] That form was part of a booklet[57] and was to be completed at a meeting which, at a minimum, included the relevant pilot (or Senior Pilot) and either the Station Leader or Operations Coordinator.[58] These forms were comprised of fields for the date, registration of the aircraft, an outline of the task, a list of nine 'risk management' questions with 'yes/no' answers, as well as a table to outline 'identified hazards/risks' and the 'mitigators implemented/in place'. There was then a section indicating whether the authorising officer (the Station Leader or Operations Coordinator) accepted the risks and fields for the pilot and authorising officer to sign.[59]

80. The first of the 'risk management' questions read: "Aircraft Tasking Considerations (inside cover) items reviewed". That was a reference to two pages, titled 'aircraft tasking considerations' and 'additional tasking considerations & controls',[60] although those pages were not always consulted.[61] It ought to be noted that at the end of the 'additional tasking considerations & controls' appeared the following:

> Conduct thorough pre and post task briefings to examine hazards and the effectiveness of controls.

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[55] For eg, Sutton had received no training relating to the 'Air Task - Risk Assessment' process prior to going to Antarctica (CB256 at [21] and tn240.20-21) and had not seen a copy of the *AAD Standard Operating Procedure Operations Manual Volume 5* (relating to aviation) prior to the incident (CB256 at [27] and tn248.8-14).

[56] Labudda at tn371.32-35, tn372.19-25; CB265 (*Labudda Outline of Evidence)* at [16]; CB254 (*Statement of Patterson*) at [6]; Patterson at tn152.6-11; Sutton at tn230.39-42.
Note: this form appears to be what is contemplated by the '*AAD Standard Operating Procedure Operations Manual'* at volume 5 pp15-16.

[57] Labudda at tn424.44 to tn425.2, tn372.10-25; Patterson at tn152.32-38.

[58] CB265 (*Labudda Outline of Evidence)* at [16]-[18]; Labudda at tn424.36-42; De Bruyn at tn863.32-41; Sutton at tn233.28-32, tn242.8-11, tn298.30-44.

[59] See, for example, CB123 (*Air Task – Risk Assessment #13492*).

[60] Labudda at tn425.16 to tn426.3 as discussing CB38 (*De Bruyn Report for Coroner*) at pp18-20; Patterson at tn152.40 to tn153.13 (but note that this does not indicate that there were two lists).

[61] Sutton at tn299.34-44, tn305.13-30. Cf Patterson at tn153.22-24.

81. While the direction to conduct pre-task briefings was routinely followed, the related direction to conduct post task briefings appears not to have been addressed in any systematic fashion. Indeed, in relation to this direction, Sharon Labudda gave evidence that "[w]e always just had a conversation, we didn't document – didn't formally document it, no."[62] In a similar vein, Bill De Bruyn gave evidence that "if it's business as normal that's an assumption that nothing happened on that occasion and that's business, that's how I run the station."[63] In fairness, it ought to be noted that the 'Air Task – Risk Assessment' form clearly had to be completed prior to the tasking being undertaken[64] and there was no similar AAD form to be completed at the conclusion of a tasking.[65] Notably, Bill De Bruyn gave evidence that the 'Air Task – Risk Assessment' placed a requirement on the pilot to report any obstacle or crevasse at a site they were going to.[66]

82. While there was no post flight 'Air Task – Risk Assessment' form, there were some records created at the conclusion of a day of flying. These included:

- a HeliRes flight log and risk assessment form. Those logs could have been used to record hazards,[67] however it appears that the Station Leader would only see them at the end of each season;[68]
- a HeliRes "Operational Hazard Report", completion of which was delegated to "the Pilot-in-Command after consultation with the Chief Pilot";[69]
- a form titled 'Operations Davis Daily Air Operations Report'. That form was filled out by the Operation Coordinator and provided back to the AAD headquarters. It recorded the corresponding risk assessment form number and had a column indicating whether the particular task had been completed. On occasion, the 'Task Completed' column was utilised to make notes about the task;[70] and

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[62] Tn459.12-16. See also tn375.43 to tn376.7, tn410.1 to tn411.2 (including: "they need to let me know if the see anything that is unsafe. I don't know unless they tell me what they see at the site.").

[63] Tn789.8-10.
Note generally per De Bruyn at tn768.34-43, 771.25-36, tn789.4-34; CB11 (*Interview with Clifton*) at Q&A190-191; CB13 (*Interview with Lomas*) at Q&A906-907, 918, 932-944; Patterson at tn131.10-14; CB256 (*Statement of Sutton*) at [44]; Sutton at tn301.5-6.

[64] Evident from the form itself. See also per De Bruyn at tn771.6.

[65] CB11 (*Interview with Clifton*) at Q&A189-190; Patterson at tn131.14.

[66] Tn770.1-43. It should be noted that the 'AAD Standard Operating Procedure Operations Manual' at volume 5 (CB225) pg25 states that 'All hazards must be reported to the Supervisor or manager' but then goes on to mention remedy 'onsite'.
Note that the ATRAs were not sent to HeliRes in Hobart – see Lomas at Crim tn1298.22-23.

[67] For an example, see CB124. See also Sutton at tn248.16 to tn249.16, tn230.4 to tn231.4, tn305.32 to tn306.2; Patterson at tn131.10-20, tn121.14-24.

[68] De Bruyn at tn771.14-23.

[69] See CB232 (*Helicopter Resources Pilots Operations Safety Manual – Volume 2*) at 5.6 (pg42) and note English at tn84.13-24.

[70] Labudda at tn376.9-38. For examples where the 'task completed' column was used in this fashion, see CB90 and CB98. But note per Labudda at tn386.47 (indicating that she was never advised that this form was a place for reporting issues).

- an "Incident and Hazards Improvement System" which was a mechanism to report within the AAD.[71] It should be noted that the *AAD Standard Operating Procedure Operations Manual* at volume 5 (titled 'Aviation Standard Operating Procedures') required that '**All** hazards and incidents must be lodged into the IHIS system' (emphasis in original). [72]

83. Ultimately, Bill De Bruyn, as the Station Leader, had responsibility for all people at Davis.[73] However, pilots had the right to refuse to land in any given area, or to refuse a task generally if they felt that it was unsafe.[74]

Conflict Between Sling-lining and Carrying an FTO

84. At the relevant time, *Civil Aviation Order* 29.6(4) provided:

> The pilot in command of a helicopter engaged in sling load operation shall not permit any person to be carried in the helicopter except:
>
> (a) a flight crew member; or
>
> (b) a flight crew member under training; or
>
> (c) a person who performs an essential function in connection with sling load operations.

85. By reference to that regulation, it was understood at Davis that, where a helicopter was transporting goods by sling line, a passenger (including an FTO) could not be on board.[75] This meant that when a helicopter engaged in sling lining flew to a site with unknown characteristics (whether because it was a new site or a site that had not been visited for a significant period), the pilot needed to make their own assessment of the suitability of the area without input from an FTO. The alternative safeguard which was available was to conduct a separate flight for the purposes of 'proving' the site.[76] That, however, could create financial strain given the cost of operating helicopters[77] and

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[71] De Bruyn at tn865.44 to tn866.9.
[72] See CB225 at pg25.
[73] De Bruyn at tn873.33-35.
[74] CB258 (*Statement of Gales*) at [9]; CB232 (*Helicopter Resources Pilots Operations Safety Manual – Volume 2*) at 4.11 to 4.12; English at tn80.11-17, tn83.4-22, tn98.14-17; De Bruyn at tn760.30-31; Patterson at tn159.9-15; Sutton at tn304.35 to tn305.1; Labudda at tn454.43, tn383.42 to tn384.4; Lomas at Crim tn1277.11-17. Note also the comments of Gales at Crim tn800.1-3 (that safety is paramount) and Crim tn801.7-14 (regarding the ability of any individual to raise safety concerns).
[75] Benavente at tn622.31-42; Hamilton at tn605.10-11; Patterson at tn127.21-23 (but appears to be a transcription error saying that it was permitted); English at tn84.29 to tn85.3 and tn87.21-42; CB11 (*Interview with Clifton*) at Q&A289-291.
Note that De Bruyn believed that this was actually an AAD policy which was inconsistent with the CASA regulation (which would allow a Field Training Officer on board while conducting sling loading operations) – see at tn880.38 to tn881.11.
[76] For a description of how a site is 'proved' by 'heli-probing' see Sutton at tn245.41 to tn246.26 and CB256 (*Statement of Sutton*) at [53].
[77] De Bruyn at tn817.6-11; English at tn112.17-23. Note, however, that Labudda was never briefed on the economics of using helicopters – see at tn462.6-12.

would necessarily divert resources from other tasks. It ought to be noted that, aside from when a helicopter was carrying a sling load, it was common practice to have an FTO on board whenever a helicopter went further afield than local operations.[78]

Blue Ice v Infiltration Ice

86. The term 'blue ice' is, in the Antarctic expeditioner community, widely known to refer to ice which is not covered by snow. Given the lack of snow cover, crevasses are readily observable. As such, areas of blue ice are considered to be safer than other areas.[79] This view was summarised by Sharon Labudda who, referring to blue ice, commented that "what you see is what you get."[80] However, the term 'blue ice' refers more specifically to ice (which appears blue) that is formed by the compression of snow under hundreds (or thousands) of metres of other snow, causing any air-bubbles to become part of the crystal structure in the ice. Such ice can then appear "totally clear with no bubbles". As that ice travels towards the coast, through a series of processes it can become exposed at the surface. [81]

87. Blue ice can be contrasted against 'infiltration ice'. Infiltration ice is a type of ice which forms around coastal areas and is caused by part of the snow cover melting, infiltrating the snow structure, and refreezing. It is "much whiter and bubbly" and there can be crevasses that have been covered by snow bridges which have also turned into ice. This means that the ice may appear to be free of crevasses but in fact contain crevasses covered by bridges.[82]

88. While it is not always easy to differentiate blue ice and infiltration ice,[83] contrary to the cautionary nature of Dr Allison's evidence, weight appears to have been afforded more to whether there was snow cover over the ice than to what type of ice lay beneath.[84] Importantly, Dr Allison gave evidence that the photographs taken by Bryan Patterson on 8 December 2015 of the new fuel cache site showed an area of infiltration ice, not blue ice.[85] Further, Dr Allison gave evidence that, in one of those photographs, he

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[78] Sutton at tn247.36 to tn248.1.
[79] De Bruyn at tn763.44 to 764.10, tn871.29-35; Sutton at tn229.42 to 230.1; Hamilton at tn603.26-21; Patterson at tn147.38 to tn149.11; Benavente at tn657.38-41, tn684.30-39; Labudda at tn408.3-20. See also Allison at tn196.16-27.
[80] Tn412.11-12; see also at tn476.23-34. Note that Labudda was not aware of the term 'infiltration ice' - tn481.23-30.
[81] Allison at tn193.5-23.
[82] Allison at tn193.23-33; tn194.5-9.
[83] Benavente at tn624.6-9.
[84] Benavente at tn624.14-24. Note also the discussion of terminology per Benavente at tn667.21-34. Note per Clifton at tn550.32-34 that there was no training regarding the difference between blue and infiltration ice.
[85] Tn195.18-34; CB182 (*Report of Dr Allison*) at pg3 (in the description of figure 2).

could see a (covered) crevasse in front of the helicopter.[86] Dr Allison was also provided with photographs taken on the 28 December 2015 trip to the fuel cache site and gave evidence of locating crevasses therein.[87]

Prior Flights to the West Ice Shelf Fuel Cache

08 December 2015

89. On 8 December 2015, Bryan Patterson was tasked to deposit fuel by sling line to a previously established fuel cache site on the West Ice Shelf.[88] The coordinates provided to Bryan Patterson for that purpose were, however, incorrect. When Bryan Patterson attended the (incorrectly) specified area, he could not locate the fuel drums said to already be in existence at the location. What he observed instead was an area which he determined was unsuitable to land on.[89] Consequently, he opted to locate a more suitable area. He flew approximately 14 nautical miles north before sighting an area he believed to be blue ice (measuring approximately 15 metres by 40 metres)[90] and suitable for establishing a fuel cache (incidentally, about 3 nautical miles from the actual location of the prior fuel cache – as discovered on 28 January 2016). Bryan Patterson did not observe any cracks or crevasses in the surrounding area.[91] He deposited the drums of fuel, landed, retrieved his sling line, took a number of photographs, noted the co-ordinates of the area, and departed.

90. Upon his return to Davis, Bryan Patterson was unable to find Sharon Labudda or Bill De Bruyn.[92] He had a conversation with Marty Benavente and provided Marty Benavente with the coordinates and photographs he had taken of the newly established fuel cache site.[93] Nothing in the photographs caused Marty Benavente concern about Bryan Patterson landing in that area.[94] Reporting to Marty Benavente was not the ordinary course.[95] Marty Benavente, who was at his computer at the time, sent an email with the coordinates and a photograph of the cache to Sharon Labudda

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[86] Tn195.18-34. See also CB182 (*Report of Dr Allison*) at pg3 (in the description of figure 3). Note also tn209.15-24 where Allison suggested that it was likely that there was also a crevasse behind the helicopter.
[87] Tn210.14-42.
[88] In relation to the establishment of the site, see CB59 (*Air Task – Risk Assessment # 3728*). See also per Wenham at tn55.5-12.
[89] Patterson at tn122.31-41, tn161.18-25.
[90] Patterson at tn122.43 to tn123.5, tn126.44 to tn127.4.
[91] CB254 (*Statement of Patterson*) at [13].
[92] Patterson at tn130.30-31, tn154.3-23; CB254 (*Statement of Patterson*) at [19].
[93] Patterson at tn138.29-36, tn149.17-35. In relation to the timing of this conversation, Patterson conceded that it may have occurred the following day - tn150.18-22, tn163.23-25. Note that CB75 (*Email from Benavente 9/12/15*) has a date stamp of 9/12/15 at 4:35pm. In relation to the reliability of the date stamp, see Labudda at tn382.23-33.
[94] Benavente at tn653.3-5, tn685.27-28; CB5 (*Interview with Benavente*) at Q&A470.
Note that Hamilton was present for this conversation (but did not participate in it) – CB251 (*Statement of Hamilton*) at [13].
[95] Benavente at tn625.26-28; Labudda at tn382.39-42, tn379.31-34; 458.6-11.

and Bill De Bruyn.[96] Bryan Patterson subsequently spoke to Sharon Labudda and Bill De Bruyn, indicating that he could not locate the old fuel cache site.[97] Bill De Bruyn understood the email from Marty Benavente as supporting the suitability of the newly established fuel cache site, despite this seemingly not being the intention and there being no such direct indication in the email.[98] Sharon Labudda recalled looking at the attached photograph and it raising no concerns[99] as well as a conversation during which Bryan Patterson indicated that he was happy with the new site.[100]

91. Despite the unplanned establishment of a new fuel cache on the West Ice Shelf, there was no formalised conversation/debrief.[101]

28 December 2015

92. By the time of the next flight to the (new) West Ice Shelf fuel cache site, the HeliRes rotation had occurred, meaning that neither of the two pilots tasked to attend the location had been there previously.[102] The pilots on this occasion were Captain Wood and Paul Sutton, who were each tasked with transporting four drums by sling line to Nunatak 1.[103] That trip required them to stop at the West Ice Shelf fuel cache to refuel.[104] At the time of the tasking, Sharon Labudda was not aware of crevassing at the fuel cache site and, consequently, nothing in this regard was conveyed to Paul Sutton.[105]

93. Paul Sutton described the fuel cache site as consisting predominantly of blue ice with some snow.[106] That was consistent with what he had been told by Bryan Patterson.[107] He noted that while moving a drum of fuel to one of the helicopters, they rolled it

