



Defence
Safety Authority

Service inquiry

Death of a RAF Service
person and serious injuries
during British Services
Mountaineering Expedition,
Pakistan July 2022

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PART 1.1

Covering note & Glossary

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PART 1.1 – Covering note

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Sep 23

DG DSA

Service inquiry into the death of a Service person and the seriously injured casualties whilst participating in the British services mountaineering expedition in Pakistan in July 2022

1. The Service Inquiry Panel assembled at Boscombe Down, on the 29 Aug 22 by order of the DG DSA for the purpose of investigating the accident involving Wg Cdr Henderson, Royal Air Force on 19 July 22 and the seriously injured casualties on 26 July 22 to make recommendations in order to prevent reoccurrence. The Panel has concluded its inquiries and submits the provisional report for the Convening Authority's consideration.

2. The following inquiry papers are enclosed:

Part 1 REPORT	Part 2 RECORD OF PROCEEDINGS
Part 1.1 Covering note and Glossary	Part 2.1 Diary of events
Part 1.2 Convening order & TORs	Part 2.2 List of witnesses
Part 1.3 Narrative of events	Part 2.3 Witness statements
Part 1.4 Findings	Part 2.4 List of attendees
Part 1.5 Recommendations	Part 2.5 List of exhibits
	Part 2.6 Exhibits
	Part 2.7 List of annexes
	Part 2.8 Annexes
	Part 2.9 Schedule of matters not germane to the inquiry
	Part 2.10 Master schedule

PRESIDENT

[Signature]

Cdr RN
President
BSME20 SI

MEMBERS

[Signature]

Capt
Panel Member 1
BSME20 SI

[Signature]

Flt Sgt
Panel Member 2
BSME20 SI

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GLOSSARY

2IC	Second-in-Command
AD	Assez Difficile (fairly difficult) ¹
AEF	Air Experience Flight
AIBN	Accident Investigation Board Norway
AIT	Alpine Mountain Instructor (Trained)
ALARP	As Low As Reasonably Practicable
AMA	Army Mountaineering Association
AMF	Alpine Mountain Foundation
AMI	Alpine Mountain Instructor
AML	Alpine Mountain Leader
AMS	Acute Mountain Sickness
AMT	Alpine Mountain Trained
AOC	Air Officer Commanding
AP	Air Publication
AT	Adventurous Training
ATSB	Australian Transport Safety Bureau
BGAN	Broadband Global Area Network
BSME	British Services Mountaineering Expedition
CAA	Civil Aviation Authority
Capt	Captain
CD	Controlled Drug
CDP	Chief of Defence People
Cdr	Commander
CM	Civilian Mountaineer
CMA	Competent Medical Authority
CMH	Combined Military Hospital
Comdt RAR	Commandant Robson Academy of Resilience
D	Difficile (difficult) ¹
D&V	Diarrhoea & Vomiting
DAIB	Defence Accident Investigation Branch
DDH	Delivery Duty Holder
DDS	Director of Defence Safety
DE&S	Defence Equipment & Support
DH	Duty Holder
DHAN	Duty Holder Advice Notice
DIN	Defence Instruction & Notice
DNA	Deoxyribonucleic Acid

¹ International French Adjectival System (IFAS) grading definitions detailed in Joint Services Publication (JSP) 419, Adventurous Training in the UK Armed Forces, Part 2, Chapter 2, Section 6 – Joint Service Alpine Mountaineering Scheme.

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DPHC	Defence Primary Healthcare
DRA	Daily Risk Assessment
DSA	Defence Safety Authority
DT	Development Team
ED	Extrêmement Difficile (extremely difficult) ²
EL	Expedition Leader
F	Facile (easy) ²
Flt Sgt	Flight Sergeant
FMed	Form Medical
GDHC	General Duty Holders Course
GMT	Greenwich Mean Time
Gp	Group
GPS	Global Positioning System
GRO	General Register Office
HACE	High Altitude Cerebral [O]Edema
HAI	High Altitude Illness
HAPE	High Altitude Pulmonary [O]Edema
HLS	Helicopter Landing Site
HQ	Headquarters
HR	Human Resources
ICU	Intensive Care Unit
IFAS	International French Adjectival System
IPCC	Intergovernmental Panel on Climate Change
JCCC	Joint Casualty and Compassionate Centre
JMES	Joint Medical Employment Standard
JPA	Joint Personnel Administration
JSAT	Joint Services Adventurous Training
JSATFA	Joint Services Adventurous Training Form Alpha
JSMC	Joint Service Mountaineering Committee
JSME	Joint Service Mountain Expedition Leader
JSMT	Joint Services Mountaineering Training Centre
JSP	Joint Services Publication
JSRCI	Joint Services Rock Climbing Instructor
JSWCI	Joint Services Winter Climbing Instructor
Km	Kilometre

² International French Adjectival System (IFAS) grading definitions detailed in Joint Services Publication (JSP) 419, Adventurous Training in the UK Armed Forces, Part 2, Chapter 2, Section 6 – Joint Service Alpine Mountaineering Scheme.

M	Metre
MBK	Missing Believed Killed
MFD	Medically Fully Deployable
MOD	Ministry of Defence
MT	Main Team
NOD	Non-Operational Death
ODH	Operating Duty Holder
PD	Peu Difficile (not very difficult) ³
PPE	Personal Protective Equipment
RAF	Royal Air Force
RAFFT	Royal Air Force Fitness Test
RAFMA	Royal Air Force Mountaineering Association
RAFVR(T)	Royal Air Force Volunteer Reserve (Training Branch)
RAR	Robson Academy of Resilience
RCDM	Royal College of Defence Medicine
RN	Royal Navy
RNRMMC	Royal Navy & Royal Marine Mountaineering Club
ROAN	Risk Owner Advice Note
RtL	Risk to Life
SDH	Senior Duty Holder
SEMS	Safety and Environmental Management System
SG	Surgeon General
SI	Seriously Injured
SME	Subject Matter Expert
SMP	Safety Management Plan
SOP	Standard Operating Procedure
SP	Service Personnel
SST	Safe System of Training
STEP	Sequence Timed Events Plotting
TD	Très Difficile (very difficult) ⁴
TDO	Training Development Officer
TLB	Top Level Budget
TSRM	Total Safety Risk Matrix

³ International French Adjectival System (IFAS) grading definitions detailed in Joint Services Publication (JSP) 419, Adventurous Training in the UK Armed Forces, Part 2, Chapter 2, Section 6 – Joint Service Alpine Mountaineering Scheme.

⁴ International French Adjectival System (IFAS) grading definitions are detailed in Joint Services Publication (JSP) 419, Adventurous Training in the UK Armed Forces, Part 2, Chapter 2, Section 6 – Joint Service Alpine Mountaineering Scheme.

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[REDACTED] [REDACTED]

UIN	Unit Identification Number
VHF	Very High Frequency
VSI	Very Seriously Injured
Wg Cdr	Wing Commander

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PART 1.2

Convening order & TORs

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Service Inquiry Convening Order-AL1

6 June 2023

SI President Hd DAIB
SI Members DSA HQ Legad

DAIB Mentor
DAIB Office Manager

Copy to:

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PS/Min(Lords)	MA/CGS	Air Inspector RAF
PS/Min(DPV)	PSO/CAS	EA/DDC Dir
PS/Min(DP)	PSO/COMD UKStratCom	DDC Head of News
PS/PUS	PSO/AOC 22Gp	DDC PR News SO1 RAF
PS/2PUS	22Gp-DRS-Dir	Air COSPers-Del Casbereave SO2
DPSO/CDS	Air 22Gp SASO	

DSA DG/SI/04/22 – Service inquiry into the death of a Service person and the seriously injured casualties whilst participating in the British Services Mountaineering Expedition in Pakistan in July 2022

1. In accordance with Section 343 of the Armed Forces Act 2006 and Joint Service Publication (JSP) 832 – Guide to Service Inquiries¹ and as Director General of the Defence Safety Authority (DG DSA), I have elected to convene a safety Service Inquiry (SI).
 2. The purpose of this SI is to investigate the circumstances surrounding the incidents, make recommendations to prevent reoccurrence, investigate the boundaries, authorities, and accountabilities of the policy and process in respect of high altitude mountaineering.
 3. The SI panel members commenced their administrative briefings at 1200 on Tuesday 23 August 2022 at the Defence Accident Investigation Branch (DAIB), B120 at MOD Boscombe Down. The SI was formally convened by me at 1000 on Thursday 25 August 2022.
 4. The SI panel comprises 3 members:

President: Commander

Members: Captain [REDACTED]

Flight Sergeant

¹ Issue 1.0 dated October 2008

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5. The Legal Advisor to the SI is **Wing Commander [REDACTED] RAF ([REDACTED])**. Technical investigation/inquiry support is to be provided by the DAIB and the nominated mentor for this SI is **Warrant Officer (WO1) [REDACTED] ([REDACTED])**.

6. The SI panel is to investigate and report on the facts relating to the matters specified in its Terms of Reference (TOR) at Annex A. The SI panel is to comply with its TORs and record all evidence and express opinions as directed therein. An initial report is to be submitted to me by **Monday 10 October 2022**.

7. Attendance at SI activities by advisors/observers, unless extended by the Convening Authority, is limited to the following:

Head DAIB – unrestricted attendance

DAIB investigators in their capacity as advisors to the SI panel – unrestricted attendance

Human Factors specialists in their capacity as advisors to the SI panel – unrestricted attendance

8. The SI panel will undertake its initial induction training at the DAIB facility at MOD Boscombe Down immediately after the SI's convening. Thereafter, permanent working accommodation, equipment, and assistance suitable for the nature and duration of the SI will be requested at a location decided by the SI President in due course.

9. Reasonable costs will be borne by DG DSA under UIN D0456A.



S J Shell CB OBE MA
Air Marshal
DG DSA – Convening Authority

Annex:

A. Terms of reference for the service inquiry into the **death of a** Service person and the seriously injured casualties whilst participating in the British Services Mountaineering Expedition in Pakistan in July 2022.

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Record of Changes

Date	Change No.	Detail	Made by
6 Jun 23	AL1	<p>Change of title from 'Missing believed killed' Service person to 'death of a Service person - <i>Changed due to confirmation of death and issue of death certificate on 19 Dec 22.</i></p> <p>Change Annex title from 'missing believed killed' to 'death of a Service person' – <i>Changed due to confirmation of death and issue of death certificate on 19 Dec 22.</i></p>	SI SO1 SI SO1

**Annex A To
DSA DG/SI/04/22 Convening Order AL1
Dated 25 August 2022**

Terms of reference for the service inquiry into the death of a Service person and the seriously injured casualties whilst participating in the British Services Mountaineering Expedition in Pakistan in July 2022

1. As the nominated panel for the subject Service Inquiry (SI), you are to:
 - a. Investigate and, if possible, determine the cause of the accidents, together with any contributory, aggravating and other factors and observations. You should also, where possible, gather information and evidence to establish the death of the SP.
 - b. Ascertain whether personnel involved were acting in the course of their duties.
 - c. Examine what policies, orders and instructions were applicable and whether they were appropriate and commensurate with the risks associated with the activity, and that they were complied with.
 - d. Establish the level of training, relevant competencies, qualifications, and currency of the individual involved in the accident, specifically: the efficacy of the buddy-buddy system; use of ropes and body position on the mountain; mountain rescue.
 - e. Identify if the levels of planning and preparation were commensurate with the activities' objectives.
 - f. Review the levels of authority and supervision covering the task during which the incidents occurred.
 - g. Investigate and comment on relevant fatigue implications of individuals' activities prior to the matters under investigation and on any Human Factors that may have played a part in the accidents.
 - h. Determine the state of serviceability of relevant equipment.
 - i. Determine any equipment deficiencies.
 - j. Report and make appropriate recommendations to the DG DSA.
2. The investigation should not seek to attribute blame and you should use JSP 832 Guide to Service Inquiries and DSA 03.10 as guidance for the conduct of your inquiry. You are to report immediately to the DG DSA should you have cause to believe a criminal or Service offence has been committed.
3. If at any stage the panel discovers something that they perceive to be a continuing hazard presenting a risk to the safety of personnel or equipment, the President should alert the DG DSA without delay to initiate remedial actions. Consideration should also be given at this time to raising an Urgent Safety² notice.

² This could be an advice or a recommendation safety note.

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PART 1.3

Narrative of events

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Part 1.3 – Narrative of events

Synopsis

All times local (Pakistan Standard Time = Greenwich Mean Time (GMT)+5)

1.3.1. Death of Wing Commander Henderson. At approximately 14:00 on 19 July 2022, during the British Services Mountaineering Expedition 2020 (BSME20), Wing Commander Gordon Henderson, referred to throughout as Wg Cdr Henderson, was involved in a fatal accident whilst descending from Broad Peak mountain in the Karakoram mountain range area of Pakistan (Figure 1.3.1). The accident occurred at an altitude of approximately 8035 metres (m), where Wg Cdr Henderson was observed by a member of a separate expedition to fall from a ridge. The body of Wg Cdr Henderson was initially seen from above by paragliding pilots at approximately 17:15 in a crevasse field.¹ His body was subsequently observed from the ground on 20 July 2022, at an altitude of approximately 7400m, by a sherpa from a separate expedition. An unsuccessful attempt to recover his body was conducted over the period 24 to 27 July 2022.

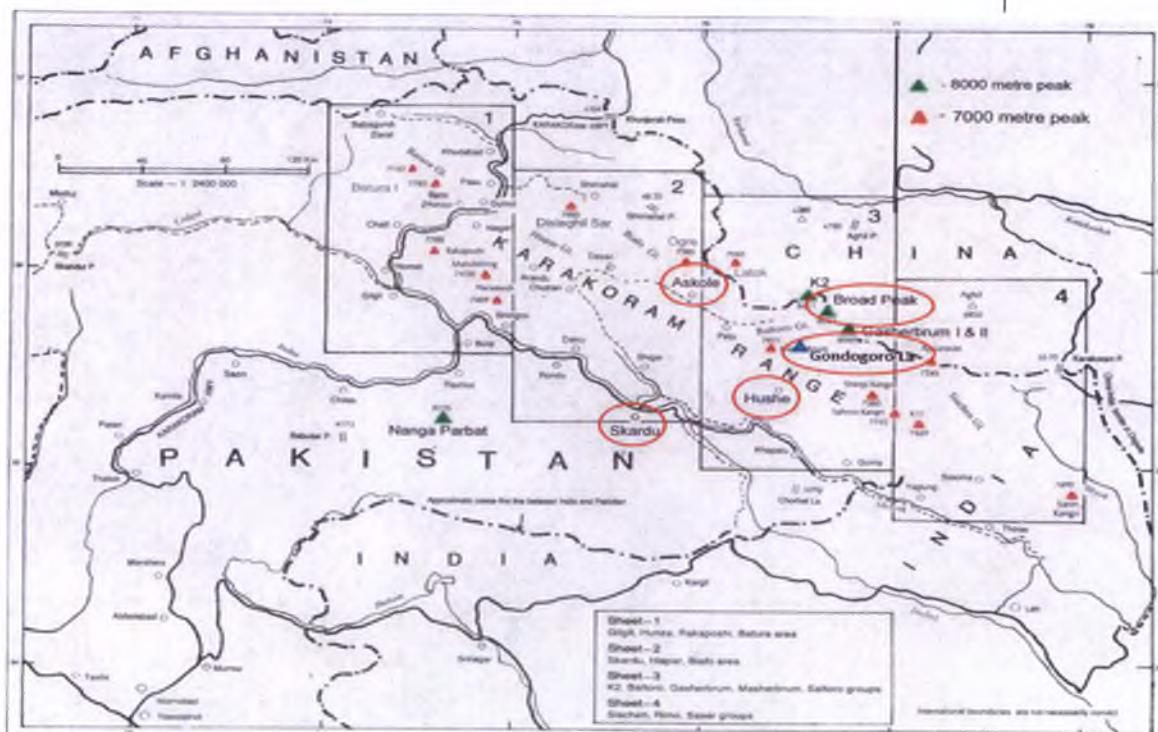


Figure 1.3.1 – Key locations - Karakoram Range, Pakistan.²

¹ A crevasse is a deep crack, which forms in a glacier or ice sheet that can be a few inches across to over 40 feet.

² Source: www.caingram.info - Map showing the location of the 8000 metre mountains of the Pakistan Karakoram.

1.3.2. **Rockfall accident.** At approximately 10:10 on 26 July 2022 a rockfall accident occurred during the BSME20 traverse of the Gondogoro La in the Karakoram mountain range area of Pakistan (Figure 1.3.1). Two participants of BSME20 were struck by rockfall at an altitude of approximately 5200m and initially assessed at the scene of the accident. The first casualty was declared seriously injured (SI) having been struck [REDACTED] by a rock and was escorted away from the area. They subsequently recovered and completed the remainder of the expedition on foot. The second casualty was declared very seriously injured (VSI) having been struck by a rock on the [REDACTED]. They were treated at the scene of the accident by a BSME20 team doctor and were removed by stretcher at approximately 13:00. The stretcher party and the VSI casualty arrived at the next camp at approximately 21:30 where medical attention was provided overnight by the BSME20 medical team. At approximately 11:30 on 27 Jul 2022, the VSI casualty was evacuated by helicopter to a medical facility in Skardu (Figure 1.3.1). They were recovered to the UK on 2 August 2022 and transported to Queen Elizabeth Hospital, Birmingham for further treatment.