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[96] Benavente at tn625.38-41; CB75 (*Email from Benavente 9/12/15*); Labudda at tn379.25-29.
[97] CB254 (*Statement of Patterson*) at [22]; Patterson at tn155.18-28 (re conversation with De Bruyn), tn166.13 to tn157.15 (re conversation with Labudda); Labudda at tn440.24 to tn441.14, tn441.40 to tn442.5.
[98] Tn790.35 to 791.2, tn791.21-25, tn840.5-21, tn859.32-41, tn754.35-36.
[99] Tn380.21-29, tn416.6-8. See also at tn442.10 where Labudda agreed that it shows blue ice. Note that at th442.16-18 Labudda gave evidence that she spoke to Benavente about the photo but cf tn442.31 to tn443.38.
[100] Labudda at tn379.25-29, tn378.28-35. Note also per Labudda at tn382.7-10 (confirming that the email was prior to the conversation).
[101] De Bruyn at tn772.11-17. Note also that De Bruyn suggests (although uncertain) that he had a limited (and seemingly passing) conversation with Patterson. He did not speak to Benavente – tn752.1-25. Note also Labudda at tn379.4-8 regarding the absence of any real policy regarding the selection of new fuel cache sites. See also at tn473.1-8 where Labudda said that the Station Leader had the ultimate responsibility regarding the decision to use/not use sites and that he was always aware prior to use.
[102] Sutton at tn250.23-26.
[103] Note that Lomas gave evidence at Crim tn1292.16-38 that, having noted Patterson's flight on 8/12/15, he had a conversation with Sutton about there being no single helicopter flights to the West Ice Shelf location (or further afield). But cf at Crim tn1293.4-6 (Lomas could not recall a similar conversation with Patterson) and Crim tn1280.37-39 (that Lomas did not know about the fuel cache at the West Ice Shelf until after 11/1/16).
[104] Sutton at tn249.39 to 250.3; CB83 (*Air Task Risk Assessment #13468*).
[105] Labudda at tn384.10-12, tn284.34-35; Sutton at tn242.3-4.
[106] Tn252.1, 254.13-15, tn253.37-40. Note also CB256 (*Statement of Sutton*) at [35]: "consisted of blue ice with crevassing".
[107] Sutton at tn325.3-8, tn229.35-40, tn253.37-38; CB256 (*Statement of Sutton*) at [13].

across a crevasse which measured approximately 10-30cm across.[108] In response to a query by Paul Sutton about whether they ought to move the fuel to a different location, Captain Wood responded "better the devil you know, than the one you don't."[109] While at the fuel cache, Captain Wood took a photograph of a crevasse which, on that occasion, was behind his helicopter and largely open.[110] Paul Sutton said that the crevasse was approximately half a metre wide.[111] After refuelling, each pilot loaded an empty fuel drum into their helicopter[112] and departed on route to Nunatak 1.[113]

94. Following that trip to the West Ice Shelf, there was no formal report or debrief between the pilots and Bill De Bruyn or Sharon Labudda.[114] Bill De Bruyn reported having an informal conversation concerning the flight at some later point with Captain Wood. That conversation, however, focused predominantly on the scenery (particularly at Nunatak 1). Bill De Bruyn gave evidence that Captain Wood did not raise any concerns about the West Ice Shelf fuel cache site and from the absence of expressed concerns he inferred that the site was suitable.[115] Sharon Labudda had a conversation with Paul Sutton, during which Paul Sutton relayed Captain Wood's comment regarding "the devil you know".[116] Paul Sutton also indicated that there were some small cracks at the location but that he was happy with the site if Captain Wood was.[117] Paul Sutton did not mention rolling a fuel drum over a crevasse.[118] In turn, Sharon Labudda conveyed to Bill De Bruyn that the pilots were satisfied with the new site.[119] Sharon Labudda

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[108] Tn254.25-34, tn314.39 to tn315.12.
[109] Sutton a ttn254.4-8; CB256 (*Statement of Sutton*) at [36]: "better the devil you know than you don't".
[110] CB87 (*Photos taken by Wood on 28.12.15*); Sutton at tn295.24-37, tn300.25-29, tn333.1-17.
Note that the photo was not brought to the attention of Labudda or DeBruyn but was uploaded onto the server – Labudda at tn402.38 to tn403.7.
[111] CB256 (*Statement of Sutton*) at [39]; tn333.6-9.
[112] CB256 (*Statement of Sutton*) at [41].
[113] Sutton at tn259.17; CB81 (*Daily Air Operations Report 28/12/15*), CB83 (*Air Task - Risk Assessment #13468*), CB84 (*Daily Flight Log – Wood – 28/12/15*), CB85 (*Daily Flight Log – Sutton – 28/12/15*), CB86 (*ANARE comms log – 28.12.15*).
[114] Sutton as tn259.41 to tn260.7; Labudda at tn459.12-16.
[115] Tn768.5-32, tn769.28-43. Note that, in recalling this conversation, De Bruyn places the stop at the West Ice Shelf as being on the return leg from Nunatak when, in fact, it was on the way to Nunatak.
[116] Sutton at tn312.33 to tn314.29; Labudda at tn387.18-25, tn411.21-38, tn472.23-39.
Note that Labudda put the 'devil you know' comment as having been made prior to the helicopters landing but Sutton says that it was after.
[117] Labudda at tn387.27-38, tn411.40-42 (implicit adoption of being told re 'cracks' but rejects that the word 'crevasse' was use), tn414.24-29 (indication of size was with his hands, not verbal. But note that at tn415.23-28 it is confirmed that Sutton's use of his hands was actually after the incident), tn415.3-5 (absence of indication they were large was indication they were only small - see also tn415.32-41), tn414.31-37 (suggestion that was a 10-15 minute conversation where Labudda asked several times about whether he had any concerns about the site), tn476.21 (Sutton reported that the site was blue ice).
Sutton at tn300.31-34 34 (agreed that he didn't tell anyone about cracks or crevasses) although note tn333.28-34 (agreed that has no real recollection of conversation).
[118] Labudda at tn475.42 to tn476.8, tn403.9-10.
[119] Labudda at tn427.39 to tn428.23; CB265 (*Statement of Labudda*) at [57]. Note also at tn388.14-21 where Labudda said she couldn't recall if she told De Bruyn about the cracks.

further recalled that she relayed the "better the devil you know" comment to Bill De Bruyn.[120]

11 and 12 January 2016

Tasking to the West Ice Shelf Fuel Cache

95. On 11 January 2016, Paul Sutton and Captain Wood were each tasked to transport four drums of fuel to the West Ice Shelf, being the fuel cache established by Bryan Patterson on 8 December 2015 and visited by Paul Sutton and Captain Wood on 28 December 2018. Paul Sutton gave evidence that the tasking was originally for a single helicopter to transport four barrels but that, upon him indicating some unease about using a single helicopter, a decision was made to instead use two helicopters to transport eight barrels.[121] Sharon Labudda disputed that the original request related to a single helicopter.[122]

96. The 'Air Task - Risk Assessment' form (number 13492)[123] was completed for this task by Paul Sutton and Sharon Labudda.[124] The 'Identified Hazards/Risks' column had two entries, being:

- 'Snow landing', for which the 'Mitigators Implemented/In place' column reads 'good weather conditions been at the location previously this year'; and
- 'Sling loading', for which the 'Mitigators Implemented/In place' column reads 'suitable conditions'.

97. No reference was made to the cracks/crevasses sighted on 28 December 2015. Likewise, during the meeting at which the form was completed (with both Paul Sutton and Captain Wood present), concerns about cracks/crevasses were not raised, nor was any concern raised regarding the suitability of the site more generally.[125] It appears that no regard was paid to the fact that there had been snow at Davis (and therefore possibly at the fuel cache site) in the preceding days.[126]

The Incident at the West Ice Shelf

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[120] Tn428.25 to tn429.1.
Note that De Bruyn didn't recall that comment being relayed to him prior to the incident on 11.1.16 (but could not say that it wasn't) – see tn772.41 to tn773.24.

[121] Sutton at tn260.41, tn261.12-29, tn315.28 to tn316.17; CB256 (*Statement of Sutton*) at [57].
In relation to the requirement to have another helicopter within 1 hour for Search and Rescue reasons, see Sutton at tn316.43 to tn317.14; Labudda at tn373.4-6; Lomas at Crim tn1256.19-23.

[122] Tn482.6-10.

[123] CB123.

[124] Labudda at tn426.14-15

[125] Labudda at tn426.22-33, tn482.27 to tn483.6, tn390.17-26; Sutton at tn260.43 to tn261.1, tn301.16-25, tn314.31-37. Note also Labudda at tn389.22-42 re non-inclusion of reference to cracks/crevasses on form.

[126] Labudda at tn389.44 to tn390.13, tn456.3-41.

98. Paul Sutton, flying helicopter UUI, departed Davis bound for the West Ice Shelf at 1427 on 11 January 2016. Captain Wood, flying helicopter UUG departed Davis at 1428.[127] There was no discussion between the pilots en route regarding crevasses at the fuel cache site.[128] At approximately 1557,[129] Captain Wood arrived at the fuel cache, placed his drums of fuel down, and released his sling line before circling around to make room for Paul Sutton. Paul Sutton then placed his drums of fuel and landed, followed shortly by Captain Wood,[130] who positioned helicopter UUG about 30 metres from helicopter UUI.[131] Prior to landing, Captain Wood did not perform a full reconnaissance of the area[132] and there was no discussion of crevasses between the pilots during the landing.[133] Paul Sutton shut down his helicopter, while Captain Wood left his running.[134] Each pilot exited their helicopter and went to retrieve their drum hooks and long lines.[135] Paul Sutton described the terrain as "White and flat" and "completely white and snow covered" when they attended on this occasion.[136]

99. On the way to the fuel drums, Paul Sutton stepped into a crevasse up to about his knee. He mentioned this to Captain Wood. Paul Sutton believed that this was the same crevasse which the fuel drum had been pushed over on 28 December 2015.[137]

100. The pilots collected their drum hooks and commenced returning to their helicopters. Paul Sutton loaded his helicopter before turning around, at which time he was unable to see Captain Wood.[138] Paul Sutton began walking towards helicopter UUG and noticed an opening in the snow near the port-side skid. He was unable to see Captain Wood but noted that one end of Captain Wood's sling line (being the end with the drum hooks) was inside the crevasse. The other end of the sling line was not attached to the

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[127] CB128 (*Communications Log – 11.1.16*).
[128] Sutton at tn261.3-10.
[129] See CB128 (*Communications Log – 11.1.16*) which records the helicopters arriving at the West Ice Shelf at 0857UTC (1557 Davis). Cf exhibit 8 to CB256 (*Statement of Sutton*) and tn274.41 which indicate landing at 1553 and departing at 1600.
[130] Sutton at tn261.31 to tn262.5.
[131] Sutton at tn265.12-13.
[132] CB162 (*Footage from within helicopter UUG*); English at tn98.31 to tn99.8; Lomas at Crim tn1394.27-30 and Crim tn1397.9-14.
As to the importance of conducting a reconnaissance prior to landing, see Lomas at Crim tn1284.9.19, Crim tn1261.14-20, crim tn1367.33-38.
Note also that Lomas gave evidence that Sutton told him that neither he nor Wood had conducted a reconnaissance prior to landing – Lomas at Crim tn1398.4-29, crim tn1403.22-39.
In relation to conducting reconnaissance to identify a snow bridge, see per Lomas at Crim tn1285.43 to Crim tn1286.10.
[133] CB256 (*Statement of Sutton*) at [60]; Sutton at tn301.27-41.
[134] Sutton at tn262.23-24 (UUI), tn265.26 (UUG).
[135] Sutton at tn264.24-26.
[136] Tn261.34; CB256 (*Statement of Sutton*) at [60].
Note that consistent evidence was given (albeit giving evidence about the condition of the site later in the day) by Benavente (at tn673.5-6, tn700.21-24) and Hamilton (tn571.10-11).
[137] Sutton at tn264.30 to 265.3, tn295.39 to tn296.22.
[138] Sutton at tn265.8-24.

helicopter. Paul Sutton yelled out but was unable to hear any response over the sound of the engine and rotors of helicopter UUG. Paul Sutton entered helicopter UUG and turned it off. In doing so, he accidentally turned off the master battery before turning the engine off. He rectified this mistake by turning the master battery back on and then shutting down helicopter UUG with the correct procedure. He then climbed through the helicopter and, standing on the side skid steps, looked into the crevasse. He yelled out to Captain Wood and received a faint response to the effect of 'get help.' He was unable to see Captain Wood at this time. He indicated to Captain Wood that he was going to get help, then climbed back through helicopter UUG and proceeded to helicopter UUI.[139]

Leaving the West Ice Shelf and Communication on the way back to Davis

101. Paul Sutton started his helicopter and, once the systems had initialised and during lift-off, contacted Davis comms at 1604. He indicated that Captain Wood had fallen down a crevasse and that he was returning for help. Unsure whether this had been heard due to a poor connection, Paul Sutton made a 'mayday' call before terminating.[140] In response, Mick Eccles called Sharon Labudda and told her to come to the comms room. Mick Eccles also attempted to call Paul Sutton back (also at 1604) but no connection was made.[141]

102. Paul Sutton attempted, through a local aviation channel, to contact the pilot of a nearby aircraft (to use that person to relay information). That attempt was unsuccessful.[142] Upon reaching a safe altitude and engaging autopilot, at 1606 Paul Sutton again called Davis comms and spoke to Mick Eccles.[143]

103. At 1609, Paul Sutton called the 'heli hut' to speak to the engineers.[144] At 1612, there was a further call between Mick Eccles and Paul Sutton, during which there was a discussion about what Captain Wood was wearing. During that call, Paul Sutton also indicated that he was 32 minutes from Davis.[145]

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[139] Sutton at tn266.27 to 270.1. Re the words spoken by Wood, see per Sutton at tn327.30 tn328.5.
[140] Sutton at tn270.14 to 271.10; Eccles at tn488.23-8, tn489.17-28; CB128 (*Communications Log – 11/1/16*) and CB129 (*SAR Communications report – 11/1/*16). Note that CB161 (*TracPlus Global Ltd satellite phone billing records*), once corrected, shows this call at 1603.
[141] CB129 (*SAR Communications report – 11/1/*16).
[142] Sutton at tn271.14-25, tn339.10-17.
[143] Sutton at tn271.27 to tn272.4; Eccles at tn489.35-42; CB128 (*Communications Log – 11/1/16*); CB129 (*SAR Communications report – 11/1/*16); CB161 (*TracPlus voice call records*).
[144] CB161 (*TracPlus voice call records*); Sutton at tn335.3-21; Strutt at tn177.5-11, tn179.24-36.
[145] CB128 (*Communications Log – 11/1/16*); CB129 (*SAR Communications report – 11/1/*16); Eccles at tn490.10-14.

104. At 1614, Paul Sutton called David Lomas. At 1622, Paul Sutton called his sister before calling his partner at 1624.[146]

105. At 1630 Paul Sutton again called Mick Eccles and provided the coordinates of the incident location. He also provided an update that he was 12 minutes from Davis.[147]

106. At 1642, Paul Sutton landed helicopter UUI at Davis and shut it down.[148]

Movement at Davis from the Time of Receiving the Mayday Call

107. Upon the connection being lost with Paul Sutton at the end of the 'mayday' call, Mick Eccles phoned Sharon Labudda who immediately attended his location in the comms room.[149] There were further attempts (successful and unsuccessful) at communication with Paul Sutton (including those mentioned above).[150] At 1610, it was noticed that the TracPlus tracking system showed helicopter UUI moving.[151] At 1612, Sharon Labudda left the comms room to speak to Bill De Bruyn.[152] Approximately 5 minutes later, Bill De Bruyn arrived in the comms room.[153] At 1612 Sharon Labudda also called Marty Benavente who was in the field store, requesting that he come immediately to the comms room to see Bill De Bruyn.[154] Marty Benavente arrived at the comms room at

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[146] CB161 (*TracPlus voice call records*); Sutton at tn335.25-30; Lomas at Crim tn1298.36-45.
See also tn272.15-26 where Sutton indicates that he doesn't recall calling the heli hut, that he left a message on his sister's phone (to abate any concern given he thought communications may be locked down) and that the call to his partner was unsuccessful.
CB161 (*TracPlus voice call records*) demonstrates that the call to the heli hut was 1:45 long, the call to David Lomas was 1:13 long, the call to his siter was 0:43 long, and the call to his partner was 1:03 long.
Note that this is somewhat contradictory (although the inconsistency could be explained by signal issues) to De Bruyn who suggested at CB1 (part1) Q&A1431 that they couldn't contact Sutton for "fifteen, eighteen minutes", but in oral evidence revised that to "closer to 10 minutes" (see tn849.23-26).
Re the call to David Lomas, see also CB13 (*Interview with Lomas*) at Q&A333-335, 338-351 and Lomas at Crim tn1298.36-45.

[147] CB128 (*Communications Log – 11/1/16*); CB129 (*SAR Communications report – 11/1/*16). Note that this communication is not reflected in CB161 (*TracPlus voice call records*), although this may be a reflection that radio was used instead of satellite phone.

[148] CB128 (*Communications Log – 11/1/16*); CB129 (*SAR Communications report – 11/1/*16); Sutton at tn272.17; Strutt at tn186.43 to tn187.1.

[149] CB266 (*Statement of Eccles*) at [2.1](c); Labudda at tn391.27-34, tn489.30-33.
Note that Labudda and De Bruyn's offices were in the communications building – Labudda at tn369.41-42.

[150] De Bruyn recalled being present in the comms office while Eccles unsuccessfully attempted to contact Sutton a number of times – see tn820.43 to 821.12. See also per Labudda at tn392.16-20, 459.18-31.

[151] CB129 (*SAR Communications report – 11/1/*16); per Labudda at tn393.2-6; Eccles at tn491.38-39.
Note that at tn781,20-24 De Bruyn said he was present when this was noticed (he believed by Labudda). De Bruyn also suggested at tn781.33-40 that he was in the comms room for what appears to be the 1606 call.
Further, at tn783.18-39 De Bruyn said that he was in the comms room when Sutton took off.

[152] CB266 (*Statement of Eccles*) at [2.1](f); Eccles at tn491.20-22.
Note tn772.6-22 where De Bruyn says that he was contacted by Labudda on the phone.

[153] Eccles at tn491.24-26. See also tn775.31-39 where De Bruyn estimates that he arrived in 3 minutes (but this would be from notification by Labudda); see also at tn776.1 where De Bruyn says he got to the comms office at 1608.

[154] Note at tn429.29-31 Labudda suggests that DeBruyn was in the comms room when Benavente was called.

1616 where he was briefed.[155] At 1620, predicting the need for a Search and Rescue team to be dispatched, Mick Eccles contacted the Davis kitchen to organise food.[156]

108. In the period that followed, Bill De Bruyn was involved in discussions and briefings with:[157]

- Mick Eccles regarding his role;[158]
- Sharon Labudda concerning things he needed her to do;[159]
- Wade Laberth (BOM) to ensure that he continued monitoring the weather;[160]
- Dave Davies;[161]
- Dr John Parker;[162]
- Robb Clifton (Operations Manager at the AAD - Kingston);[163] and
- Tijun (the aviation manager for the nearby Chinese base) to request possible use of Chinese aviation assets.[164]

109. Sharon Labudda went to the helipad to speak to the engineers. When she got there, Rowan Strutt had already been advised of what had happened by Paul Sutton.[165]

110. Having been briefed by Bill De Bruyn, Marty Benavente returned to the field store to brief James Hamilton[166] and then attempted (unsuccessfully) to contact Anthea Fisher. At 1627, he collected a ute from outside the workshop and took it to the field store where he and James Hamilton loaded (pre-packed) rescue equipment into it.[167] They then drove towards the living quarters and located Anthea Fisher on the way.[168] Anthea Fisher was collected and briefed before Marty Benavente dropped James Hamilton and Anthea Fisher at the Sleeping and Medical Quarters to dress and collect their

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[155] Benavente at tn626.41 to 627.15; CB247 (*Statement of Benavente*) at pg73.
Note that Eccles estimates that Benavente arrived in the comms room a little more than 10minutes after the mayday call, but does suggest his attention was elsewhere - see at tn492.33-45.
See also per De Bruyn at tn885.23-24 and tn821.33-37 where it is indicated that this briefing was for "[a] matter of minutes".

[156] C266 (*Statement of Eccles*) at [2.1](g); Eccles at tn493.9-22. See also per Labudda at tn400.42 to tn401.1, 462.25-30 (ration packs also available and request for food did not slow anything down).

[157] Note that the exact order of these was unable to be recalled (per De Bruyn at tn822.16-20).

[158] De Bruyn at tn821.37-39.

[159] De Bruyn at tn821.39-40.

[160] .De Bruyn at tn821.40-44. See also at tn822.2-3 (De Bruyn estimated that this took about 2 minutes).

[161] De Bruyn at 822.3-5 (indicated this was "probably a couple of minutes").

[162] De Bruyn at tn822.7-8.

[163] De Bruyn at 822.10-16 (De Bruyn estimated "a minute" for this discussion); CB11 (*Interview with Clifton*) at Q&A17-21. Note that at tn822.8-10 De Bruyn also referenced making a number of phone calls to "get some staff back up so there was ongoing brief" (this seems likely to be AAD staff at Kingston).

[164] De Bruyn at tn887.32 to 889.3; Labudda at tn393.36-38.

[165] Labudda at tn393.3-7.

[166] Hamilton at tn567.11-15, tn599.2-12; CB251 (*Statement of Hamilton*) at [15].

[167] Note that Benavente referred to the lack of information meaning that they had to be prepared for more situations (see tn675.33-35). As to the equipment being pre-packed, see Hamilton at tn567.17-30.

[168] Benavente at tn700.1-11 (includes that the initial difficulty locating Fisher did not make a material difference to the departure time).

personal gear. Marty Benavente went to speak to Dr John Parker. He indicated that it was unlikely Dr John Parker would be able to join them. Consequently, Dr John Parker began gathering medical supplies. Marty Benavente went to his room to dress and collect his equipment. When Marty Benavente, James Hamilton, and Anthea Fisher met back at the ute, Marty Benavente directed Anthea Fisher to collect the food which had been prepared and James Hamilton to fetch the medical equipment from the surgery. Marty Benavente went to the comms room and spoke to Mick Eccles.[169] At approximately 1715, the three FTOs arrived at the Helipad.[170]

111. Meanwhile, following the notification from Paul Sutton, Rowan Strutt had commenced preparing for the return trip. That included preparing for refuelling and the placement of an external basket on the helicopter.[171] At 1642, Paul Sutton landed back at Davis.[172] At the time Paul Sutton landed, Bill De Bruyn was at the helipad waiting for him and engaged him in a conversation for approximately 10 minutes regarding what had occurred and to check on Paul Sutton's welfare.[173] At the same time, Rowan Strutt and Angus Hardwick refuelled the helicopter and removed the sling line, a process which was completed prior to the FTOs arriving at the helipad.[174] It should be noted that while there was a third helicopter in the hanger at Davis Station, not only was there no further pilot but it was not in an immediately operable state.[175]

112. At 1710, believing that everything he needed to do had been done, Bill De Bruyn activated the Search and Rescue alarm. The Search and Rescue alarm required those on station to muster at a designated location. The alarm was sounded so that those on base could be informed of what was happening and to stop work (thereby minimising the chance of another accident). Prior to activating the alarm, Bill De Bruyn had 'cleared' certain people (who were directly involved in the preparation for the Search and Rescue effort) meaning that they did not need to attend the muster.[176]

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[169] Eccles at tn492.33-36 (although see following lines – this may be a reference to being there earlier).
[170] CB247 (*Statement of Benavente*) at pg7; Benavente at tn627.17 to 628.2, tn694.3 to 695.14; CB7 (*Statement of Fisher*) particularly at Q&A51-66 and 88-123. Note that Fisher references having a conversation with De Bruyn, see for eg Q&A64-65. Note also that at Q&A204, Fisher says she thinks they were at the living quarters when the helicopter arrived at Davis.
[171] Strutt at tn177.13-41.
[172] CB128 (*Communications Log – 11/1/16*); CB129 (*SAR Communications report – 11/1/*16).
[173] De Bruyn at tn822.21-27 (includes that the conversation was for 5-10 minutes), tn890.33, 891.11-12 (conversation was "probably a good 10 minutes"); Sutton at tn274.2-8 (spoke to De Bruyn and Labudda), tn277.41-42 (not made aware that his fitness to fly was being checked), tn303.17-27 (De Bruyn asked how he was); Labudda at tn396.32-39 (5 to 10 minutes; DeBruyn speaking to Sutton but Labudda present).
[174] Strutt at tn178.5 to tn179.18; Sutton at tn330.25-28, tn274.2-4; Labudda at tn397.1-6.
[175] Strutt at tn175.35-41 (and see tn175.43 to tn176.43 for a discussion of required timeframes to prepare this helicopter dependent upon the state it was in; see also tn184.17 to tn185.20). See at tn186.5-33 regarding other steps that had to be taken to prepare the helicopter.
[176] De Bruyn at tn889.10-27, tn890.4-11, tn834.21-30; Labudda tn395.5-15, tn397.39 to tn398.3, tn430.15-32.

113. When the FTOs arrived at the helipad (at approximately 1715), Marty Benavente had a conversation with Paul Sutton and Sharon Labudda while James Hamilton and Anthea Fisher worked with the engineers to load the helicopter. Given the conversation with Paul Sutton, Marty Benavente decided that they would "approach the scene as an unproven crevassed area" and accordingly he and James Hamilton put on appropriate equipment.[177]

114. At 1737 (55 minutes after it landed and 1 hour and 33 minutes after the 'mayday call'), helicopter UUI took off to return to the West Ice Shelf.[178] On board were Paul Sutton, Marty Benavente, James Hamilton, and Anthea Fisher. While Marty Benavente had foreshadowed the decision, ultimately it was Bill De Bruyn who decided who was to travel to the West Ice Shelf.[179] It was understood that Marty Benavente was the team leader.[180]

The Flight back to the West Ice Shelf

115. During the flight back to the West Ice Shelf, the communication with Davis was largely limited to updates of the helicopter's location, except for a conversation concerning a secondary Search and Rescue team being organised.[181] Discussions within helicopter UUI related to the process to be engaged in upon reaching the site (so as to ensure a safe landing and working site) and, pending seeing the crevasse, did not involve the formulation of a specific plan of action.[182] During the flight, James Hamilton volunteered to go into the crevasse.[183]

116. The tracking system showed that helicopter UUI landed back at the West Ice Shelf at 1841. At 1855, contact was made via satellite phone confirming arrival.[184]

At the West Ice Shelf

Note that, at the same time that certain people were 'cleared', De Bruyn contacted some scientists who were stationed on an island (directing them to stop work) and directed the crew of the Basler (a fixed wing aircraft) to return to station – De Bruyn at tn889.29-40.
In relation to the go-slow/stopping of other activities, see also per Gales at Crim tn748.5-31.

[177] CB247 (*Statement of Benavente*) at pg73; Hamilton at tn568.21-36.
Note that this also necessitated a re-configuration of the helicopter for heli-probing purposes – Benavente at tn634.16-21.

[178] CB128 (*Communications Log – 11/1/16*); CB129 (*SAR Communications report – 11/1/*16); CB247 (*Statement of Benavente*) at pg74.
Note that at tn487.8-9 Eccles clarified that the relevant entry in CB128 reads '1037' not '1057'.

[179] De Bruyn at tn745.19-24, tn827.31-33.

[180] Benavente at tn636.39; CB7 (*Interview with Fisher*) at Q&A254; Hamilton at tn570.12-15, tn560.38-41; Sutton at tn279.25-26.

[181] De Bruyn at tn905.5-26; CB128 (*Communications Log – 11/1/16*); CB129 (*SAR Communications report – 11/1/*16); CB247 (*Statement of Benavente*) at pg74; CB7 (*Interview with Fisher*) at Q&A230, 243-248.

[182] CB247 (Statement of Benavente) at pg74; CB7 - *Statement of Fisher* - at Q&A28, 230 (recalling some discussion about the crevasse and weather); Hamilton at tn571.13-14 (inferentially suggesting that there was some planning); CB251 (*Statement of Hamilton*) at [22].

[183] Hamilton at tn571.13-14.

[184] CB128 (*Communications Log – 11/1/16*); CB129 (*SAR Communications report – 11/1/*16).

117. When helicopter UUI reached the fuel cache site, Marty Benavente and James Hamilton, utilising a standard procedure, exited the helicopter and ensured that the landing area was safe for Paul Sutton to land.[185] That took approximately 10-15 minutes.[186] Further, the FTOs probed their way from the landing area to the crevasse.[187] Paul Sutton was instructed not to move more than one step from the helicopter. He busied himself reconfiguring the helicopter (to fit the stretcher inside) and began removing the stretcher from the basket.[188]

118. The crevasse was approximately 600-650mm wide with an opening that was approximately 1000-1200mm long[189] and was clearly observable on approach.[190] It appeared that the opening had been covered by an ice bridge which was about 10-15cm thick.[191] Approximately 7 metres down there was a bend.[192] Captain Wood was approximately 12 metres from the surface,[193] but could not be seen from the surface due to the bend.[194] The crevasse narrowed as it went down and was approximately 300mm wide where Captain Wood was stuck.[195]

119. When Marty Benavente approached the crevasse, he yelled out to establish contact with Captain Wood. He initially heard a muffled "yes" in response.[196] From that point, Marty Benavente only heard Captain Wood respond by repeating the same words over and over, being "just pull me out".[197] He noted that Captain Wood's speech sounded slurred[198] and that it appeared at one point that Captain Wood moved the sling line which went down into the crevasse.[199]

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[185] CB247 (*Statement of Benavente*) at pg74; CB7 (*Interview with Fisher*) at Q&A301-305; Hamilton at tn569.39-40.
[186] Benavente at tn662.6-9 (estimate of 15 minutes); Hamilton at tn589.29-31 (estimate of 10 minutes).
[187] Benavente at tn636.23-24; Hamilton at tn569.39-40, tn570.31 to 571.1 (includes estimate that proving the path from the helicopter to the crevasse took approximately 5 minutes).
[188] Sutton at tn278.26 to tn279.3.
[189] For various estimates, see: CB247 (*Statement of Benavente*) at pg74; Sutton at tn288.18-34; CB251 (*Statement of Hamilton*) at [26]; CB271 (*Hamilton's hand-drawn diagrams*); Hamilton at tn573.31 to tn574.11, tn573.41 to tn574.11; CB271 (*Hamilton's hand-drawn diagrams*). Note also CB38 (*Report of De Bruyn*) at pp31-32.
[190] Benavente at tn636.30-31, tn673.8-13 (but note that it appears that Benavente did not observe the second crevasse – that which Hamilton had stepped into on 28/12/15).
[191] Hamilton at tn574.27-28.
[192] Hamilton at tn575.20-22; CB271 (*Hamilton's hand-drawn diagrams*).
[193] Hamilton at tn538.34-42, tn575.20-23, tn598.32-25; CB271 (*Hamilton's hand-drawn diagrams*); CB251 (*Statement of Hamilton*) at [26].
[194] Hamilton at tn575.25-26 (indicating that once at the bend he could see Wood's helmet), tn573.24-29.
[195] CB271 (*Hamilton's hand-drawn diagrams*); CB251 (*Statement of Hamilton*) at [26]; Hamilton at tn575.15.
[196] Benavente at tn637.34-43. Note that the muffled 'yes' is not referred to in CB247 (*Statement of Benavente*). CB128 and CB129 indicated that voice communications were established with Wood at 1905.
[197] Benavente at tn638.12-26.
[198] CB247 (*Statement of Benavente*) at pg74. Benavente at tn638.12-17 ("in a muffled, maybe semi-coherent way").
[199] CB247 (*Statement of Benavente*) at pg74.