Background

1.3.3. **BSME.** BSME was a quadrennial tri-service programme of expeditions to the Greater Ranges that developed service personnel through participation in challenging, high-altitude mountaineering activities, in a remote location.³

Exhibit 45

1.3.4. **BSME20.** The BSME20 iteration, to the Karakoram mountain range area of Pakistan, was led by the Royal Air Force Mountaineering Association (RAFMA) and was split into two teams: the Main Team (MT), and the Development Team (DT). The Main Team, which consisted of 13 personnel, conducted a 60-day extreme high-altitude, unsupported, oxygen-free summit attempt of Broad Peak. The Development Team, which consisted of 16 personnel, conducted a 23-day high-altitude trekking phase to K2 Base Camp. Both teams also planned to exit the mountain range via a traverse of the Gondogoro La pass. BSME20 was originally planned to be conducted over the period 7 June to 5 August 2020. It was delayed due to the global impact of COVID-19 and was instead undertaken over the period 2 June to 2 August 2022. The objectives of BSME20 were:

Exhibit 01
Exhibit 02

- a. To develop leadership, teamwork, and courage through adventurous training.
- b. The development of service mountaineers for the future.

³ The Greater Ranges included Himalaya, Transhimalaya, Hengduan, Karakoram, Kunlunshan, Hindukush, Pamir, Tianshan and the Great Tibetan Plateau.

- c. To increase the number of service mountaineers with high-altitude experience.
- d. To place UK Armed Forces personnel on the summit of Broad Peak.
- e. To conduct a programme of pioneering medical research.

1.3.5. **RAFMA.** RAFMA was the representative body for the multi-discipline sport of mountaineering in the Royal Air Force (RAF) whose activities included outdoor rock climbing, hill walking, scrambling, indoor climbing, ice and mixed winter climbing and overseas adventurous training (AT) expeditions.

Exhibit 03

1.3.6. **Broad Peak.** Broad Peak is a mountain in the Karakoram mountain range on the border of Pakistan and China. It is the twelfth-highest mountain in the world, at 8047m above sea level. (Figures 1.3.1 and 1.3.2).



Figure 1.3.2 – Photograph of Broad Peak.⁴

⁴ Source: BSME20 team member.

1.3.7. **Gondogoro La.** Gondogoro La is a 5585m high mountain pass in the Karakoram mountain range area of Pakistan, 25 kilometres (km) south of the world's second-highest peak, K2. (Figures 1.3.1 and 1.3.3)



Figure 1.3.3 – Photograph of Gondogoro La.⁵

1.3.8. [REDACTED] and [REDACTED]. BSME20 used [REDACTED], a British mountaineering company, to support the planning of the expedition in Pakistan and prepare itineraries for both the Main and Development Teams. The in-country transport and supply of high-altitude porters and guides was provided by [REDACTED], a local mountaineering company based in [REDACTED].

Witness 01
Exhibit 02
Exhibit 13

Death of Wing Commander Henderson - 19 July 2022

1.3.9. **Arrival in Pakistan and initial activity.** The Main Team arrived in Islamabad on 4 June 2022 and, following a period in Skardu, arrived at Askole (Figure 1.3.1) via road on 9 June 2022. They then trekked approximately 70km east to Broad Peak Base Camp (Figure 1.3.4), arriving on 15 June 2022. They conducted acclimatisation, consolidation training, and prepositioned food and equipment at camps higher up the mountain until 10 July 2022. During this period, the Development Team arrived in Islamabad on 9 July 2022. Whilst at Broad Peak Base Camp (4850m) there were five days of snowfall, from 11 July 2022 to 15 July 2022. This prevented the Main Team from leaving the camp. During this period, the Development Team arrived at Askole via road on 14 July 2022.

Witness 01
Exhibit 02
Exhibit 13
Exhibit 16

⁵ Source: BSME20 team member.

1.3.10. Broad Peak Base Camp to Camp 3. On 16 July 2022, the conditions were considered suitable, by the expedition leader (EL), to conduct a summit attempt. Two summit teams were formed: Summit Team 1, comprising of six climbers and Summit Team 2 of four climbers. Summit Team 1 consisted of the EL, Team members 1 to 4 (MT-1 to 4) and Wg Cdr Henderson. Summit Team 2 consisted of Main Team members 5 to 8 (MT-5 to 8). Summit Team 1 commenced their departure from Broad Peak Base Camp (4850m) at approximately 22:00 on 16 July 2022 and arrived at Camp 2 (6250m) at approximately 08:00 on 17 July 2022 (Figure 1.3.4). They spent the day resting, rehydrating, and eating. Summit Team 2 departed Broad Peak Base Camp at approximately 22:00 on 17 July 2022 and were supported to Camp 1 (5500m) by Main Team member 9 (MT- 9) and Main Team member 10 (MT-10).⁶ Main Team member 11 (MT-11) remained at Broad Peak Base Camp as a central point of contact for communication with the two summit teams.⁷ Summit Team 1 set off from Camp 2 for Camp 3 (7050m) at approximately 05:30 on 18 July 2022 (Figure 1.3.4) and arrived at approximately 10:00. They rested and prepared for a summit attempt that night. Summit Team 2 arrived at Camp 2 by 12:45 on 18 July 2022.

Witness 01
Witness 02
Witness 03
Witness 04
Witness 05
Witness 08
Witness 09
Witness 10
Witness 12
Witness 13
Witness 14
Witness 15
Exhibit 16



Figure 1.3.4 – Illustration of route to Broad Peak Summit.⁸

⁶ MT-9 and MT-10 had not been beyond Camp 2 due to poor acclimatisation. The EL decided that they could not attempt to summit Broad Peak.

⁷ MT-11 remained at Broad Peak Base Camp due to illness and deterioration.

⁸ Source: BSME20 team member. Edited by SI panel.

1.3.11. Camp 3 to the col.⁹ Five climbers (the EL, Wg Cdr Henderson, MT-1, MT-3 & MT-4) from Summit Team 1 departed Camp 3 at approximately 22:00 on 18 July 2022 to start their ascent, leaving MT-2 who had not rested well, in Camp 3. At 00:30 on 19 Jul 2022, the supporting members of Summit Team 2, MT-9 & MT-10, arrived back at Broad Peak Base Camp. During the ascent, three climbers from Summit Team 1 returned to Camp 3. The first climber to turn back was MT-1, who turned back alone after approximately three hours at 01:00, due to the effects of altitude. MT-1 arrived back in Camp 3 at approximately 04:00 and used a separate tent from MT-2. MT-3 and MT-4 turned back after eight hours (at approximately 06:00 from an altitude of 7616m) due to the effects of cold and fatigue. Wing Commander Henderson gave MT-3 & MT-4 a very high frequency (VHF) radio, that he was carrying, for their descent.¹⁰ This left the EL and Wg Cdr Henderson as the remaining climbers in Summit Team 1, with one VHF radio carried by the EL, to continue the summit attempt. Throughout the ascent the EL was the lead climber and Wg Cdr Henderson followed behind; both had stopped every 60 to 90 minutes to rest together. The EL made it to the col (7800m) below the Rocky Summit at approximately 07:40 (Figure 1.3.4). MT-3 and MT-4 supported each other during their descent, arriving back in Camp 3 at approximately 08:00. Upon finding MT-1 in the tent, MT-3 provided them with medical treatment for acute mountain sickness (AMS).^{11,12} Wg Cdr Henderson arrived at the col at 08:10.

Witness 01
Witness 04
Witness 05
Witness 09
Witness 12
Witness 15

1.3.12. Ascent to the Rocky Summit. The EL and Wg Cdr Henderson continued their ascent and were at the Rocky Summit (8035m) at approximately 12:15 (Figure 1.3.4). A radio check was completed with Broad Peak Base Camp and whilst they rested, they ate food, discussed the weather conditions, their mental and physical fitness, and both made the decision to continue. The EL and Wg Cdr Henderson then proceeded along the ridge towards Broad Peak Summit (8047m).

Witness 01
Exhibit 16
Exhibit 43

1.3.13. Last sighting of Wg Cdr Henderson by the EL. The last confirmed sighting of Wg Cdr Henderson, traversing the ridge towards Broad Peak Summit, was at 12:30 by the EL at approximately 8035m (Figure 1.3.5). This was captured on GoPro™ footage taken by the EL. The EL then continued along the ridge ahead of Wg Cdr Henderson towards the summit.

Witness 01
Exhibit 16
Exhibit 17
Exhibit 52

1.3.14. EL activity at Broad Peak Summit. The EL, ahead of Wg Cdr Henderson, stopped 30m short of Broad Peak Summit at approximately 13:30. The EL waited for Wg Cdr Henderson to arrive so they could arrive

Witness 01
Exhibit 16
Exhibit 18

⁹ A col is the lowest point of a ridge or saddle between two peaks, typically providing a pass from one side of a mountain to another.

¹⁰ 6 x VHF radios were held throughout the Main Team and a VHF base station at Broad Peak Base Camp.

¹¹ MT-3 was an expedition Medical Officer within the Main Team.

¹² Acute mountain sickness (AMS), is the harmful effect of high-altitude, caused by rapid exposure to low amounts of oxygen at high elevation. Symptoms may include headaches, vomiting, tiredness, confusion, trouble sleeping, and dizziness. Acute mountain sickness can progress to high-altitude pulmonary [o]edema (HAPE) with associated shortness of breath or high-altitude cerebral [o]edema (HACE) with associated confusion.

at the summit together. After approximately 30 minutes, the EL became concerned that Wg Cdr Henderson had not arrived. Other climbers, external to BSME20, had passed the EL on their way to the summit. The EL made the decision to continue to Broad Peak Summit (Figure 1.3.5) to ask if the other climbers had seen Wg Cdr Henderson. At approximately 14:10 the EL arrived at Broad Peak Summit. None of the climbers reported seeing or passing Wg Cdr Henderson.