120. The rescue effort was conducted by James Hamilton (who used a roping system[200] to enter the crevasse and make his way to Captain Wood), Marty Benavente (who positioned himself at the edge of the crevasse and guided communication), and Anthea Fisher (who managed the roping system).[201] On his way down, James Hamilton spoke to Captain Wood, indicating that he was coming to get him. He noted that Captain Wood was repeating "I'm cold. Get me out",[202] and that at one point he believed Captain Wood said his name.[203]

121. When James Hamilton reached Captain Wood it appeared that Captain Wood was wedged by his helmet and chest.[204] He had his arms up with his palms near his ears,[205] and had hold of the sling line[206] with the swivel and drum hooks behind his head and the sling line variously over him.[207] Given the confines of the crevasse, when James Hamilton got to within about 30cm of Captain Wood, he needed to partially invert himself as he could not get closer.[208] He observed that Captain Wood was in and out of consciousness, mumbling and repeating himself.[209] James Hamilton fastened a tape sling around each of Captain Wood's arms. Over the time that he was in the crevasse, James Hamilton noted that Captain Wood's communication and consciousness deteriorated.[210]

122. Once the sling was fastened around Captain Wood's arms, Marty Benavente and Anthea Fisher attempted to hoist Captain Wood to the surface utilising a 9:1 mechanical advantage system.[211] James Hamilton, who was still in the crevasse, assisted in the lifting by the use of a 'jigger'.[212] During that attempt to free him, Captain Wood moaned and screamed[213] but remained wedged.[214] From that point he was incoherent.[215] After some deliberation, the FTOs called on the assistance of Paul

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[200] Which took approximately 5-10 minutes to set-up - See Hamilton at tn571.36-40.
[201] Benavente at tn636.31 to 637.23; CB7 (*Interview with Fisher*) at Q&A331, 333, 358; Hamilton at tn571.13-18, tn573.11-12.
[202] Tn575.28-43.
[203] Tn576.4-5; CB251 (*Statement of Hamilton*) at [26].
Note that Fisher said that "when we first got there" Wood very clearly said "Get me out of here, James. Get me out of here. I'm cold, get me out of here." – see CB7 (*Interview with Fisher*) at Q&A526-528.
[204] Hamilton at tn579.12-36, tn582.11-14, tn598.32-35; CB251 (*Statement of Hamilton*) at [27] and [28].
Note that CB128 (*Communications Log – 11/1/16*) and CB129 (*SAR Communications report – 11/1/*16) record Hamilton reaching Wood at 1931.
[205] Hamilton at tn577.8-12.
[206] CB251 (*Statement of Hamilton*) at [27], noting that he had to prise it out of Wood's hand.
[207] Hamilton at tn577.14 to 578.17, tn679.14; CB251 (*Statement of Hamilton*) at [27].
[208] Hamilton at tn576.19-29; CB251 (*Statement of Hamilton*) at [26].
[209] Tn576.41-44, tn575.28-41.
[210] Hamilton at tn579.12 to tn580.17; CB251 (*Statement of Hamilton*) at [28].
[211] Benavente at tn640.1-21.
[212] Hamilton at tn581.1-25.
[213] Hamilton at tn581.27; CB251 (*Statement of Hamilton*) at [29]; CB247 (*Statement of Benavente*) at pg76; Sutton at tn280.39 to tn281.1 ("yelling in pain" at some point during the extraction).
[214] Benavente at tn640.19-28, tn641.9-14.
[215] Hamilton at tn582.24-25.

Sutton who then helped in attempting to hoist Captain Wood. Following some initial resistance, Captain Wood came free. A further tape sling was placed around his chest and he was hauled towards the surface.[216] From the time that Captain Wood was dislodged, he did not make any more noise and struggled to breathe.[217] It took approximately 5-10 minutes to haul him to the surface.[218] An assessment was made that it was not possible to move him into a horizontal position.[219]

123. When he neared the surface, James Hamilton exited the crevasse and assisted Marty Benavente to lift Captain Wood vertically from the crevasse and onto the snow.[220] It was noted at this time that Captain Wood's body was rigid.[221] He was no longer responding to verbal stimulation (but was responding to pain stimulation), had 'ragged' and short breathing, and curled into a foetal position with his hands to his face.[222] He did not say anything further from the time that he came out of the crevasse.[223] Marty Benavente managed his airway and breathing[224] and his helmet was removed.[225] He was placed into a hypothermia bag (with two hot water bottles)[226] on a stretcher and moved into helicopter UUI.[227] It was noted that his clothes were damp.[228]

124. While the FTOs were at the West Ice Shelf, they periodically informed Bill De Bruyn what was happening by relaying messages through Paul Sutton.[229]

First Aid After Extraction and During the Flight to Davis

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[216] Benavente at tn642.34-4; CB7 (*Interview with Fisher*) at Q&A417-418; Hamilton at tn582.3-6, tn583.22-27; CB251 (*Statement of Hamilton*) at [29]-[30].
[217] Hamilton at tn584.35-44.
[218] Hamilton at tn585.2-5
[219] Hamilton at tn584.13-19; Benavente at tn641.35-39, tn643.2-3, tn691.35-39 (where Benavente mentions consideration of Wood's airway).
[220] CB7 (*Interview with Fisher*) at Q&A444-448; Hamilton at tn585.9-19; CB251 (*Statement of Hamilton*) at [30]. Note that CB128 (*Communications Log – 11/1/16*) and CB129 (*SAR Communications report – 11/1/*16) record Wood being on the surface at 1954.
[221] Benavente at tn692.4-11; CB7 (*Interview with Fisher*) at Q&A449-451; CB251 (*Statement of Hamilton*) at [31].
[222] Benavente at tn643.41-45, tn644.10-23; CB247 (*Statement of Benavente*) at pg76; CB7 (Interview with *Fisher*) at Q&A459; Hamilton at tn585.21-23.
[223] Benavente at tn644.43-44. Cf CB7 (*Interview with Fisher*) at Q&A459 where Fisher suggests Wood made some unintelligible noises at around this time. However, note that at Q&A525 Fisher says that Wood "wasn't really responsive anymore". Per Sutton at tn281.32-38 ("very slow movement…and a bit of grumbling…eye's didn't look normal").
[224] Benavente at tn645.1-5.
[225] CB7 (*Interview with Fisher*) at Q&A462-463; Hamilton at tn585.38; Benavente at tn650.32-33 (mentioning that a beanie was placed on Wood's head).
[226] Benavente at tn651.18-20; CB7 (*Interview with Fisher*) at Q&A468 ("a hot water bottle").
[227] Benavente at tn645.29-32; Hamilton at tn585.35 to tn586.2; CB251 (*Statement of Hamilton*) at [32]; Sutton at tn281.43 to tn282.5, tn284.15-16. Note that Sutton removed the front seat of the helicopter for this to occur – CB7 (*Interview with Fisher*) at Q&A507-508.
Note that CB128 (*Communications Log – 11/1/16*) and CB129 (*SAR Communications report – 11/1/*16) records Wood being in the helicopter at 1959 and "making snoring noises".
[228] Hamilton at tn602.2-12; CB251 (*Statement of Hamilton*) at [31]; Benavente at tn643.21-25 (not wet but hard to tell whether they were damp), tn697.40-41 (agreed damp), tn650.43-44 (questioned about whether they were wet enough to warrant removal).
[229] De Bruyn at tn906.7-11; Benavente at tn639.38-41.

125. It was decided that Marty Benavente would travel in the helicopter with Captain Wood, while James Hamilton and Anthea Fisher remained on the West Ice Shelf.[230] Shortly after the side door to the helicopter was closed, Marty Benavente observed that Captain Wood's "body relaxed and so his hands fell away from his face, his eyelids opened, his pupils dilated noticeably in the bright light and there was no sign of breathing."[231] Marty Benavente suspected Captain Wood had gone into cardiac arrest.[232] He provided "several breaths" to Captain Wood and then attempted to find a pulse on his carotid artery for "an extended period of time" but could not detect one.[233] The FTOs had a brief discussion and determined that, as little could be done at the scene, the best course was to transport Captain Wood back to Davis Station.[234]

126. Helicopter UUI departed the West Ice Shelf at 2005.[235] During the flight back to Davis, Marty Benavente performed CPR (chest compressions and breaths) on Captain Wood for approximately 5-10 minutes before needing to stop for a rest. Following about a 5-minute rest, approximately another 5 minutes of CPR was performed. The positioning in the helicopter made the performance of CPR difficult and Marty Benavente noted the impact it was having on the helicopter. Consequently, CPR was ceased but expired air resuscitation (EAR) continued.[236] During the flight, Captain Wood showed no signs of life.[237]

127. Helicopter UUI arrived back at Davis at 2043 (4 hours and 39 minutes after the 'mayday' call).[238]

Medical Efforts at Davis

128. After providing first aid materials to the FTOs, Dr John Parker prepared for the receipt of Captain Wood. He organised his equipment, contacted the Polar Medicine Unit (so as to later be provided expert advice over the phone),[239] and briefed the lay surgical assistants.[240]

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[230] The size of the helicopter would not have allowed all people to return to Davis together, particularly noting the room taken up by a stretcher.
[231] Benavente at tn645.34-36. See also CB7 (*Interview with Fisher*) at Q&A512-515; Hamilton at tn586.15-21.
[232] Benavente at tn645.38-39. See also per Sutton at tn282.7-13.
[233] Benavente at tn646.37 to tn647.4.
[234] CB247 (*Statement of Benavente*) at pg77; CB251 (*Statement of Hamilton*) at [33]; Sutton at tn282.7-16.
[235] CB128 (*Communications Log – 11/1/16*); CB129 (*SAR Communications report – 11/1/*16). Note that these entries record that Wood was breathing (shallow).
[236] Benavente at tn648.44, tn649.40 to 650.2; CB247 (*Statement of Benavente*) at pg77; Hamilton at tn586.23-24 (recalling seeing CPR commenced as the helicopter was leaving); Sutton at tn282.38-39 (indicating that Benavente performed CPR on Wood "most of the way").
[237] Benavente at tn649.38.
[238] CB128 (*Communications Log – 11/1/16*); CB129 (*SAR Communications report – 11/1/*16).
[239] In this instance, assistance was provided by Dr Roland Watzl and later by Dr Clive Strauss as well as a team of relevant specialists.
[240] CB253 (*Statement of Parker*) at pg1.

129. Dr John Parker met helicopter UUI as it arrived back at Davis. He garnered some brief information from Marty Benavente and made initial observations that Captain Wood was deeply cyanosed, not breathing, and that no carotid pulse was palpable. Captain Wood was transported to the Davis Medical Facility where he arrived at 2053 and was attended to by Dr John Parker.[241]

130. When he arrived at the medical facility, Captain Wood was confirmed to be pulseless and not breathing. His temperature was taken and recorded as being 24.2 degrees. His clothing was removed, a cardiac monitor attached, and he was covered with a blanket. Further observations revealed some superficial injuries.[242]

131. Over the ensuing 18 hours, Dr John Parker and his lay surgical team (as well as six other expeditioners who assisted) attended to Captain Wood. Warming techniques were applied, including ventilation with warm humidified oxygen, irrigation of the stomach and bladder with warm saline, and infusing of warm intravenous fluids.[243] After an initial minor decrease in temperature, he was successfully warmed to 32.4 degrees at 1508 on 12 January 2016.[244]

132. During the period of warming, a number of interventions were administered and blood samples taken. They initially appeared positive, however, that was not sustained.[245] Further, at one point there was some brief low voltage 'blips' picked up on the heart monitor. It is likely, however, that those were artifacts and did not represent actual cardiac activity.[246] Also during this period, a telephone was placed beside Captain Wood so that family members could speak to him.

133. At 1508, Captain Wood was administered adrenaline and one minute of CPR was performed. Unfortunately, he showed no signs of life and, at 1510 on 12 January 2016, was declared dead.[247]

The West Ice Shelf, Crevasses, and Temperature

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[241] CB253 (*Statement of Parker*) at pg2; CB27 (*Handwritten clinical notes*); CB128 (*Communications Log – 11/1/16*); CB129 (*SAR Communications report – 11/1/*16).
Note that to remove Wood from the helicopter the door had to be removed - CB129 (*SAR Communications report – 11/1/*16).

[242] CB253 (*Statement of Parker*) at pg2; CB27 (*Hand-written clinical notes*) which records the reading of 24.2 as being taken at 2102.

[243] CB253 (*Statement of Parker*) at pg2; CB28A (*AAD Profile Clinical Notes*).

[244] CB27 (*Hand-written clinical notes*) records readings of 24 degrees at 2119 and 2143 followed by an increasing temperature up to 1508.

[245] CB26 (*Piccolo results*); tn713.22 to tn714.40 (per Parker, Watzl and Strauss). See also per Ritchey at tn558.11-21.

[246] Parker at tn710.42 to tn711.14, tn711.40 to tn712.13; CB253 (*Statement of Parker*) at pg2; CB28A (*AAD Profile Clinical Notes*); Watzl at tn711.30-36.

[247] CB36 (*Life extinct statement*); CB28A (*AAD Profile Clinical Notes*); CB253 (*Statement of Parker*) at pg3; CB27 (*Hand-written clinical notes*). Cf tn716.27-30 where Parker says that CPR was not administered at the medical facility. Note, however, that this is likely to be a reference to earlier stages of treatment.

134. The dangers associated with crevasses are well known, particularly to those spending time in the Antarctic. Indeed, the *AAD Field Manual 2015*, under the heading 'Crevasses', included:[248]

> Crevasses are caused by the inelasticity of ice and snow. As the ice flows over or around obstructions or changes in the underlying terrain, it splits and cracks.
>
> Crevassing is influenced by ice movement and thickness and the nature of sub-glacial obstructions. Crevassing is usually most severe at the crest of rises (convex slopes) and at the outside of a bend when the ice flow changes direction. Crevasses can vary in width from a few centimetres to 10–20 metres. The smaller ones are often the most dangerous.
> …
> Avoid crevassed zones if possible, even if it entails a considerable number of detours. Consult maps and field notes from previous journeys. Because an area has been crossed without incident, do not assume that it is crevasse-free. The previous parties may have been lucky. Do not even assume that regularly used routes are crevasse-free. Stick to approved travel routes when traveling off station, there have been a number of serious crevasse incidents where people have been exploring in apparently safe areas.
>
> Spotting crevasses
> Crevasses can be impossible to see, particularly early in the season and after snowfall. They are particularly dangerous if there is sufficient snow to bridge or hide them, but not enough to support your weight. Natural features will often be a guide in the expectation of crevasses.
> Remember that crevassing can extend for many kilometers from the immediate cause, or the cause may be sub-glacial and invisible. Be wary of any area where the surface changes from level flatness.
> A snow bridge across a crevasse usually has a different colour and texture from the surrounding snow. Often it is slightly slumped. A narrow crack running along the snow surface may indicate the approximate leeward edge of the crevasse. That edge is constructed of honey-combed snow or ice and is unsound.
> …

[248] CB220 (*AAD 2015 Field Manual*) at pp97-98.

As you can't usually identify the depth and breadth of a crevasse, play safe and assume the worst.

135. Large scale crevassing has been known to exist on parts of the West Ice Shelf since at least 1966 when Russian cartographers produced a map demonstrating the same (a 1969 Australian map which relied on an earlier Russian map also depicted this).[249] Unfortunately, for reasons which are not entirely clear, recognition of these zones as crevassed areas appears to have diminished, with the focus of concerns about crevasses more recently shifting to the Amery Ice Shelf and Sorsdal glacier.[250] Indeed, it appears that 'glaciated terrain' and 'crevassed terrain' were used almost synonymously.[251]

136. Despite the lack of recent recognition,[252] the incident area is prone to crevassing. Multiple features impact the formation of crevasses, including: undulation in the bedrock, differences in the speed of flow (in the relevant area the rate of flow was approximately 128m per year[253]), the ice thickness (in the relevant area the ice was approximately 550m thick[254]) and, potentially, tidal flex.[255] The presence of such features in an area tends to be consistent and consequently an area which is prone to crevassing is likely to remain so, even though the particular crevasses will move with the ice flow.[256] The features in the incident site mean that not only was there crevassing around the fuel cache site, but that it was almost inevitable.[257]

137. The impact which static features of a location have upon crevasse formation mean that dated maps can be of relevance in determining whether an area is prone to crevassing.[258] Unfortunately, the usefulness of older maps was not appreciated by Bill De Bruyn.[259]

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[249] Allison at tn199.4 to tn200.20.

[250] CB1 (*Interview with De Bruyn*) (part 1) at Q&A762-770; Labudda at tn448.5 to tn449.31 (discussing the use that could have been made of a map depicting crevassing in thin the area (in particular, the 1969 map referred to by Dr Allison)).

[251] See, for example, CB5 (*Interview with Benavente*) at Q&A207-209; Benavente at tn678.41-44, tn679.29-32, tn798.25-28; CB258 (*Statement of Gales*) at [52]-[53]; Gales at Crim tn749.44 to Crim tn750.10, Crim tn810.26-32. Cf De Bruyn at tn879.41-45.

[252] See, for eg, Labudda at tn434.43 to tn435.5.

[253] Allison at tn198.22-24.

[254] Allison at tn198.12-20 (note that this is relatively thin).

[255] Allison at tn203.32-37, tn206.26-33.

[256] Allison at tn198.36 to tn199.2, tn201.1-37, tn205.19-35.
Note that many expeditioners did not appreciate the factors contributing to crevasse formation – see Labudda at tn450.28 to tn451.2, tn481.32-34; Patterson at tn168.33-44 (does not recall being told that crevassing is likely near water). See also Hamilton at tn590.40-41 (never briefed by glaciologist) but see at tn591.9-43 (demonstrates understanding).

[257] Allison at tn206.17-24, tn199.35-42.

[258] Allison at tn199.35-39.

[259] De Bruyn at tn800.30-34, tn803.14-22. Note also Labudda at tn481.36-41 (never trained re usefulness of old maps).

138. The temperature inside a crevasse (at least beyond 10m deep) is approximately the same as the average annual temperature for the area (with variation of about a degree throughout the year). As such, the temperature faced by Captain Wood was approximately -14 degrees Celsius.[260]

Hypothermia and Chances of Survival

139. A person is hypothermic when their body core temperature is below 35 degrees. Patients may be classified as having mild hypothermia (between 35 and 32 degrees), moderate hypothermia (between 32 and 28 degrees) or severe hypothermia (below 28 degrees). Each stage of hypothermia is typically associated with particular symptoms, with severe hypothermia carrying a high risk off ventricular fibrillation, which can cause cardiac arrest and loss of consciousness.[261] There is, however, variability in what may be survived by an individual.[262] Additionally, it ought to be borne in mind that there is disagreement amongst experts as to best practices and the weight to be placed on factors such as 'after drop'.[263]

140. One of the guiding principles in relation to severely hypothermic patients who are not showing signs of life is that 'nobody is dead until warm and dead'. This is because severe hypothermia can mimic death.[264] It is for that reason that severely hypothermic patients who show no signs of life are warmed prior to any final decision being made.

141. There is a phenomenon known as 'circum-rescue collapse' which relates to the propensity of hypothermic patients to deteriorate shortly after rescue. A number of factors appear to play a role in this phenomenon,[265] including rough handling, 'after drop', and a drop in blood pressure.[266] It is probable that Captain Wood suffered circum-rescue collapse shortly after being placed in the helicopter, as indicated by the change in body position.[267]

142. Rough handling (or mechanical stimulation) of a person with hypothermia can cause ventricular fibrillation and cardiac arrest.[268] It was therefore important for the FTOs to

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[260] Allison at tn196.38 to tn197.18.
[261] CB273 (*Statement of Watzl*) at [5]-[7]. Note that Giesbrecht indicated that, while there will be outliers, 28 degrees "is the temperature at which the heart really starts to become at risk of stopping because of the cold" (tn963.30-31).
[262] Giesbrecht at tn965.10-20.
[263] CB274 (*Watzl response to Giesbrecht*) at [9]-[13].
[264] CB273 (*Statement of Watzl*) at [18]; Giesbrecht at tn965.22-26.
[265] In relation to the contributors to circum-rescue collapse, see per Giesbrecht at tn1011.35 to tn1012.6.
[266] Brock (speaking also on behalf of Giesbrecht and Watzl) at tn926.36-38. Cf Giesbrecht at tn1011.45 referencing an increase in blood pressure but question whether this is a transcription error.
[267] CB276 (*Hot tub document*) at pg2.
[268] Watzl at tn965.35-37; CB250 (*Statement of Giesbrecht*) at pg5; Giesbrecht at tn970.30-38; CB248 (*Statement of Brock*) appendix A, [22][xii].
See also Giesbrecht at tn999.40 to tn1000.3, tn1011.9-20 (to the effect that ventricular fibrillation caused by rough handling is ordinarily temporally proximate to the rough handling).

extricate Captain Wood as gently as possible. It should be noted that each of the FTOs was aware of the desirability of avoiding rough handling.[269] A number of moments in the rescue could be seen as constituting rough handling, including: the force exerted to free Captain Wood from the crevasse,[270] placing him in a horizontal position,[271] and potentially CPR.[272] The impact of rough handling varies dependent upon the patient's temperature,[273] however, the exact contribution of any/all of the rough handling cannot be quantified and is simply one potential factor in Captain Wood's death.[274]

143. The term 'after drop' relates to the effects of a number of factors, including cool blood flowing from the peripheries to the heart causing the heart to continue to be cooled (and also causing the flow of irritants to the heart),[275] a drop in blood pressure,[276] and rough-handling.[277] One of the ways to minimise 'after drop' is to move a patient into a horizontal position as soon as possible and to lift them gently in that position.[278] It should be noted that the FTOs were aware that a horizontal lift was preferable.[279] Similar to rough handling, the impact of the vertical lift cannot be quantified.[280]

144. The practicalities of effecting a horizontal lift are, of course, relevant. It was the assessment of Marty Benavente and James Hamilton that it was not possible.[281] James Hamilton's assessment, however, appears to have been partially based on the use of a stretcher, with the use of slings not considered.[282] It appears that additional

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[269] Benavente at tn641.28-29, tn689.13-23, tn697.9-15; CB7 (*Interview with Fisher*) at Q&A573-4, 700-710; Hamilton at tn583.11-18, tn585.27-44, tn580.32.
[270] Giesbrecht at tn975.4-7.
[271] Watzl at tn973.33-34. But note below regarding horizonal lifting and circum-rescue collapse.
[272] Watzl (purportedly speaking also on behalf of Brock and Giesbrecht) at tn966.5. Cf Giesbrecht at tn985.30-34 who notes that rough handling is something that might cause the heart to stop and CPR is performed after the heart stops.
[273] Giesbrecht at tn964.23-32.
[274] Note that, beyond individual variability, the exact circumstances of Wood are not known, for example, whether his legs were being compressed by the ice, in relation to which, see tn973.9 to tn974.15 and CB274 (*Watzl response to Giesbrecht*) at [39][b].
Note also Giesbrecht at tn964.30-32: "The point is that rough handling didn't cause cardiac arrest and that's because this was – this was approximately 45 or 50 minutes before he got into the helicopter and finally did arrest."
[275] Watzl at tn709.12-27; CB276 (*Hot tub document*) at [p]. See also Watzl at tn930.16-28 in relation to the autoregulation of blood pressure in hypothermic patients.
[276] CB276 (*Hot tub document*) at [p].
[277] CB248 (*Statement of Brock*) at pg9.
[278] Giesbrecht at tn976.18-23. It should be noted that the studies in this area relate to immersion in water where there is artificially (by the pressure of the surrounding water) increased blood pressure and there is some uncertainty as to how analogous Wood's situation was. Note Watzl's description of circum-rescue collapse at tn707.28 to tn708.15 and the discussion of the impacts: Watzl at tn973.9 to tn974.27; Giesbrecht at tn975.35 to tn976.1; Strauss and Watzl at tn710.6-21.
[279] Benavente at tn641.35-37; Hamilton at tn584.13-33.
[280] Note the comment attributed to Giesbrecht in CB276 (*Hot tub document*) at [o] which drew attention to the likelihood that Wood died shortly after extraction. Note also Watzl at tn708.37-38 expressed the view that bringing Wood out horizontally was unlikely to make any real difference. See also at tn708.42 to tn709.4 for Strauss' apparent agreement with Watzl on this point.
[281] Benavente at tn641.35-39, tn642.1-2; Hamilton at tn584.13-33.
[282] In relation to the use of slings, see Watzl at tn979.31-32; Giesbrecht at tn977.14-26; CB250 (*Statement of Giesbrecht*) at pp5 and 16.

considerations for the FTOs (in addition to the width of the crevasse) included the length of the opening (and the undesirability of widening it),[283] and concern for Captain Wood's airway as he was being lifted.[284]

145. As a matter of practicality, the gentleness of an extraction and the way in which a person is lifted will often be weighed against the time taken to perform the extraction. In the circumstances of the present matter, bearing in mind the length of time that Captain Wood had been in the crevasse and his deteriorating state, there was a degree of urgency felt by the FTOs.[285] It is notable in this regard that Professor Gordon Giesbrecht (an expert in the area) stated that:[286]

> a very important guiding principle of rescue/extraction [is] "the colder a patient is (meaning the longer they have been exposed), the slower you can go". A few minutes more won't make that much difference in the 'effect of exposure' but it will allow the rescuer to better handle and treat the victim and minimize negative responses.

146. A further factor which may have contributed to the circum-rescue collapse was 'mental relaxation'. This relates to the reduction in catecholamine (adrenaline) release, causing a decrease in blood pressure and muscular strength. It may be possible to avoid/minimise such relaxation by providing positive verbal commands as opposed to reassuring statements. This, of course, will be unhelpful for an unconscious patient.[287]

147. The role of injuries suffered by Captain Wood was also examined. Dr Jeffrey Brock opined that, given the damage to Captain Wood's helmet, it was likely he had suffered a concussion.[288] Additionally, an injury was noted to Captain Wood's right arm which

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[283] Benavente at tn690.15-22.
[284] Benavente at tn691.29-39.
[285] Benavente at tn642.7-16. Note also the discussion at tn1019.35 to tn1024.4 regarding other factors (for example, potential injuries) which may have impacted on the assessment of the FTOs.
[286] CB250 (*Statement of Giesbrecht*) at pg5.
Note also the discussion of 'unnecessary urgency' in CB276 (*Hot tub document*) at pp8-9.
See also the discussion from tn976.30 to tn981.29 concerning whether time should have been taken to lay Wood horizontal earlier.
Note further Brock at tn975.10-18 opining that a cardiac arrest was inevitable regardless of how Wood was handled out of the crevasse.
[287] CB276 (*Hot tub document*) at pp2-3; CB250 (*Statement of Giesbrecht*) at [38][b] (pg16); Brock at tn926.43 to tn927.9 Giesbrecht Brock and Watzl at tn931.28 to tn933.3.
[288] Tn927.18-41, tn928.19-40, tn1009.10-11, tn1033.11-27. See also per Watzl at tn1034.7-9: "I don't think we can rule out a concussion as being a contributing factor"; See also CB276 (*Hot tub document*) at pp3-4. Note Ritchey at tn555.23-30 (during the autopsy he did not observe a head injury that would have caused loss of consciousness).

likely would have resulted in rhabdomyolysis.[289] The impact that any injury may have had cannot, however, be quantified.[290]

148. The likelihood of survival can be usefully summarised as being dependent on three factors:[291]

    1. The cooling conditions (for example, the temperature that the person is exposed to, the clothing worn, and the person's body mass);
    2. The time of exposure (i.e. the length of time for which the person is exposed to the cold); and
    3. The way the person is handled and treated during and after the extraction (for example, how roughly they are handled, the way they are lifted, and the medical expertise/equipment used to treat them).

149. Reducing the period of exposure would have increased Captain Wood's chances of survival.[292] The period which Captain Wood may have survived was discussed:[293]

- Dr Jeffrey Brock estimated that he "could not have survived more that 4-6 hours in the crevasse at the extreme", that "[m]ost individuals in the same situation would have perished within 2-4 hours", and that "[t]he likelihood of anyone surviving beyond 5-6 hours in those conditions would be remote";[294]
- Professor Gordon Giesbrecht did not estimate a survival period but commented that:[295]

    > given his relatively good condition when he was initially contacted and the conditions surrounding the entire event it is not inevitable that he did not survive. I feel that his chances of survival would have been greatly enhanced, and indeed a reasonable expectation, if the following conditions were addressed:
    >
    > a. The SAR team left the base much sooner (decreasing the exposure time of the patient). Much of the preparation likely could have been started sooner and been done at the same time.
    > b. The base medical practitioner should have been on the scene to provide advanced medical care.

[289] CB276 (*Hot tub document*) at pg3; Giesbrecht at tn985.22-25; Brock at tn993.3-19.
[290] Giesbrecht at tn970.4-21; Ritchey at tn558.23-33, tn560.7-14; per Brock, Giesbrecht and Watzl at tn966.34 to tn967.30.
[291] CB250 (*Statement of Giesbrecht*) at [21][d] (pg3).
[292] Brock, Giesbrecht and Watzl at tn953.19 to tn954.20; Watzl at tn961.37-39
[293] Note also Ritchey at tn564.7-35.
[294] CB248 (*Statement of Brock*) at [22] (pg3 of annexure A).
[295] CB250 (*Statement of Giesbrecht*) at [33] (pp15-16).

c. More advanced medical equipment should have been on hand that could have been used by the medical practitioner (e.g., intubation supplies, BVM, supplemental oxygen, and AED etc.).
d. More effective warming capabilities; the warm water bottles were essentially ineffective and electric or chemical heating pads or blankets would have been more effective.
e. Time taken to reposition Mr. Wood into a more horizontal position during the long hauling process to the top of the crevasse would have been beneficial.
f. Time taken to extricate Mr. Wood over the lip of the crevasse as gently as possible.

- Dr Roland Watzl estimated "that the extreme of survival time would have been somewhere between 1.6 hours (worst case) to 4.4 hours (best case)."[296]

Equipment on the Helicopter

150. The medical equipment which could be taken to the West Ice Shelf was limited by the size and payload of the helicopter. The equipment which was taken consisted of a 'first responders' medical kit, a hypothermia recovery bag, hot water bottles, and warmed towels.[297] Ideally, a range of further equipment would have been present, although real questions were drawn as to whether the presence of those items would have ultimately made a difference to Captain Wood's survival. The items discussed in that regard included oxygen and a heat source which was more reliable than the hot water bottles.[298] Similarly, the presence of a defibrillator would have been ideal, but whether it would have worked was questioned.[299] In that regard, it ought to be noted that Marty Benavente gave evidence that he would have been assisted by a heart monitor or similar device in determining whether to commence CPR.[300]

Part 6 – Issues & Findings

151. I turn to consideration of the issue and my findings in respect to them.

152. Counsel Assisting submitted that no adverse comment was called for in relation to any individual in these proceedings. Relevant parties concur with this view, as do I. Indeed,

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[296] CB274 (*Watzl response to Giesbrecht*) at [26].
[297] CB353 (*Statement of Dr Parker*) at [3]; Benavente at tn632.33-34, tn674.16-28 (Benavente does not recall the warmed towels).
[298] Parker, Watzl, and Strauss at tn705.24 to tn706.15; CB276 (*Hot tub document*) at pg4 (noting that Watzl did not agree regarding a better heat source); CB250 (*Statement of Giesbrecht*) at [g][iii], [k].
[299] Watzl and Strauss at tn706.22 to tn707.7; CB276 (*Hot tub document*) at pp4-6; Brock at tn942.5-39.
[300] Tn649.24-29.
See also Brock at tn942.32; Giesbrecht at tn944.17-24.

the efforts of many were outstanding. Particular mention ought to be made of Paul Sutton, who flew tirelessly in difficult circumstances in aid of the rescue mission, and James Hamilton, whose descent into the crevasse demonstrated inspiring courage.