Figure 1.3.5 – Aerial view of Broad Peak's ridge from the west.¹³

1.3.15. Fall from height event of Wg Cdr Henderson. At approximately 14:00, a climber from a separate expedition, civilian mountaineer 1 (CM-1), whilst ascending, observed, from a distance of approximately 20m, Wg Cdr Henderson descending from Rocky Summit towards the col. Wg Cdr Henderson was slightly below the Rocky Summit, at a section that only permitted one person at a time to pass (Figure 1.3.6). The pair exchanged gestures to determine who would move first. Wg Cdr Henderson signalled that he would move first, and CM-1 acknowledged this with a thumbs up. Wg Cdr Henderson began his descent and was observed by CM-1 to fall down the south face of the mountain. After losing sight of Wg Cdr Henderson, CM-1 called out and attempted to search areas of the south face for approximately 1 hour.

Witness 16
Exhibit 19
Exhibit 35

¹³ Source: A view of Broad Peak's Ridge from the west, Usman, 2013. Edited by SI panel.



Figure 1.3.6 – High ground from where Wg Cdr Henderson fell (just below Rocky Summit).¹⁴

1.3.16. EL departure from Broad Peak Summit. The EL departed Broad Peak Summit at approximately 14:20. The EL radioed MT-11, at Broad Peak Base Camp at approximately 14:45, to communicate that Wg Cdr Henderson was missing, and continued their descent. On notification, MT-11, MT-10, and MT-9 at Broad Peak Base Camp commenced missing person procedures.

Witness 01
Witness 04
Exhibit 16
Exhibit 43

1.3.17. CM-1 departure from the fall location. At approximately 15:00, CM-1 contacted their base camp team to inform them of the incident that they had observed and was advised to descend.

Witness 16
Exhibit 35

1.3.18. EL descent to col. The EL arrived at the col at approximately 15:50 and informed MT-11 at Broad Peak Base Camp by radio, that Wg Cdr Henderson remained missing.

Exhibit 16

1.3.19. Finding of clothing by CM-1. At approximately 17:00, CM-1 found a jacket, glove, and boots during their descent between the col and Camp 3. CM-1 took photographs of the items and left them in-situ.

Witness 16
Exhibit 35
Exhibit 49
Exhibit 50
Exhibit 51

1.3.20. Initial sighting of body. At 17:15, a report was received over the radio at Broad Peak Base Camp that two paragliding pilots had seen a rucksack (approximately 7000m) and a body (approximately 7400m) in a crevasse field (Figure 1.3.7).

Witness 08
Exhibit 20
Exhibit 21
Exhibit 43

¹⁴ Screenshot taken from Exhibit 19

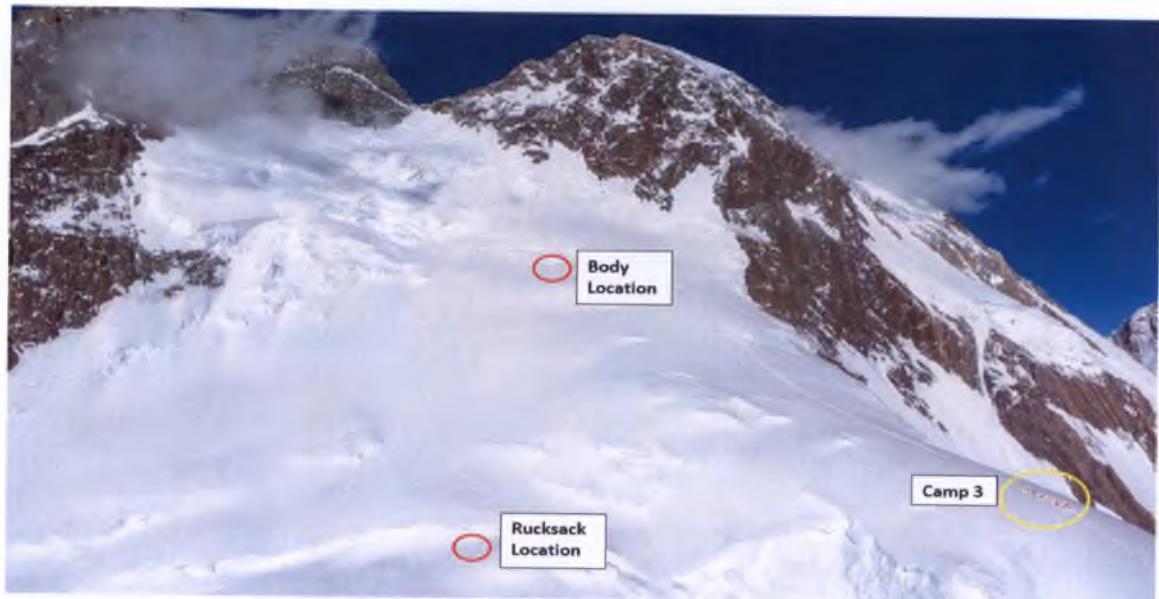


Figure 1.3.7 – Image from paragliding pilot.¹⁵

1.3.21. Recovery of clothing by EL. During their descent, the EL recovered the jacket, one of the boots, and the glove from the snow field between the col and Camp 3.

Witness 01

1.3.22. MT-3 & MT-1 departure from Camp 3. At approximately 18:00, MT-3 escorted MT-1 to a lower altitude under medical supervision. MT-2 and MT-4 remained at Camp 3 in order to support the EL.

Witness 05

Witness 09

Witness 12

Witness 15

1.3.23. Incident Reporting and arrival of EL at Camp 3. During the EL's descent to Camp 3, the Broad Peak Base Camp team (MT-11, MT-10, and MT-9) notified the Joint Casualty and Compassionate Centre (JCCC), Delivery Duty Holder (DDH), and the British High Commission Islamabad that Wg Cdr Henderson was missing.¹⁶ The EL arrived back at Camp 3 at 19:25.

Witness 01

Witness 09

Witness 12

Exhibit 22

Exhibit 43

1.3.24. Personnel movements on 20 July 2022. At 08:10 on 20 July 2022, MT-3 and MT-1 arrived at Broad Peak Base Camp. MT-5 and MT-7 ascended to Camp 3 from Camp 2 whilst MT-8 and MT-6 remained at Camp 2. The EL departed Camp 3 whilst MT-2 and MT-4 remained at Camp 3. Later that day, whilst descending, the EL collected MT-6 at Camp 2, and they continued to Broad Peak Base Camp together. MT-7 then returned to Camp 2 and re-joined MT-8. MT-5, MT-4 and MT-2 remained at Camp 3.

Witness 01

Witness 02

Witness 09

Witness 10

Witness 12

Witness 13

Witness 14

Witness 15

¹⁵ Edited image from Exhibit 21. The paragliding pilots did not provide this image until 19 August 2022.

¹⁶ The principle of duty holding was to establish an organisational construct of trained and accountable individuals who were competent and empowered to manage Health and Safety risks across the spectrum of the military activities undertaken by Defence. In Defence the fundamental elements of duty holding management arrangements were that there were three levels of accountable individuals for managing risk and they were the: Senior Duty Holder (SDH), Operating Duty Holder (ODH) and Delivery Duty Holder (DDH). The DDH for BSME 20 was the RAFMA Chair.

1.3.25. **BSME20 radio interview with CM-1.** At some point during the evening of 20 July 2022, CM-1 passed information from K2 Base Camp via radio, to MT-11 and MT-3 at Broad Peak Base Camp, of what they had witnessed. They agreed to conduct a face-to-face interview at K2 Base Camp the following morning.

Exhibit 43
Witness 04
Witness 05
Exhibit 23
Exhibit 24

1.3.26. **Photographic evidence of body.** A few minutes after that radio call, a sherpa from a separate expedition arrived at Broad Peak Base Camp and reported to the BSME20 team that they had found a body, at an altitude of approximately 7500m, around 100m off the main route from the col to Camp 3. They had captured photographic evidence and members of BSME20 used this to determine that the body was Wg Cdr Henderson.

Witness 01
Witness 04
Witness 05
Exhibit 25

1.3.27. **Initial body recovery proposal.** At some point later, MT-2, MT-4, and MT-5 who were still at Camp 3, asked permission to attempt to recover the body from its location using the information provided by the sherpa. Permission was not granted by the EL due to the crevasse danger in the area where the body was located.

Witness 01
Witness 02
Witness 09
Witness 12
Exhibit 43

1.3.28. **BSME20 face-to-face interview with CM-1.** A face-to-face interview was conducted at K2 Base Camp on the morning of 21 July 2022, by MT-3 and MT-11, with CM-1 and CM-1's colleague, civilian mountaineer 2 (CM-2), supporting as an interpreter. CM-1 provided further detail to MT-3 and MT-11 of what they had observed utilising video and photographic footage that they had taken at the fall location and on their descent. MT-3 and MT-11 showed CM-1 photographs of Wg Cdr Henderson to determine if that was who CM-1 had seen fall. CM-2 also provided detail of the rope that they had fixed at the fall location on the morning of 19 July 2022 and stated that not all of the ridge had been fixed with ropes.