The Cause of Death

153. Captain Wood's body was transported to Hobart where, on 18 January 2016, Dr Donald Ritchey conducted a postmortem examination. During the postmortem examination, the following injuries were noted:[301]

- a 6x3cm abraded contusion on the forehead above the left eyebrow;
- a roughly circular 4cm contusion on the left cheek;
- a 0.5cm abrasion on the left side on the nose;
- an irregular area of contusion approximately 5x5cm on the anterior surface of the chin;
- a scalp contusion on the left temporal region above the left ear;
- a 3cm abraded contusion on the posterior medial left wrist;
- multiple small abrasions on the dorsal surfaces of the left fingers and thumb; and
- a small contusion on the anterior left side of the tongue tip.

154. Dr Donald Ritchey opined that "[t]he cause of death…was hypothermia (environmental cold exposure) sustained after a fall down an ice crevasse."[302]

155. Dr Jeffrey Brock, Dr Roland Watzl and Professor Gordon Giesbrecht agreed that "the cause of Captain Wood's death was hypothermia causing cardiac arrest."[303]

156. Consistent with this evidence, I find that Captain Wood died of cardiac arrest caused by hypothermia.

Time of death

157. Captain Wood was alive, although in a parlous state, when extracted from the crevasse. There are indications, being cessation of breath and pulse, that cardiac death occurred shortly after being secured in the helicopter on 11 January 2016.[304] Heroic measures were applied by Dr Parker until Captain Wood was pronounced dead

[301] CB32 (*Postmortem report*) at pg5.
[302] CB32 (*Postmortem report*) at pg9.
[303] CB276 (*Hot tub document*) at pg1.
[304] Brock (speaking also for Watzl and Giesbrecht) at tn926.32-41.
See also Watzl at tn931.14-20, tn938.4-8; Giesbrecht at tn968.28-30, tn970.4-6; Ritchey at tn559.22-30.

at 3:10pm on 12 January 2016, Davis Station time (7:10pm AEST).[305] In the intervening period there were no reliable indicators of life. The difficulty in determining the exact time of death arises due to the effects of hypothermia mimicking death.

158. Absent clear indicators to the contrary, I adopt the date and time that Captain Wood was pronounced dead by Dr Parker as my finding.

Did the time which elapsed between Paul Sutton discovering that Captain Wood had fallen in the crevasse and his arrival at the Davis medical facility contribute to his death?

159. This period can be divided into three components:
    i. The time between Paul Sutton discovering Captain Wood was in the crevasse and the arrival of the rescue crew (approximately 2 hours and 41 minutes); [306]
    ii. The time between the arrival of the rescue crew and Captain Wood being extracted (approximately 1 hour and 19 minutes);[307] and
    iii. The time between extraction from the crevasse and arrival at the Davis Medical Centre (approximately 53 minutes). [308]

Were any of these periods unduly prolonged?

<u>i.The time between Paul Sutton discovering Captain Wood was in the crevasse and the arrival of the rescue crew</u>

160. Paul Sutton acted decisively and moved quickly on discovering Captain Wood's misadventure. As consideration of the technical difficulty of the later extraction demonstrates, even with equipment, this could not have been affected by a single person. No more could have been achieved by Paul Sutton delaying his departure back to Davis.

161. It was then 55 minutes after helicopter UUI landed at Davis before take-off back to the West Shelf. Theoretically, different resources may have resulted in a quicker turnaround, such a different aircraft, an additional pilot, a pre-configured aircraft reserved solely for rescue purposes. This could be achieved if an helicopter which

[305] CB36 (*Life extinct statement*).
[306] This time has been approximated by commencing at 1600 (4 minutes prior to the 'mayday' call) and concluding at 1841 (when the TracPlus system showed helicopter UUI land back at the West Ice Shelf).
[307] This time has been approximated by commencing at 1841 (when the TracPlus system showed helicopter UUI land back at the West Ice Shelf) and concluding at 2000 (5 minutes prior to the recorded time that the helicopter departed the West Ice Shelf).
[308] This time has been approximated by commencing at 2000 (5 minutes prior to the recorded time that the helicopter departed the West Ice Shelf) and concluding at 2053 (the time recorded in CB27 (Handwritten clinical notes)).

was kept in a pre-packed, flight ready state, which had been regularly inspected, with blades attached and with a reserve pilot (or more) on standby 24 hours a day. In a remote environment such as Antarctica, the cost of such an arrangement is likely to be exorbitant.

162. More significant though is the fact that there is no single arrangement or configuration of either equipment or personnel that could be ready for every eventuality. Decisions have to be made as to how to respond to the particular emergency which has arisen. This requires an agile rather than a predetermined response.

163. In this case, person to person communication was important. It was appropriate that Bill De Bruyn speak face to face with Paul Sutton to assess his capacity to continue flying and with the wider team to ensure their understanding of the mission requirement.

164. Ensuring that Paul Sutton remained fit to fly was essential to any possible success of the rescue mission.

165. Proper preparation both for the rescue, in terms of the aircraft and on ground equipment required, and preservation of the rescuers, as to their personal equipment, clothing and sustenance, was also essential.

166. The flight times both ways could not have been hastened.

167. I am satisfied that there was no undue delay in the time between Paul Sutton discovering Captain Wood was in the crevasse and the arrival of the rescue crew at the West Shelf site.

ii.The time between the arrival of the rescue crew and Captain Wood being extracted

168. Approximately 1 hour and 19 minutes passed between helicopter UUI landing at the West Ice Shelf and Captain Wood being extracted from the crevasse. Up to 20 minutes of this period was utilised to test the site, both for helicopter UUI to set down and to ensure the safety of the rescuers. Failure to ensure the safety of the helicopter and rescuers would have necessarily resulted in failure of any rescue.

169. The work undertaken in the next hour by the three FTOs, Anthea Fisher, Marty Benavente and James Hamilton, was, on any assessment, gruelling. It was executed by three consummate professionals, diligently and courageously. Effecting the extraction of Captain Wood from the crevasse necessarily took a toll on his body. I have no doubt that it also took a toll both physically and mentally on his rescuers.

170. Similarly, Paul Sutton was actively involved in preparing the helicopter to transport Captain Wood, having already flown for a significant time over an extended, and no doubt mentally draining period, and whilst anticipating a further demanding flight.

171. There is no evidence to suggest that the rescue preparations or extraction could have been carried out faster or more effectively and I am therefore satisfied that this component was not unduly prolonged.

iii. The time between extraction from the crevasse and arrival at the Davis Medical Centre

172. Having extracted Captain Wood, the FTOs spent approximately 10 minutes assessing their next steps in light of his presentation. Such considered action was necessary. After the flight, it was also necessary to remove the helicopter door to take Captain Wood out. This and transport to the medical facility took a further 10 minutes.

173. I am satisfied this time period could not reasonably have been reduced.

174. Self-evidently, the almost five hours between Captain Wood falling into the crevasse and the commencement of specialist medical assistance contributed to his death. Earlier extraction and warming may have saved him. But sadly, it was not possible in the exigencies of his situation. There is no identifiable room for improvement within identified resource constraints and no compelling argument for more or different resources on the evidence in this case.

Were there any suspicious circumstances surrounding Captain Wood's death?

175. Initially, I was concerned as to why Captain Wood was left in the crevasse without any efforts to extract him. That concern was entirely misguided. Any notions of suspicion regarding the circumstances of Captain Wood's death were dispelled upon receipt of the full brief of evidence. What became apparent throughout the inquest is that all those involved are to be commended on their efforts notwithstanding the tragic outcome.

Factors which may/may not have contributed to Captain Wood's death?

The adequacy of reconnaissance or appreciation of risks of the fuel cache site

176. This issue was contested as it relates to the adequacy of the training pilots received, the proper delineation of roles and the debriefing process.

Counsel Assisting Submissions

177. Counsel Assisting submitted that the establishment of the fuel cache site and the lack of consideration and appreciation of its inherit risks is a cause for concern and directly

contributed to Captain Wood's death. Counsel Assisting submitted that 'from the moment of establishment of the site to the moment Captain Wood fell into the crevasse, the lack of attention was palpable.' [309]

178. The West Ice Shelf fuel cache site was approximately 15 metres by 40 metres and was not clearly defined. It was inappropriate for future use. The absence of markings delineating the boundaries of the previously sighted fuel cache site meant that it was entirely possible that subsequent helicopters could land nearby the existing drums but in an unsighted area. This was all the more likely when multiple helicopters attended the area. As was discussed by Bill De Bruyn, accounting for the length of the sling lines and the dimensions of the helicopters, such a fuel cache site should be a circle (with the fuel drums in the middle) with a radius of approximately 45 metres.[310] As opposed to the approximately 600m2 observed by Bryan Patterson, that would require a circular area of approximately 6362m2.

179. In order to reduce the size of a fuel cache site but ensure safety of those attending, boundaries must be clearly delineated. Indeed, subsequent to this incident, the revised *AAD Field Guidelines – Helicopter Crevasse Probing* (which are clearly premised on the boundaries of the site being appropriately marked[311]) provide: "The safe zone dimensions should be as required for the task e.g. single helicopter 15m x 15m; two helicopters 15 x 36m. These measurements also allow for a fuel depot to be placed.

180. Counsel Assisting submitted that the trip to the fuel cache site on 28 December 2015 and the lack of action which followed was similarly concerning. Counsel Assisting formed the view that pilots were trained to land on blue ice, such as that identified at the fuel cache site. Having observed and photographed crevassing and even having rolled a fuel drum across a crevasse, no real concern was raised by either Paul Sutton or Captain Wood. No formalised debrief was conducted despite the considerations listed in the 'Air Task - Risk Assessment' form, and no concern was raised in any strong sense otherwise. The height of concern appears to have been the relaying of Captain Wood's comment along the lines of "better the devil you know then the one you don't". That comment should have triggered some inquiries, given it only makes sense if there was a 'devil' at the site.[312] However, without more, and seemingly taken

[309] Counsel Assisting closing submissions dated 17 October 2024 [137].
[310] Tn904.24 to tn905.3.
[311] CB240 at 6.0. Note also the comparison with former documents contained at Annexure 12 of CB258 (Statement of Gales) which refers to CB225 (AAD SOP Op Manual Vol 5 – Aviation) at pg18 and CB222 (AAD SOP Op manual Vol 1 Ch4) at 4.6 (neither of which contain such dimensions).
[312] Note tn412.10-15, which includes Labudda being asked what the expression meant and answering "Just that there's blue ice. It's what – you know, what you see is what you get." See also at tn428.28-31 where Labudda

as a more generalised comment, no inquiries ensued, and it was conveyed to Bill De Bruyn that the pilots were satisfied with the site.

The Commonwealth's position

181. The Commonwealth disputed the characterisation of the debriefings as 'lacking formality'.[313] The Commonwealth submitted that daily documented debriefs occurred including on 28 December 2015. [314] Further, the Commonwealth submitted that the evidence supported a finding that the crevasse Captain Wood fell into was the same crevasse he observed and took pictures of on 28 December 2015. [315] The Commonwealth also disputed Counsel Assisting's submissions regarding a lack of consideration and appreciation of the inherent risks of the West Ice Shelf fuel cache site. [316] The Commonwealth submitted that a safer site was not identified in the criminal proceedings. It was also not put to the pilots or AAD personnel that there was a lack of attention paid to its establishment and relevant safety of the site. [317] The Commonwealth also dispute Counsel Assisting's comment that there was no regard to snowfall at Davis (and possibly the fuel cache site) preceding the incident.[318] The Commonwealth put to me that the reference in ATRA13492 of "snow landing" was evidence of the contemplation of this risk. [319]

Bill De Bruyn's position

182. In closing submissions Bill De Bruyn agreed with Counsel Assisting's proposition that a debrief following the visit on 28 December 2015 would have assisted to identify the presence of crevasses, and guided decisions about future use.[320] Bill De Bruyn submitted further that it was incumbent on Captain Wood and Mr Sutton to report the hazards and failure to do so limited the ability to control risks. He further posited that the reliance on the expertise of pilots to safely assess proposed landing sites is to be preferred over relying on older maps which lack useful details in regard to known crevassing and are therefore not capable of reliably informing risk assessment processes.[321] Ultimately Bill De Bruyn submitted that Counsel Assisting's claims of inadequate reconnaissance and risk assessments at the fuel cache site disregards

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said that she took the combination of blue ice and 'the devil you know' comment "as a good thing that they were happy with the site." See also at tn458.33-40.
[313] Commonwealth closing submissions dated 29 November 2024 [61] – [65].
[314] Ibid [67].
[315] Ibid [74].
[316] Commonwealth closing submissions dated 29 November 2024 [85].
[317] Ibid [86] – [92].
[318] Ibid [71].
[319] Ibid [72].
[320] Bill De Bruyn closing submissions dated 29 November 2024 [2.17].
[321] Ibid [2.8-9].

AAD policies which rely upon the expertise of helicopter pilots to conduct risk assessments and establish these sites.[322]

183. In relation to Counsel Assisting's distinction between blue ice and infiltration ice, Bill De Bruyn clarified use of the word "blue ice" for AAD expeditioners as identifying safe areas on the surface, namely, clear ice without cover where hazards could be observed. [323]

Paul Sutton's position

184. Paul Sutton refuted the submission that because a 360 degree clockwise orbit of the site was not undertaken on the day of the incident a thorough reconnaissance was not conducted.[324] Paul Sutton noted that reconnaissance can be undertaken in various forms, depending on the site, and subject to the discretion of the pilot.[325]

185. Paul Sutton agreed that he ought to have alerted Davis Station personnel as to the cracks and crevasses identified during his previous visit to the fuel cache site on 28 December 2015, despite this not properly being a pilot responsibility to conduct these assessments.[326] Paul Sutton submitted that this 'simple human error', however, may have been rectified with appropriate procedures and systems, such as subsequent proving of the site by someone with appropriate expertise, it being geographically defined, and then re-assessed having regard to the dynamic environment in which it was located. [327]

186. Paul Sutton submitted that there was a lack of specific training received by pilots in relation to identifying, surveying or proving locations in deep field Antarctica to conduct safe landing.[328] Instead, pilots received only basic survival training and ad hoc familiarisations. Paul Sutton posited that the role of pilots, upon reviewing the structure of authorisations required to operate outside Davis Sation, as well as the HeliRes Manual relating to crevassing, was properly confined to finding a safe landing site for a helicopter. It had become accepted practice, however, that this responsibility extended to selecting, assessing, proving and approving sites where expeditioners were to disembark from the aircraft and walk around (e.g. establishing fuel cache sites in deep

[322] Ibid [2.14].
[323] Ibid [2.2-3].
[324] Paul Sutton closing submissions dated 29 November 2024 [45].
[325] Ibid [45].
[326] Ibid [20].
[327] Ibid [28]-[29], [41]-[42]).
[328] Ibid [15]

field). This role was a responsibility which must have been properly born by AAD, particularly FTOs, who were skilled and equipped with the appropriate knowledge.[329]

Dr Gale's position

187. Dr Gale's submitted that Captain Wood and Paul Sutton had adequate knowledge of the fuel cache site by virtue of their training, experience and previous attendance to be aware that crevassing was present at the site and the risks associated with that. [330]

188. Dr Gale's further put that the evidence does not support a conclusion that any particular change in procedure, or any negligent action or omission of an individual, would have changed the outcome on 11 January 2016.[331]

189. Dr Gale's rejects Counsel Assisting's proposition that Captain Wood's death can be attributed to complacency on the basis that this submission is unsupported on the evidence.[332]

HeliRes' position

190. HeliRes disagreed with Counsel Assisting's criticisms of risk management processes in relation to the fuel cache site. They contended that the evidence instead supports a finding that processes were in place to ensure proper consideration, appreciation and assessment of risks, particularly in the form of air task risk assessment forms, daily flight logs and air task risk assessments.[333]

191. HeliRes agreed with Dr Gales' submission that Captain Wood and Paul Sutton were trained specifically in relation to crevasse sighting.[334]

The FTO's position

192. The FTOs dispute Counsel Assisting's submission that the pilots were trained to land on blue ice by FTOs. Rather, they submit that pilots were taught how to identify suitable terrain for landings, with an important feature being a lack of snow cover. [335]

193. The FTOs submit I should find that the conversation between Bryan Patterson and Marty Benavente in regard to the landing on the West Ice Shelf on 8 December 2015

[329] Ibid [15] – [23].
[330] Dr Gale closing submissions dated 29 November 2024 [6]-[9].
[331] Ibid [19].
[332] Dr Gale closing submissions dated 29 November 2024 [20].
[333] HeliRes closing submissions dated 02 December 2024 [22] – [24].
[334] Ibid [19].
[335] FTO closing submissions received 12 December 2024 [7].

[336] was an informal one and was not intended to determine if the landing spot was suitable as an ongoing fuel cache site.[337]

Findings

194. I find the reconnaissance of the West Ice Shelf fuel cache site and an appreciation of the risks both by the pilots and AAD staff were inadequate. This was attributable to a misapprehension by AAD staff of the pilots' skill set and a failure on the part of both the pilots and AAD staff to identify and address the particular risk posed by the crevasse which had in fact been identified by Captain Wood and Paul Sutton on 28 December 2015.

195. On 28 December 2015, Mr Sutton had informally reported the presence of small cracks at the fuel cache location to Ms Labudda and relayed Captain Wood's comment that it was "better the devil you know than the devil you don't". She in turn had relayed Captain Wood's comment to Mr De Bruyn. These comments indicate a possible risk but both Mr de Bruyn and Ms Labudda, consistent with then policy, relied on the pilots to assess the safety of the site, and had been reassured that the pilots had no concerns. Thus, there had been no (or at least no recorded) consideration of how this risk was to be managed. Whilst the pilots were trained and responsible for managing this in terms of landing the helicopter, it appears they were not sufficiently trained to identify and manage the risk once operating outside the landed craft.

196. It follows, that I do consider that the failure to properly identify and mitigate the risk posed by the presence of crevassing at the West Ice Shelf contributed to Captain Wood's death. The risk was identified by him as 'the devil you know' but not safely addressed by him on the day of his fall into the crevasse. The risk was subsequently not properly recognised by AAD staff who operated on the belief that Captain Wood's absence of expressed concerns inferred that the site was suitable. Had this risk been properly considered, arrangements could have been put in place such as: abandoning that site in favour of another (with unknown outcomes); or having FTOs prove the site proximate to its use, either in a separate expedition or as part of the sling loading mission (noting that the latter was not then allowed at that time because of the AAD's interpretation of CASA regulations as not allowing a passenger in an helicopter during sling loading missions).

[336] Ibid [13].
[337] Ibid [11] – [13].

197. I am optimistic that changes implemented by AAD since Captain Wood's death are well-placed to prevent a similar issue arising in the future. Those changes are as follows.

Field Location Assessment Group

198. Since Captain Wood's death, a committee, known as the 'Field Location Assessment Group' (FLAG), has been established to "undertake environmental and hazard assessment of identified locations to enable the delivery of a field site assessment report."[338] It is envisaged that those reports will assist in the planning of projects and will ordinarily be completed prior to the commencement of the season, although provision is made for the completion of such reports during the season. The committee will examine existing products (including imagery) and has the discretion to purchase further imagery or analysis. Notably, the Terms of Reference for the committee contemplate the engagement of experts, including glaciologists.

Risk Assessment

199. The 'Air Task - Risk Assessment' form has been subject to some, relatively minor, revision.[339] The changes include a question as to whether the landing site is classified as 'dynamic' and subsequent fields for information relating to the assessment of, and last visit to, such site. The Aircraft Tasking Considerations (previously located on the inside of the covers of the book of forms) now forms part of the form itself, hopefully making it less likely that a practice of inadvertence will develop.

200. Notably, "[c]onduct thorough pre and post task briefing to examine hazards and the effectiveness of controls"[340] remains on the 'Additional Tasking Considerations & Controls' document. However, contrary to the practice in the immediate lead-up to Captain Wood's death, the requirement for post task debriefing has been formalised by way of the implementation of Field Landing Site assessments and post aviation operations debriefs.

201. Vol 5 – Aviation Standard Operating Procedures (**the ASOP**) mandates (at [5.1.2]):[341]

[338] CB280 at pp471-474 (Field Location Assessment Group (FLAG) Terms of Reference).
[339] See at CB280 pp152-155.
[340] Note that the version as at 11 January 2016 referred to 'briefings' as opposed to 'briefing' but otherwise the wording remains the same.
[341] CB280 at pg134.

> The tasking officer and the senior pilot must undertake a Post Aviation Operations Debrief (Appendix E) at the first suitable opportunity post aviation operations and prior to undertaking further aviation operations on a subsequent day. The debrief will pertain to the days ATRA's (separate debriefs for rotary and fixed wing) and documented in plain English covering any adjustments/amendments required prior to next Aviation Operation.

202. The form found at Annexure E[342] contains fields for the relevant parties to comment on what operations occurred, what went well, what didn't go well, and improvements/changes/steps required prior to the next operation. A series of eight checkboxes follow, the second of which reads "[a]re there any safety or environmental issues to report?"

203. The ASOP provides (at [3.6]) for a 'Field landing site and fuel cache database'.[343] That database is 'available to all aviation contractors' and 'incorporates data from field landing site reports, which are completed by the pilot-in-command and/or the field training officer inspecting the field landing site.' Appendix D to the ASOP is the 'Helicopter field landing site report' form.[344] That form requires the provision of various information including location, date and time visited, dimensions, a description of the site and identified hazards. The form contemplates its use in relation to fuel caches, specifically providing for details of the cached fuel.

204. The establishment of a fuel cache further requires the completion of the 'Fuel cache establishment checklist' (Appendix F).[345] That form appears, however, to be predominantly focused on the potential environmental impact of the fuel cache, as opposed to the safety of individuals visiting the site.

Site Assessment of Dynamic Terrain

205. Part 4.14 of the Operations Manual Volume 1: Station and Field – Chapter 4 Field Operations (2023-24) provides that "[d]ynamic terrain is terrain that is subject to crevassing caused by movement in the underlying ice sheet." It requires a specified site assessment process to be undertaken prior to an expeditioner being allowed on dynamic terrain. Importantly, there is a presumption that all of the Antarctic ice sheet is dynamic terrain until proven otherwise.[346] The manual provides for a set process to

[342] See at CB280 pp161-162
[343] CB280 at pg129.
[344] See at CB280 pp159-160.
[345] See at CB280 pg163.
[346] CB280 at pg87.

evaluate 'unproven terrain'[347] which involves a planning phase (involving FLAG), an aerial reconnaissance, an on-site assessment, and a report (to be completed by an FTO). There is a reassessment requirement after six weeks (or a shorter period in some circumstances) the requirements of which "will be determined on the ground".

The adequacy of Captain Wood's clothing for the conditions, including any policy, rules or enforcement thereof in relation to appropriate environmental protective clothing

206. It is one thing to provide workers with personal protective clothing and equipment. Sadly, its practical use is often an entirely different matter. This case is such an example.

207. As Professor Gordon Giesbrecht logically observed, the 'cooling conditions', which include clothing worn, contribute to the period of survival. The difficulty here is, of course, the unsuitability of the issued clothing for piloting a helicopter, particularly while conducting sling loading operations. HeliRes had not considered it necessary to address this particular issue in its policies. AAD policy only required pilots to have their survival kit with them but did not require them to wear it. Consequently, pilots adhered to the policy by wearing lighter clothing and having their survival kits in their helicopters.

208. Counsel Assisting submitted that the clothing Captain Wood wore was inadequate to protect him against the harsh conditions within the crevasse.[348] It is understandable, however, that he chose to wear such clothing given the relative warmth inside the helicopter, the impracticality of wearing the survival clothing, and the short periods that pilots often spent outside of their helicopters. While an option would have been to don more clothing prior to exiting the helicopter, given the short periods outside and the relatively confined space inside the helicopters, not doing so was an enticingly practical option.

209. HeliRes agreed that heat fatigue and impediments on visibility and manoeuvrability meant pilots did not wear survival suits or full thermal protection clothing whilst piloting sling load operations.[349] HeliRes also submitted that storing the survival bags or additional clothing in the cockpit was not practical as it could move into flight controls during turbulence or be accidentally removed from the aircraft by passengers.[350]

[347] 'Dynamic terrain' is categorised as either 'unproven terrain' or 'managed routes and areas' (see [4.14.3]).
[348] Watzl, Giesbrecht and Brock at tn925.36 to tn926.24.
[349] HeliRes closing submissions dated 02 December 2024 [10] – [17].
[350] Ibid [10] – [17].

210. The availability of clothing which was more fit-for purpose may have been attractive to the pilots and, if worn, have increased the period that Captain Wood could survive inside the crevasse.

211. I find that the clothing worn by Captain Wood at the time of his death, albeit within his discretion, was inadequate for the conditions and contributed to the level of hypothermia he suffered prior to extraction.

212. Significantly, the AAD has implemented changes to pilots' clothing and equipment since Captain Wood's death.[351] Restrictions have been imposed on pilots in relation to the clothes that they wear and carry. Whereas pilots had been required simply to have their survival kits on board, Vol 5 –ASOP at [6.3] now specifies the clothing to be worn by aircrew (including a flight suit approved by the AAD), additional items that must be accessible within the cabin of the aircraft, and items to be carried in personal survival kits. Further, pilots are required to wear either a down jacket, a waterproof shell jacket, or insulated workwear (or combination) "[w]hen exiting the aircraft in areas assessed as having evidence of crevassing present".[352]

<u>The adequacy of rescue training and procedures on a mission, in particular in relation to the other pilot (Paul Sutton) in attendance</u>

213. There was some dispute in closing submissions as to the adequacy of rescue training for mission participants other than the allocated search and rescue team members, particularly pilots having regard to this situation.

Counsel Assisting Submissions

214. Counsel Assisting submitted that ideally, rescue training would be afforded to a very wide range of expeditioners. Practically, however, training takes time and costs money. It is also unlikely to be utilised by the majority of expeditioners. Decisions must be made as to who receives what training as not everyone can be trained to do everything. Consideration must be given to the role of, and potential risks faced by, each person. Given, however, the unique role of helicopter pilots, both in their travels in the 'deep field' and their likely involvement in a variety of rescue and emergency situations, the training afforded to them ought to be carefully considered.

[351] Dr Gale closing submissions dated 29 November 2024 [15] – [16].
[352] CB280 at pg138. Note that the AAD Field Manual 2023 at pg43 (CB280 at pg277) states that "Pilots and crew are required to wear AAD approved clothing." Similar statements are also found at pp197 and198 (CB280 at pp431 and 432).

215. Turning to the present case, Paul Sutton had only basic survival training. He, as with the other helicopter pilots, was not required to undertake broader training. He was not trained in, nor did he have the equipment for, a crevasse rescue. Importantly, on his own, regardless of what training he may have had, he would have been incapable of perfecting a rescue of Captain Wood. However, had he been more significantly trained, he may have more readily been incorporated into the rescue efforts once he and the FTOs returned to the scene. Conversely, where he was the only means of transport, it would have been open to safeguard him by keeping him away from the rescue efforts. More generally, for other situations where the person to be rescued is not one of the two helicopter pilots, further training of helicopter pilots would increase the number of rescuers available given the limited payload of the helicopters. Similarly, providing advanced training to the resident doctor would allow them to be part of the rescue crew and therefore be on hand to provide specialised medical treatment as soon as possible.

The FTOs' position

216. The FTOs dispute the submission that at the time of the incident, there was not a trained Search and Rescue Team. Rather, they put to me that they were the appropriately trained Search and Rescue Team.[353] On the day of the incident, the FTOs were training a team of six people who would be spending the winter at the station in their emergency response capabilities.[354]

The Commonwealth's position

217. The Commonwealth submitted that Counsel Assisting's criticism of the adequacy of rescue training for pilots and doctors was never put to witnesses and should be rejected as not supported by evidence.[355] The Commonwealth further submitted that Counsel Assisting's suggestion that pilots and doctors should receive technical training in order to participate in any technical rescue fails to comprehend the criticality of pilots and doctors core roles and the distinct responsibilities they are required to perform separate to the rescue team.[356]

Findings

218. It is important to appreciate that those deployed to the AAD with specialist roles, such as pilots, will generally have less expertise in other functions such as search and

[353] FTO closing submissions received 12 December 2024 [7].
[354] Ibid [7].
[355] Commonwealth closing submissions dated 29 November 2024 [98].
[356] Commonwealth closing submissions dated 29 November 2024 [98].

rescue, for which others are specifically trained. However, there needs to be a balance between specialist function and the need for location based skills, having regard to the particular environment. Finding that balance is no doubt an art, not a science, informed by experience, including Captain Wood's tragic death.

219. The AAD has already engaged in reflection and modification of its policy as is evident in *The AAD Field & Emergency Response Training Guideline 2023* volume 17.0. This Guide provides for more substantial training of pilots and formalises some previously informal practices. All helicopter pilots are now required to undertake a Station Operating Area Aerial Recce, Aircrew Survival training, Dynamic Terrain training, and Aircraft Crevasse Probing training. That is in addition to the requirement for all expeditioners who will be present for more than two weeks to complete Survival training and Sea Ice Travel training, and for those who will be present for more than six weeks to complete Field Travel training (and other mandated training dependent upon location and role).[357]

220. The topics covered in the above training modules are prescribed by the guideline, as are the periods for which they remain current. Notably, Dynamic Terrain Awareness training, which includes 'Terrain assessment' is required to be completed by helicopter pilots each season. The outline reflects a focus on crevasses, indicating that "[t]his flight will be conducted in areas where crevasses may be prevalent…".[358]

221. I find that whilst the availability of broader search and rescue training to all participants on mission could be beneficial, the lack of it, in particular for the base doctor and Paul Sutton, was not inappropriate. Nor did the lack of such training impede rescue efforts for Captain Wood, which were appropriately executed by the available FTOs.

Prohibition on Solo flights to Dynamic sites

222. It is also noteworthy that there are now an array of circumstances where appropriate crew members must be carried. Most relevantly, it is now specified that "[l]one pilot operations cannot be conducted to unmanned locations" and "helicopter operations to a dynamic site requires the pilot and essential crew member to have completed the Dynamic Terrain Awareness Training."[359]

223. These changes in procedure assists to bring the requirements for helicopter pilots into line with other expeditioners. In this regard, it is noted that the stipulation in the *AAD*

[357] CB280 at pp203-204 (AAD Field & Emergency Response Training Guideline 2023 v17.0 at [2.9])
[358] CB280 at pg197 (AAD Field & Emergency Response Training Guideline 2023 v17.0 at [2.5.3]).
[359] CB280 at pg142 (Vol 5 – Aviation Standard Operating Procedures at [8.4]).

Field Manual 2015 that the "[m]inimum group size for deep field operations is usually three people" was not applied to pilots.[360] The *AAD Field Manual 2023* is more directive, providing simply that the "[m]inimum group size is 3 people."[361]

224. The application of these safety measures will no doubt enhance pilot safety, including by improving hazard detection, better equipping pilots for emergencies in the field and providing additional assistance to pilots in that context.

The unavailability of FTO to assess for the presence of crevassing

225. I noted earlier the issue that arose on the evidence about the effect of not having FTOs available to assess for crevassing when sling load operations were being carried out.

226. This *Civil Aviation Order* 29.6 Order was repealed in December 2021.[362] That enlivened the potential to draw upon the knowledge and experience of FTOs while simultaneously transporting fuel (or other goods by sling line).

227. I conclude that had arrangements been available for FTO assistance, either when first identifying a fuel cache location or, more especially, when effecting a sling load delivery, it is far more likely that crevassing would have been identified and appropriate measures taken to avoid this outcome. This may have been more careful placement of the load or indeed abandonment of this fuel cache site in favour of a safer alternative.

228. As to how this issue may be addressed in future, I note, that crevasse probing generally requires two FTOs. The additional weight of passengers necessarily decreases the otherwise available payload of the helicopter. Careful consideration must be given as to how the FTO expertise can be harnessed for the greater protection of pilots engaged in sling loading, whether that be by enhanced pilot training, ensuring that it is possible to have FTOs accompanying the mission, howsoever that might be achieved, or in some other way.