Witness 04
Witness 05
Exhibit 35

1.3.29. **Recovery of remaining personnel to Broad Peak Base Camp.** On 21 July 2022, MT-7 and MT-8 departed Camp 2 and MT-2, MT-4 and MT-5 departed Camp 3, with all returning to Broad Peak Base Camp. On 24 July 2022, the Development Team passed through Broad Peak Base Camp, on their way to Concordia Camp (Figure 1.3.8), as part of their trekking programme elsewhere in the Karakoram.

Witness 09
Witness 10
Witness 12
Witness 13
Witness 14
Exhibit 02

1.3.30. **Body recovery effort.** The EL remained at Broad Peak Base Camp to co-ordinate the effort to recover the body of Wg Cdr Henderson. They contracted high-altitude mountaineers to attempt to locate and recover the body commencing on 24 July 2022. Leadership of the Main Team was then transferred to MT-10 to continue with the original plan of exiting the Karakoram via the Gondogoro La.

Witness 01
Witness 08
Witness 17
Exhibit 26
Exhibit 281

1.3.31. Table 1 is a summary of events leading up to, during, and after the fatal accident and confirmed death of Wg Cdr Henderson.

OFFICIAL--SENSITIVE

Date (a)	Time (b) Approx.	Event (c)
4 June 2022		Main Team arrived in Islamabad.
9 June 2022		Main Team arrived in Askole.
10-15 June 2022		Main Team trekked approx. 70km to Broad Peak Base Camp (4850m).
15 June – 10 July 2022		Main Team completed various treks and acclimatisation rotations on Broad Peak.
11 – 15 July 2022		Main Team members were confined to Broad Peak Base Camp due to poor weather.
16 July 2022	22:00	Summit Team 1 departed Broad Peak Base Camp for Camp 2 (6250m).
17 July 2022	08:00	Summit Team 1 arrived at Camp 2.
	22:00	Summit Team 2 departed Broad Peak Base Camp for Camp 2.
18 July 2022	05:30	Summit Team 1 departed Camp 2 for Camp 3 (7050m).
	10:00	Summit Team 1 arrived at Camp 3.
	12:45	Summit Team 2 arrived at Camp 2.
	22:00	Summit Team 1 departed Camp 3 for a summit attempt. MT-2 remained at Camp 3.
19 July 2022	01:00	MT-1 turned back.
	04:00	MT-1 arrived back at Camp 3.
	06:00	MT-3 & MT-4 turned back.
	07:40	EL arrived at the col (7800m) and waited for Wg Cdr Henderson.
	08:00	MT-3 & MT-4 arrived back at Camp 3.
	08:10	Wg Cdr Henderson arrived at the col.
	12:15	EL and Wg Cdr Henderson arrived at the Rocky Summit (8035m).
	12:30	Wg Cdr Henderson last confirmed sighting by EL.
	13:30	EL stopped 30m short of the summit to wait for Wg Cdr Henderson.

~~OFFICIAL SENSITIVE~~

	14:00	EL arrived at Broad Peak Summit (8047m).
	14:00	CM-1 witnessed Wg Cdr Henderson fall.
	14:10	EL departed Broad Peak Summit and commenced descent.
	14:45	EL radioed MT-11 at Broad Peak Base Camp to report that Wg Cdr Henderson was missing.
	15:00	CM-1 contacted their base camp to report the incident and commenced their descent. CM-1 observed a jacket, glove, and boots during their descent between the col and Camp 3.
	15:50	EL arrived at the col. During their descent, the EL recovered a jacket, a boot, and a glove in the snow field between the col and Camp 3.
	17:15	Paragliding pilots reported sighting of rucksack and body in a crevasse field.
	18:00	MT-1 & MT-3 commenced descent from Camp 3.
		JCCC, DDH, and BHC informed of incident.
	19:25	EL arrived at Camp 3.
20 July 2022	Morning	MT-5 & MT-7 ascended from Camp 2 to Camp 3.
	Morning	MT-1 & MT-3 arrived at Broad Peak Base Camp.
	Afternoon	EL returned to Broad Peak Base Camp from Camp 3.
	Evening	CM-1 radio conversation with BSME20 Team.
	Evening	A sherpa from a separate expedition reported to the BSME20 team that they had found a body, at approximately 7500m in altitude.
21 July 2022	Morning	CM-1 face to face interview with MT-3 & MT-11.
	Evening	MT-7, MT-8, MT-2, MT-4, and MT-5 returned to Broad Peak Base Camp.
24 July 2022		Body recovery effort commenced.
27 July 2022		Body recovery effort ceased.
19 December 2022		Death Certificate for Wg Cdr Henderson issued.

Table 1 – Death of Wing Commander Henderson timeline.

Rockfall accident – 26 July 2022

1.3.32. Arrival of Main Team and Development Team at Ali Camp. The Development Team departed Concordia Camp (4650m) on 25 July 2022 at approximately 07:30 and arrived at Ali Camp (5000m) at approximately 13:00 (Figure 1.3.8). The Main Team departed Broad Peak Base Camp at approximately 08:00 and arrived in Ali Camp at approximately 17:00 on the same day. A planned rest period was conducted prior to commencing the summit of Gondogoro La, the Development Team's key objective of the expedition.

Witness 08
Witness 13
Witness 17
Exhibit 46
Exhibit 47

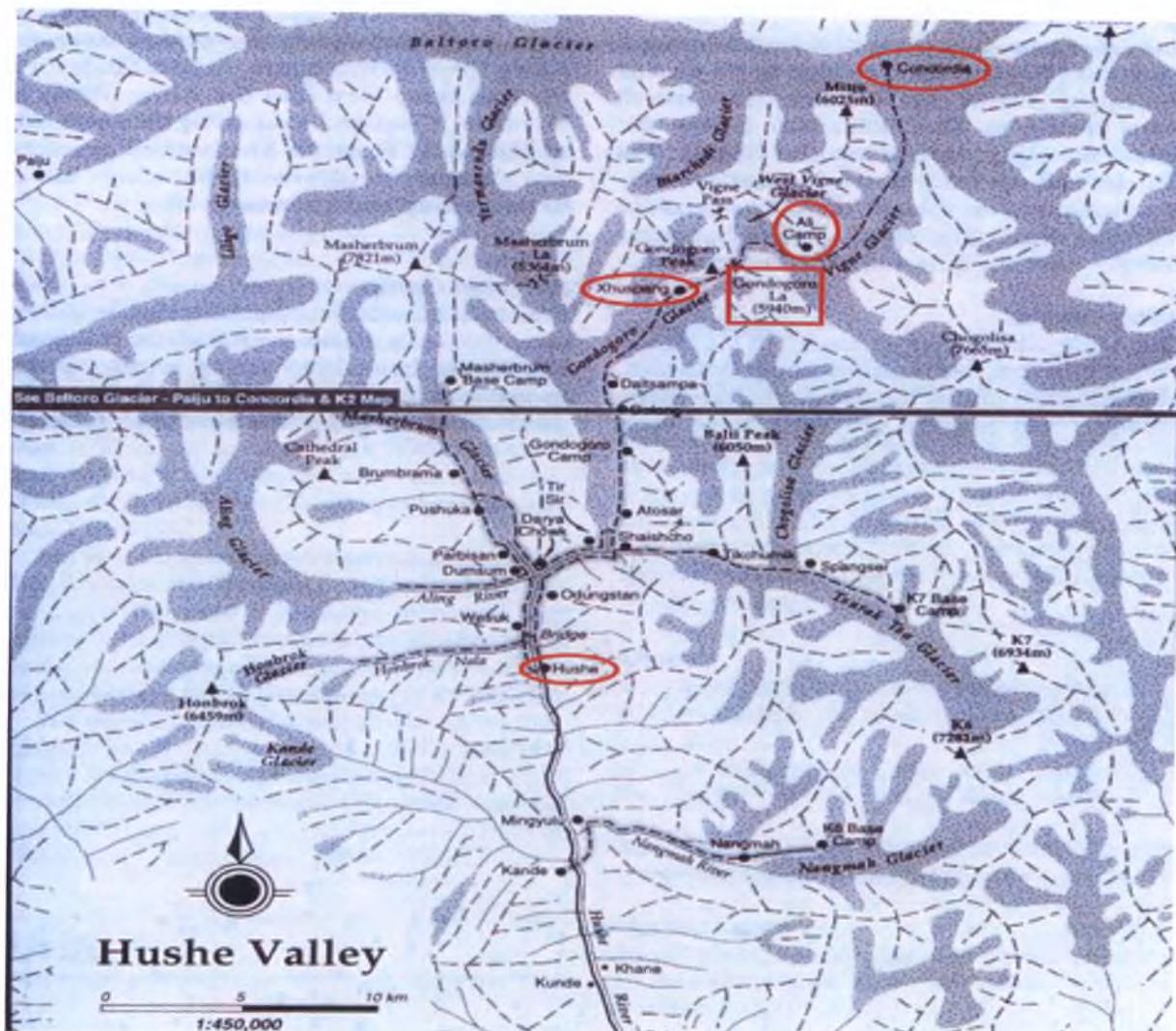


Figure 1.3.8 – Map of Hushe Valley.¹⁷

1.3.33. Departure from Ali Camp. The Development Team departed Ali Camp at approximately 23:30, following a short delay of approximately 30

Witness 06
Witness 17

¹⁷ Source: www.caingram.info - Map of the Hushe Valley Region of the Pakistan Karakoram.

minutes. The delay was caused by Development Team member 1 (DT-1) exhibiting symptoms of diarrhoea and vomiting (D&V) and their subsequent treatment by Development Team member 2 (DT-2).¹⁸ The Main Team departed Ali Camp at approximately the same time as the Development Team. The Main Team moved quicker over the ground and were soon ahead of the Development Team.

Witness 18
Witness 19
Witness 20

1.3.34. Ascent of the Gondogoro La. During the ascent of the Gondogoro La, Development Team member 3 (DT-3) began exhibiting D&V symptoms and was subsequently treated by DT-2. At the start of the fixed rope system, with two team members now ill, the Development Team leaders discussed whether to continue the summit attempt. The decision was made to continue with their ascent to the Gondogoro La utilising the fixed rope system.

Witness 06
Witness 17
Witness 18
Witness 19
Witness 20

1.3.35. Summit of Gondogoro La (Main Team). The Main Team reached the summit of Gondogoro La at approximately 03:00 on the 26 July 2022. They commenced their descent shortly afterwards, using the fixed rope system (Figure 1.3.9).

Witness 08
Witness 12
Witness 13

1.3.36. Summit of Gondogoro La (Development Team). The Development Team reached the summit of Gondogoro La at approximately 07:00. Following a short rest period to regroup, eat, and rehydrate, they commenced their descent from Gondogoro La using the fixed rope system (Figure 1.3.9). The Development Team moved in four groups with four team members in each group, each supervised by an Alpine Mountain Leader (AML).¹⁹

Witness 06
Witness 17
Witness 18
Witness 19
Witness 20

¹⁸ DT-2 was the lead Medical Officer for the Development Team.

¹⁹ Alpine Mountain Leader qualification detailed within Joint Services Publication (JSP) 419, Part 2, Chapter 2, Section 6 – Adventurous Training in the UK



Figure 1.3.9 – Gondogoro La fixed rope system.²⁰

1.3.37. Main team arrival at Xhuspang Camp. The Main Team arrived in Xhuspang Camp (Figure 1.3.8) at approximately 07:30 and rested.

Witness 13
Exhibit 48

1.3.38. Rockfall event. After leaving the fixed rope system, the Development Team groups descended independently towards Xhuspang Camp (4680m). At approximately 10:10 and 5200m, a rockfall occurred and DT-2, and Development Team members 4 to 9 (DT-4 to 9), took action to avoid being hit. DT-1, DT-3, and Development Team members 10 to 16 (DT-10 to 16), were, at this point, further down the valley and outside the immediate danger area. During this rockfall event, DT-4 and DT-6 were struck by rocks.

Witness 06
Witness 17
Witness 18
Witness 19
Witness 20
Witness 21
Witness 22

1.3.39. Very Serious Injury (VSI) casualty (DT-6). DT-6 was struck on the [REDACTED] and was displaced 10 to 20m down the

Witness 06
Witness 21

²⁰ Source: BSME20 team member

valley. DT-2,7,8 and 9 were in proximity and attended to DT-6 once the immediate danger of rockfall had passed.

Exhibit 36

1.3.40. Serious Injury (SI) casualty (DT-4). DT-4 was struck [REDACTED]. They were attended to initially by DT-5 and medically assessed by DT-13.²¹

Witness 07
Witness 17
Witness 22
Exhibit 32

1.3.41. Initial actions. DT-4 was escorted towards Xhuspang Camp (approximately 5km) by DT-13. At approximately 10:30, DT-6 was treated by DT-2 [REDACTED]

Witness 06
Witness 07
Witness 17
Witness 18
Witness 20
Witness 22
Witness 23
Exhibit 36

[REDACTED] for pain relief.^{22,23} During this time, DT-5 attempted to communicate with Askari Aviation using a satellite phone to coordinate a helicopter, but was unsuccessful due to poor signal quality.²⁴ They then attempted to contact the Main Team and was again unsuccessful due to lack of signal. DT-12 was sent by DT-10 as a 'runner' to Xhuspang Camp to inform the Main Team of the incident. DT-16 and DT-10 also began their descent to Xhuspang Camp to pass further information and acquire support for the casualties.

1.3.42. Incident communication and request for support. At approximately 11:00 DT-12 arrived at Xhuspang Camp and informed the Main Team that there had been an incident. MT-10 dispatched porters with additional medical supplies to the incident site. At some point, between 11:00 and 12:00, DT-10 and DT-16 arrived at Xhuspang Camp and provided further detail of the casualties and the requirement for a helicopter evacuation. MT-7 was dispatched to the incident site by MT-10 with a Broadband Global Area Network (BGAN) terminal to establish 2-way communications.²⁵ The Main Team established communications with the British High Commission Islamabad via a second BGAN to request casualty extraction via helicopter. At approximately 12:00 the DDH was informed of the incident. At some point DT-5 passed the satellite phone to DT-3 who descended towards Xhuspang Camp to find a better phone signal. Once achieved, DT-3 communicated with Askari Aviation to request casualty extraction via helicopter. DT-3 wrote a note for DT-5, stating that a helicopter had been requested and to locate a suitable helicopter landing site (HLS). DT-3 passed the note to a porter for delivery to DT-5 who then requested that the porter continue to the incident site and pass the information to DT-2.

Witness 05
Witness 08
Witness 10
Witness 20
Exhibit 37
Exhibit 38

1.3.43. Ongoing treatment of VSI casualty (DT-6). At approximately 12:45 the porters from Xhuspang Camp arrived with the additional medical supplies. DT-6 was treated by DT-2 with an [REDACTED]

Witness 06
Exhibit 36

²¹ DT-5 was the Development Team leader and DT-13 was an expedition Medical Officer within the Development Team.

²² [REDACTED] was an analgesic used to relieve pain.

²³ [REDACTED] was a medication used to treat or prevent excessive blood loss from major trauma.

²⁴ Expedition registered with Askari Aviation, the sole coordinator of the Pakistani Army rotary wing casualty evacuation.

²⁵ A BGAN was a portable terminal that was used to connect a laptop computer/mobile phone to broadband internet in remote locations. The network was provided by Inmarsat and used three geostationary satellites to provide almost global coverage.

[REDACTED] DT-2 made the decision that DT-6 needed urgent hospital care and required helicopter evacuation.

1.3.44. VSI casualty (DT-6) stretcher carry. At approximately 13:00, DT-9, 7 and 2, assisted by porters, used an improvised stretcher to move DT-6 (Figure 1.3.10) towards a suitable HLS. During the stretcher carry DT-2 received the note from DT-3, stating that a helicopter had been requested. During the stretcher carry, DT-8 was sent to Xhuspang Camp to pass further information on DT-6's condition. En-route, DT-8 met MT-9 and attempted to establish communications with the Main Team. This was unsuccessful due to the BGAN access being restricted, and MT-9 not possessing the required permissions to unlock it.²⁸ Over the next couple of hours, DT-1,3,14 and 15 arrived at Xhuspang Camp.

Witness 04
Witness 05
Witness 06
Witness 10
Witness 15
Witness 22

1.3.45. SI casualty (DT-4) arrival at Xhuspang Camp. At approximately 15:00 DT-4 and 13 arrived at Xhuspang Camp. DT-4 was administered pain relief and received further medical supervision. At some point after, DT-5 and 11 arrived at Xhuspang Camp.

Witness 07
Witness 17
Witness 22
Witness 25

1.3.46. VSI casualty (DT-6) transfer to Xhuspang Camp. At approximately 15:30, MT-7 met the stretcher party and attempted, for a second time, to establish communications with the Main Team but was again unsuccessful. DT-2 dispatched MT-7 to Xhuspang Camp to request additional medical support and equipment. At some point DT-8 arrived at Xhuspang Camp with the information on DT-6's condition and the Main Team were informed by the British High Commission that the helicopter was not available due to other priority taskings. At 16:00 MT-1,2,3,4 and 11, with additional medical supplies, including the Xtract®2 stretcher, began their ascent to meet the stretcher party.²⁹ At some point MT-7 arrived at Xhuspang Camp. The stretcher party arrived at the HLS at approximately 17:30 where they were met by MT-1,2,3,4 and 11. With no helicopter available, a decision was made to move DT-6 to Xhuspang Camp. At approximately 19:30 MT-5,6,8,9 and 10 left Xhuspang Camp to provide additional support to the stretcher party. They met the stretcher party and assisted moving DT-6 for the remaining 2km into Xhuspang Camp. The stretcher party and DT-6 arrived at Xhuspang Camp at approximately 21:30. Communications between the British High Commission and DT-10 indicated that a helicopter may become available the following morning. DT-6 was monitored by MT-11 and DT-13 throughout the night.³⁰

Witness 04
Witness 05
Witness 06
Witness 07
Witness 10
Witness 13
Witness 15
Witness 18
Witness 22

²⁶ [REDACTED]

²⁷ [REDACTED]

²⁸ BGAN access was restricted to reduce non-controlled communication output following Wg Cdr Henderson's accident.