The adequacy of policy in relation to leaving the person in need of rescue unattended

229. Counsel Assisting submitted that in other situations, it may be desirable not to leave a trapped and/or injured person alone. A person who remained in attendance could, for example, provide a means of communication, moral support, first aid, and initiate the

[360] See CB220 (AAD Field Manual 2015 at pg9).
[361] CB280 at pg260. Note also Operations Manual Volume 1: Station and Field – Chapter 4 Field Operations (2023-24) at [4.3.5] (CB280 at pg24) which provides for a minimum party size of three for the deep field (without exception).
[362] Following this incident, a different interpretation had been given to CAO29.6 by the AAD (so as to allow an FTO to fall within one of the exceptions) – see per Gales at Crim tn768.22-31. See also CB258 (Statement of Gales) at Annexure 12.

setup of a rescue attempt. Where, however, the only other person represents the only transport to and from the scene, there is little choice but to leave the person unattended. To do otherwise would be to deprive the person of a rescue attempt.[363]

230. Paul Sutton concurred with this view, submitting that there was little utility in him remaining to communicate with Mr Wood and acquire more information; this would have only delayed the rescue,[364] and I so find.

The adequacy of the available transport for the attending rescue team, including sufficiency of the arrangement in relation to number, qualifications and of personnel and equipment requirements

231. Counsel Assisting submitted that there were limitations imposed by the transport available to the rescue party. Helicopters with greater capacity, or a greater number of available pilots and helicopters, would have made it possible to transport more people and equipment to the site. Ideally, at least six rescuers, a doctor, and further medical equipment would have been transported to the West Ice Shelf. In circumstances, however, where there are only two helicopter pilots, the incapacitation of one will necessarily limit the resources available to the rescue party.

232. At the time of the incident, the entire available payload of helicopter UUI was filled by experienced FTOs.

233. Whilst Pilots in the AAD face inevitable risks, a pilot becoming stuck in a crevasse is a unique situation.[365] I am satisfied that even another pilot and helicopter (not prepacked) would have been unlikely to have made any significant difference to the timing of the rescue attempt and ultimate outcome for Captain Wood, given the time required for FTOs to prepare for the specific rescue operation.

The adequacy of liaison arrangements with other bases for involvement in a rescue

Counsel Assisting Submissions

234. When considering the arrangements with other bases, the vast distances on the Antarctic continent must be borne in mind. Those distances necessitate long travel times and thereby reduce the utility of resources at other bases. Bill De Bruyn outlined good relationships with counterparts at other (international) bases, albeit initial efforts

[363] Counsel Assisting closing submissions dated 17 October 2024 [148].
[364] Paul Sutton closing submissions dated 29 November 2024 [10].
[365] Gales gave evidence that he was not aware (up to January 2016) any other AAD flight that resulted in injury or death caused by a crevasse – see at Crim tn806.6-9
See also per English at tn92.21-24 and per Lomas at Crim tn1383.20-22.

at contacting the Chinese base were unsuccessful.[366] Ideally, formalised mechanisms could be put in place with other (international) bases, however this would require significant inter-jurisdictional cooperation.[367] In the present matter, the personal relationship established by Bill De Bruyn with a member of the Chinese base (Tijun) was sufficient to allow contact through informal means and to have members of the Chinese base readying their resources promptly.[368] The vast distances (combined with the need to prepare a helicopter), however, were such that utilising Paul Sutton was deemed to be the most expeditious way to proceed. Some comfort must have been gained, however, from the availability of resources to perform a further rescue if anything happened to Paul Sutton or helicopter UUI.

The Commonwealth's position

235. The Commonwealth disputed the submission that formal mechanisms could be put into place for interjurisdictional cooperation between bases on the basis that it was both irrelevant, in a causal sense, to the death of Captain Woods, and it fails to comprehend the true position. The Commonwealth submitted that, there exists, and has existed for many years, formal emergency and search and rescue arrangements with other nations present in Antarctica. These arrangements are coordinated by the Council of Managers of National Antarctic Programs (COMNAP) at annual meetings and put into practice via regular workshops and exercises – including three yearly search and rescue specific workshops. The AAD annually coordinates information and capability sharing between nations in East Antarctica. Moreover, the ADD maintains a Memorandum of Understanding (MOU) with the Australian Maritime Safety Authority (AMSA) for SAR Coordination in Antarctica. This MOU provides for AMSA coordination of international assets. It is regularly reviewed and exercised and includes links to adjoining New Zealand and South African Search and Rescue Regions.[369]

Findings

236. I find any such arrangement had no direct relevance to the outcome in this matter.

Could any aspect of the medical assistance provided to Captain Wood have contributed to his death?

[366] See, for example, tn887.32-40. Note also Eccles at tn496.12-31.
[367] It is noted that the AAD is involved in frequent meetings with representatives from other countries which, inter alia, include discussion of safety issues – see per Gales at Crim tn799.34-39, Crim tn800.10-25.
[368] It is noted that AAD headquarters in Kingston were also contacting other countries – CB11 (Interview with Clifton) at Q&A37, 173.
[369] Commonwealth closing submissions dated 29 November 2024 [101].

237. In making my findings, I consider the three contested issues below.

First aid provided at the scene

Counsel Assisting Submissions

238. Counsel Assisting submitted that limited first aid was provided at the scene. Captain Wood was placed in a hypothermia bag with hot water bottles and stretchered to the helicopter. While a more reliable source of heat may have been preferable, it cannot be said that any inadequacy in the first aid provided contributed to Captain Wood's death. A question arose in relation to Captain Wood's damp clothing not being removed. In considering this, the difficulties of doing so without exposing Captain Wood to the harsh Antarctic environment for a significantly longer period must be borne in mind. Those environmental considerations must negate any criticism for not removing the damp clothes while at the scene.

The FTO's position

239. The FTOs submitted that the rescuers could not have extracted Captain Wood more gently.[370] Exertion of force was necessary and the particular shape of the crevasse limited use of a stretcher or reliance on the horizontal position.[371]

240. In relation to the decision not to remove Captain Wood's damp clothes, the FTOs support the submission of Counsel Assisting to the effect that the difficulties of removing his clothes on the ice, which would have involved continuing to expose Captain Wood to the harsh Antarctic environment for a significantly longer period, must be borne in mind; and that this must negate any criticism for not removing the damp clothes at the scene.[372]

241. In all the circumstances, the FTOs consider that it is open to find that the first aid administered to Captain Wood was appropriate.[373]

Medical assistance during the evacuation process

Counsel Assisting Submissions

242. Administering CPR to a person who still has a heartbeat can have an adverse impact.[374] Consequently, had Marty Benavente commenced CPR upon Captain Wood while he still had a faint pulse, it may have contributed to cardiac arrest. In the

[370] FTO's closing submission received 12 December 2024 [21].
[371] Ibid [26], [28], [31]-[33].
[372] Ibid [42].
[373] Ibid [42].
[374] Giesbrecht at tn944.26-38.

absence of effective monitors, the only way to make an assessment as to whether Captain Wood still had a pulse was by manually seeking to find one. Marty Benavente undertook such an exercise and was unable to detect a pulse. Further, given the sudden change in posture, it is probable that Captain Wood suffered cardiac arrest shortly after being placed in the helicopter (and prior to CPR being commenced). Consequently, it is unlikely that the provision of CPR (or other first aid) contributed to Captain Wood's death.

243. In relation to the potential removal of damp clothes, it must be remembered that this is no small task. Marty Benavente was effectively alone during the flight and in the close confines of a small helicopter. Further, the administration of CPR was occupying him. Whether the clothing could have been removed in the helicopter prior to lift-off (ie utilising the other FTOs) is unclear. However, it would have remained a considerable undertaking and would have slowed the transit to Davis. Ultimately, it is unlikely that not removing the damp clothes had any material bearing on Captain Wood's death. [375]

The FTOs' position

244. The FTOs ultimately submitted that the first aid administered by them, particularly in relation to commencing CPR, was appropriate. This is especially where they observed no signs of life.[376] The FTOs posited it was open to find that their conduct did not contribute to Captain Wood's death, but in fact improved his chances of survival.[377] This is a rejection of the conclusions offered by Professor Giesbrecht, as set out in Counsel Assisting submissions.[378]

Medical treatment at Davis

Counsel Assisting Submissions

245. The treatment at Davis by Dr John Parker and his lay team was prolonged and significant. They had the assistance of the Polar Medicine Unit (by phone) and were guided by a wide range of experts in the treatment of Captain Wood. The treatment was sustained for approximately 18 hours and until such time as it was deemed to be appropriate to cease. These were significant efforts against all the odds, perhaps best summarised by Dr Roland Watzl who said that it was "trying to clutch victory from the jaws of defeat".[379]

[375] CB276 (Hot tub document) at [l]; Brock, Watzl and Giesbrecht at tn948.29 to tn949.8.
[376] FTO's closing submission received 12 December 2024 [38].
[377] Ibid [45].
[378] Counsel Assisting closing submission dated 17 October 2024 [118].
[379] Tn716.24-25.

Findings

246. There is no basis to criticise either the first aid or ongoing medical treatment provided to Captain Wood. The efforts of all involved were considered, prolonged and heroic, despite the tragic outcome.

Coronial Arrangements in Antarctica

247. As part of his role as Station Leader, Bill De Bruyn was appointed as a Deputy Coroner[380] and Special Constable.[381] He was provided with brief information which outlined some of the functions and responsibilities of a Coroner.[382] That information was limited and unlikely to provide any meaningful assistance to a person who was unexpectedly required to act as a Deputy Coroner. In the present matter, as an experienced police officer, Bill De Bruyn had a history of performing investigative functions and was thereby better placed to know where to focus his attention.

248. A more substantial issue arises in relation to the conflict of interest which will invariably arise when the Station Leader, who has ultimate responsibility for all personnel, needs to step into the roles of Coroner and investigator.[383] Adding a further dimension to that conflict, the close confines of the station result in regular interactions with all expeditioners.[384] Consequently, a person in Bill De Bruyn's position is called upon to investigate the death of a person for whom they have ultimate responsibility and who they know personally, in circumstances where their own conduct (or the conduct of people they know) may be called into question. Presenting yet a further complication, during and after this process, the Station Leader remains living and working with those who they are investigating.

249. While there is no suggestion of wrongdoing in the present matter, the opportunity for bias is evident. A Station Leader could skew the investigation to remove themself, or someone who had their favour, from the focus of the investigation. Unconscious bias may also act, for example, to focus the Station Leader's attention on someone who has had prior disciplinary issues or with whom there has been interpersonal conflict. Further, if there has been some form of oversight by the Station Leader, they may remain blind to it.

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[380] CB99 (Deputy Coroner Oath); CB104 (Station Leader Legal Briefing) at pg25.
[381] CB104 (Station Leader Legal Briefing) at pg19.
[382] CB104 (Station Leader Legal Briefing) at pg25.
[383] It is noted that a number of other people were appointed as special constables, including the deputy station leader - CB104 (Station Leader Legal Briefing) at pg25
[384] De Bruyn described it as living in a "fish bowl" – see tn752.5-6, tn875.20-21, tn889.16, tn908.8.

250. An arrangement which sees the Station Leader act as a Deputy Coroner is not satisfactory. It lends itself to countless potential issues of conscious and unconscious bias. Almost as importantly, it places the Station Leader in an invidious position given the confines and relationships shared with their fellow expeditioners. It must not be forgotten that the Station Leader will likely be dealing with their own grief, given their inevitable relationship with the deceased.

251. Beyond the issues identified above, the appointment of a person as a Special Constable and Deputy Coroner creates a further issue. Pursuant to s60 of the Coroners Act 1997 (ACT) a Coroner cannot be called to give evidence concerning matters coming to their knowledge while exercising their function as a Coroner. [385] Evidently, the intermingling of the roles of Special Constable and Deputy Coroner is likely to lead to difficulties should the death result in an inquest.

252. Prior to final submissions being received, the Commonwealth confirmed its position in relation to coronial arrangements as follows:

> *The AAD does not appoint Deputy Coroners as a matter of course under the Coroners Act 1997 (ACT), however the ACT Chief Minister and other ACT Ministers may appoint persons in the Australian Antarctic Territory (AAT) to be Deputy Coroners as required. There is no plan to revise or update this practice.*

253. I am comforted that the Commonwealth have accommodated this concern.

Communication with NOK

254. An issue arose as to the communication with Captain Wood's next of kin from the AAD and the Polar Medicine Unit (PMU) in Hobart. In closing submissions, Drs Watzl and Strauss, who were on duty in the PMU acknowledged and apologised for the brief delay (approximately two minutes) which occurred in providing medical information to Ms McDonald.[386] Despite this, she and Captain Wood's four children were able to say their last words to Captain Wood via telephone with the assistance of Dr Parker. [387]

255. The role of family liaison was assigned to Mr Bill English, owner of Heli-Res – who was embedded in the Crises Management Team at the AAD. Over the course of the

[385] This provision applies equally to a deputy coroner – see the definition of 'coroner' in the dictionary to the Act.
[386] Drs Watzl and Strauss closing submissions [2].
[387] *Inquest into the death of David Wood*, tn hearing dated 19 September 2017, pg.11.

incident response, the responsibility was shared by a roster of Heli-Res managers. The liaison role is identified in the AAD Crisis Management and Response Manual. [388]

256. However, a problem arose as Ms McDonald understandably reached out wherever she could to obtain information. That included her attempts to reach out to members of the Polar Medicine Unit. Their response was delayed as staff there were unaware who Captain Wood's next of kin was and were understandably cautious about releasing personal information.[389] Such delay must have caused additional anguish for her at an already very difficult time. This is an unfortunate situation, but no criticism is warranted.

257. Notably, the PMU now has access to next of kin details for all deployed personnel in Australia's Antarctic Program.

Part 7 – Conclusion

258. When an inquest takes a protracted period of time, relevant authorities may nonetheless proactively implement appropriate safeguards to ensure the wellbeing of all concerned. In this case, both the AAD and HeliRes acted quickly and appropriately to safeguard the wellbeing of helicopter pilots. In the intervening years, those safeguards have continued to evolve. Whilst it can be observed that the current suite of measures could have been in place prior to the tragic death of Captain Wood, it must be remembered that crevasses are just one risk within a hostile environment.[390] Indeed, I heard brief evidence relating to other factors which may well be more central to the concerns of pilots, including the loss of visual reference.

259. As with all risk mitigation measures, practices should be reviewed, scrutinised, and refined continually. They will only be effective if applied with due care and attention on each occasion. As has been illustrated by the unfortunate death of Captain Wood, individual and/or collective complacency may have tragic results.

[388] Commonwealth closing submissions dated 29 November 2024 [103].
[389] CB11 (Interview with Clifton) at Q&A52-61, 71, 74-82; Watzl at tn720.13-34, tn723.25-30; Strauss at tn721.42 to tn722.44.
[390] See, for eg, per Lomas at Crim tn1277.24-41, crim tn1384.11-14, and crim tn1405.3-12 regarding the dangers posed by the weather. See also per Gales at Crim tn807.17 to Crim tn808.20. Note further the comments concerning risk mitigation by Gales at Crim tn804.13-19

260. I acknowledge and deeply regret that considerable time has passed since Captain Wood's death. For Captain Wood's family engaging in the coronial process so far from their home in Canada over a protracted period has no doubt been particularly challenging and traumatic. I thank Ms McDonald for travelling from Canada and her contribution to this process. As Ms McDonald eloquently stated, "the way forward is blocked without truth". [391] The search for the truth as to the manner and cause of Captain Wood's death, albeit delayed and painful for those involved, may go some way to preventing future tragedy.

I certify that the preceding two hundred and sixty [260] numbered paragraphs are a true copy of the Findings of her Honour Chief Coroner Walker.

Associate to Chief Coroner Walker

Date: 12 February 2026

[391] *Inquest into the death of David Wood*, tn hearing dated 19 September 2017, pg. 20.