²⁹ The British Military Xtract®2 extraction stretcher was a rescue tool in case of emergencies. It was designed to carry a person to safety, to prevent further injuries.

³⁰ MT-11 was the lead Medical Officer for the Main Team.



Figure 1.3.10 – Very Seriously Injured (VSI) Casualty Stretcher Evacuation.³¹

1.3.47. **VSI casualty (DT-6) recovery to Skardu.** At approximately 09:00 on 27 July 2022 information was passed from the British High Commission to DT-10 at Xhuspang Camp, that a helicopter would not be available for three days as a result of poor weather conditions. Following a discussion with the DDH and expedition medical team, MT-10 made the decision that DT-6 would be carried, approximately 30km, to Hushe (Figures 1.3.1 and 1.3.8). The stretcher carry commenced at 11:00. At approximately 11:30, a representative from [REDACTED], called DT-5 on the satellite phone and passed information that a helicopter was en-route to extract DT-6. Within minutes, helicopters could be heard, and team members identified a suitable HLS. Two helicopters landed and DT-6 was loaded onto one, with DT-13 embarking on the other as a medical escort. The team requested that DT-4 also be evacuated, but this was denied due to helicopter weight limits at that altitude. Once the helicopters had departed, the remaining personnel split into their respective Main and Development Teams and continued their descent, on foot, to Hushe. During the descent to Skardu the helicopter stopped to refuel, and DT-13 was allowed to

Witness 06
Witness 07
Witness 08
Witness 13
Witness 18
Witness 26
Exhibit 39

³¹ Source: BSME20 team member.

travel with DT-6 in the same helicopter. At some point, they arrived at the Combined Military Hospital (CMH) in Skardu, and DT-6 was admitted to the intensive care unit (ICU). DT-13 communicated with a General Surgeon at the Royal Centre of Defence Medicine UK (RCDM) to verify that DT-6's planned treatment at CMH was appropriate.

Recovery of expedition personnel

1.3.48. Cessation of Wg Cdr Henderson's body recovery effort. The recovery team searched the suspected area eight times, but all attempts proved unsuccessful. As the weather continued to deteriorate to a level that hampered continued search coupled with concerns for the safety and welfare of the search and recovery team (which had been operating above 7000m for over 20 hours), the search was stopped on 27 July 2022. The EL departed Broad Peak Base Camp, on foot with the Pakistan Liaison Officer, for Skardu via the Gondogoro La.

Witness 01
Witness 08
Witness 17
Exhibit 44

1.3.49. Arrival of personnel in Skardu. The Main Team arrived in Hushe on 28 July 2022 and were transported, via road, to Skardu later that day. The Development Team arrived in Hushe on 29 July 2022 having exited the valley at a slower pace, requiring an additional overnight stay. The Development Team were transported to Skardu by road the same day. The EL arrived in Skardu on 30 July 2022.

Witness 01
Witness 13
Witness 17
Exhibit 40
Exhibit 41
Exhibit 42

1.3.50. Return of personnel to UK. Whilst at Skardu, DT-2 replaced DT-13 as DT-6's medical escort for their recovery to the UK. All personnel, with the exception of DT-2 and DT-6, arrived in Islamabad by road on 31 July 2022. The Development Team returned by air to the UK on 1 August 2022, followed by the Main Team on 2 August 2022. DT-6 was recovered separately to the UK on 2 August, under the supervision of DT-2, via a contracted civilian aeromedical flight. DT-6 was admitted to the ICU at RCDM, Queen Elizabeth Hospital Birmingham.

Witness 06
Witness 07
Witness 21
Exhibit 42

1.3.51. Issue of Death Certificate of Wg Cdr Henderson. Following evidence presented to the UK General Register Office (GRO) by JCCC, a death certificate for Wg Cdr Henderson was issued on 19 December 2022.

Exhibit 27
Exhibit 28

1.3.52. Table 2 is a summary of events leading to, during, and after the rockfall accident and the recovery of expedition personnel.

OFFICIAL SENSITIVE

Date (a)	Time (b) Approx.	Event (c)
9 July 2022		Development Team arrived in Islamabad.
14 July 2022		Development Team arrived in Askole.
14-25 July 2022		Development Team Trekked from Askole to Concordia.
25 July 2022	07:30	Development Team departed Concordia (4650m).
	08:00	Main Team departed Broad Peak Base Camp (4850m).
	13:00	Development Team arrived at Ali Camp (5000m).
	17:00	Main Team arrived at Ali Camp.
	23:30	The Development Team and Main Team departed Ali Camp.
26 July 2022	03:00	The Main Team summited the Gondogoro La (5585m).
	07:00	The Development Team summited the Gondogoro La.
	07:30	Main Team arrived at Xhuspang Camp (4680m).
	10:10	DT-6 and DT-4 from Development Team struck by rockfall (5200m).
	10:30	DT-4 escorted to Xhuspang Camp by DT-13.
	10:30	Initial medical treatment provided to DT-6 by DT-2.
	11:00	Main Team informed of incident by DT-12.
	11:00-12:00	MT-10 dispatched porters and additional medical supplies to the scene of the accident.
	11:00-12:00	MT-10 dispatched MT-7 with satellite communications to the scene of the accident.
	11:00-12:00	Helicopter requests submitted to Askari Aviation and the British High Commission Islamabad.
	12:00	DDH informed of incident.
	12:45	Porters arrived at the scene of the accident with additional medical supplies.
	13:00	DT-6 stretcher carry commenced towards a suitable HLS.
	15:00	DT-4 and DT-13 arrived at Xhuspang Camp.

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	15:30	MT-7 met the stretcher party and was unsuccessful in establishing communications with the Main Team.
	16:00	The Main Team informed by British High Commission that helicopter not available until the following morning.
		MT-3, MT-11, MT-4, MT-1, and MT-2 with additional medical supplies, including the Xtract2 stretcher, began their ascent to the HLS.
	17:30	DT-6 and stretcher party arrived at the HLS.
		Stretcher party began descent to Xhuspang Camp.
	21:30	DT-6 and stretcher party arrived at Xhuspang Camp.
27 July 2022	09:00	Main and Development Teams at Xhuspang Camp informed of no helicopter availability for three days.
	11:00	Main and Development Teams commenced stretcher carry of DT-6 to Hushe.
	11:30	DT-5 informed that a helicopter was en-route to extract DT-6.
		DT-6 and DT-13 (medical escort) evacuated to the ICU at Combined Military Hospital in Skardu via helicopters.
28 July 2022		Main Team arrived in Skardu.
29 July 2022		Development Team arrived in Skardu.
30 July 2022		EL arrived in Skardu.
31 July 2022		Main and Development Teams, with exception of DT-6 & DT-2 (medical escort), arrived in Islamabad.
1 Aug 2022		Development Team returned to UK.
2 Aug 2022		Main Team returned to UK.
		DT-6 and DT-2 returned to UK and transported to Queen Elizabeth Hospital Birmingham.

Table 2 – Rockfall accident timeline.

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PART 1.4

Analysis and Findings

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Part 1.4 – Analysis and findings

Introduction

All times local (Pakistan standard time = GMT+5)

1.4.1. The British Services Mountaineering Expedition 2020 (BSME20) service inquiry (SI) panel was convened on the 25 August 2022 to investigate the circumstances surrounding the death of Wing Commander (Wg Cdr) Henderson, and the seriously injured casualties, which occurred during two separate accidents, whilst participating in the BSME in Pakistan, in July 2022.

Exhibit 64

1.4.2. **Death of Wing Commander Henderson.** At approximately 14:00 on 19 July 2022, Wg Cdr Gordon Henderson was involved in a fatal accident whilst descending from Broad Peak mountain in the Karakoram mountain range area of Pakistan. The accident occurred at an altitude of approximately 8035m, where Wg Cdr Henderson was observed by a member of a separate expedition to fall from a ridge. The body of Wg Cdr Henderson was initially seen from above by paragliding pilots at approximately 17:15 in a crevasse field.¹ His body was subsequently observed from the ground on 20 July 2022, at an altitude of approximately 7400m, by a sherpa from a separate expedition. An unsuccessful attempt to recover his body was conducted over the period 24 to 27 July 2022.

1.4.3. **Rockfall accident.** At approximately 10:10 on 26 July 2022 a rockfall accident occurred during the traverse of the Gondogoro La in the Karakoram mountain range area of Pakistan. Two participants of BSME20 were struck by rockfall at an altitude of approximately 5200m and initially assessed at the scene of the accident. The first casualty was declared 'seriously injured' (SI) having been struck [REDACTED] by a rock and was escorted away from the area. They subsequently recovered and completed the remainder of the expedition on foot. The second casualty was declared 'very seriously injured' (VSI) having been struck by a rock on the [REDACTED]. They were treated at the scene of the accident by a BSME20 team doctor and were removed by stretcher at approximately 13:00. The stretcher party and the VSI casualty arrived at the next camp at approximately 21:30 where medical attention was provided overnight by the BSME20 medical team. At approximately 11:30 on 27 Jul 2022, the VSI casualty was evacuated by helicopter to a medical facility in Skardu. They were recovered to the UK on 2 August 2022 and transported to Queen Elizabeth Hospital, Birmingham for further treatment.

1.4.4. The SI initially focused on interviewing all participants of BSME 20 and other accident witnesses, to understand the details of both events, before expanding the investigation to look at the adventurous training (AT) organisational structure and compare and contrast events with defence policy and expert opinion.

¹ A crevasse is a deep crack, which forms in a glacier or ice sheet that can be a few inches across to over 40 feet.

1.4.5. The service inquiry panel has drawn conclusions and made recommendations throughout the report. A summary of accident factors is included at the end of Part 1.4 and a summary of recommendations is in Part 1.5.

Methodology

Accident Investigation Board Norway (AIBN) analysis model

1.4.6. The service inquiry (SI) panel used the Accident Investigation Board Norway (AIBN) analysis model to analyse the evidence gathered. AIBN's analysis process is an amalgamation of the Australian Transport Safety Bureau (ATSB) model and the Sequence Timed Events Plotting (STEP) process. This is a seven-stage iterative process, allowing the systematic analysis of evidence gathered to determine the relevant factors that influenced the outcome of the incident.²

Exhibit 65

Accident factors

1.4.7. Once an accident factor had been determined to have been present it was then assigned to one of the following categories:

- a. **Causal factor(s).** 'Causal factors' are those factors which, in isolation or in combination with other causal factors and contextual details, led directly to the incident or accident. Therefore, if a causal factor was removed from the accident sequence, the accident would not have occurred.
- b. **Contributory factor(s).** 'Contributory factors' are those factors which made the accident more likely to happen. That is, they did not directly cause the accident. Therefore, if a contributory factor was removed from the accident sequence, the accident may still have occurred.
- c. **Aggravating factor(s).** 'Aggravating factors' are those factors which made the final outcome of the accident worse. However, aggravating factors do not cause or contribute to the accident. That is, in the absence of the aggravating factor, the accident would still have occurred.
- d. **Other factor(s).** 'Other factors' are those factors which, whilst shown to have been present, played no part in the accident in question, but are noteworthy in that they could contribute to or cause a future accident. Typically, other factors would provide the basis for additional recommendations or observations.
- e. **Observation(s).** Observations are points or issues identified during the investigation that are worthy of note to improve working

² The Accident Investigation Board Norway 1st edition, January 2017

practices, but which do not relate to the accident being investigated and which could not contribute to or cause future accidents.

Probabilistic language

1.4.8. The probabilistic terminology detailed below (Figure 1.4.1) clarifies the terms used in this report to communicate levels of certainty. It is based on terms published by the Intergovernmental Panel on Climate Change (IPCC) in their Guidance Note for Consistent Treatment of Uncertainties as well as the ATSB in its paper on Analysis, Causality and Proof in Safety Investigations.^{3,4}

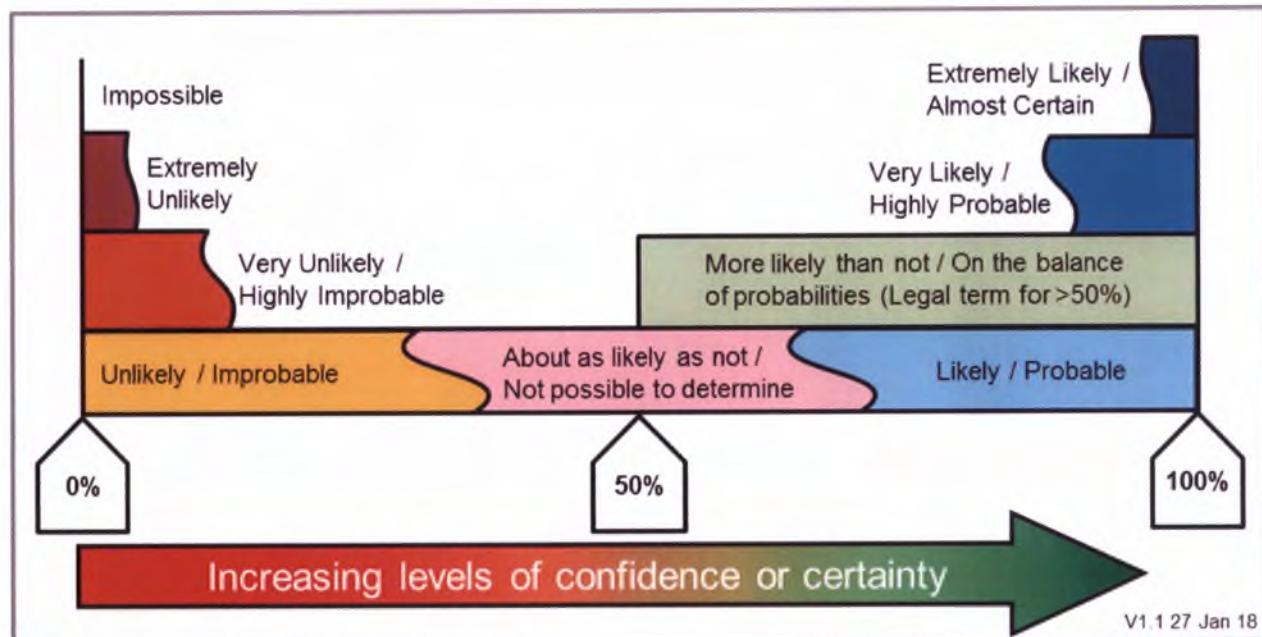


Figure 1.4.1– Probabilistic language.

Available evidence

1.4.9. The panel had access to the following evidence:

- Evidence gathered as part of the initial triage investigation, including:
 - Witness statements.
 - Photographs, videos, and interview recordings provided by BSME20 personnel.
 - Planning documentation for BSME20.
- Initial investigation triage report.

³ IPCC (2010), 'Guidance Note for Consistent Treatment of Uncertainties'.

⁴ Op. Cit., ATSB (2008).

- c. Interviews conducted by the panel with:
 - (1) BSME20 participants.
 - (2) Civilian witnesses.
 - (3) Duty holding personnel.
- d. Discussions with subject matter experts (SMEs).
- e. Photography/videography and mapping provided from several sources.
- f. Global Positioning Data (GPS) data taken from members of the expedition.
- g. Reports pertaining to individuals, including medical documentation, qualifications, and competencies.
- h. Equipment and clothing.
- i. Technical reports including material analysis and forensic services.
- j. Policy on AT, medical, and safety including.
 - (1) Joint Service Publication (JSP) 419, Adventurous Training in the UK Armed Forces.
 - (2) JSP 950, Medical Policy.
 - (3) Air Publication (AP) 8000, AIR TLB Safety and Environmental Management System.
 - (4) AP3342, Management of Physical Education in the RAF.
 - (5) RAFMA Safety Management Plan (SMP).
 - (6) RAFMA Standard Operating Procedures (SOPs).
- k. Death certificate for Wg Cdr Henderson.

Services

1.4.10. The panel was assisted by the following organisations:

- a. The Defence Accident Investigation Branch (DAIB).
- b. Defence Equipment and Support (DE&S).
- c. Defence Primary Healthcare (DPHC).
- d. The Joint Casualty and Compassionate Centre (JCCC).

- e. The Robson Academy of Resilience (RAR), HQ 22Gp.
- f. The Air Human Resources (HR) Centre 1.
- g. RAF HQ Air Command.
- h. The Joint Services Mountaineering Training Centre (JSMTC).
- i. The RAF Mountaineering Association (RAFMA).
- j. The Army Mountaineering Association (AMA).
- k. The Royal Navy & Royal Marine Mountaineering Club (RNRMMC).
- l. HQ Air RAF Safety Centre.
- m. Inspector Land Safety (RAF).
- n. 1710 Naval Air Squadron - Materials.
- o. The RAF Police Scientific Support Unit, RAF Henlow.
- p. Kuehne and Nagel military and government, Bicester.
- q. QinetiQ.
- r. Cellmark.

Background

Adventurous training

1.4.11. Physical development was a key component of armed forces military capability, comprising of three pillars: physical training, adventurous training (AT) and sport. AT made a significant contribution to military effectiveness, fighting spirit and personal development. AT was on-duty, mandated, military training which, through exposure to challenges and controlled risk, enabled service personnel (SP) to develop the fortitude, rigour, robustness, initiative and leadership necessary to deliver the resilience that military personnel required on operations and during other military tasks. In addition, AT built teamwork, self-discipline, determination, coordination, and courage. AT also provided balance in the lives of SP who were subject to the pressures of military commitments and periods of high tempo operations. It provided an invaluable opportunity for decompression that played an important part in service life, including its impact on recruiting and retention.

Exhibit 81

Policy governance

1.4.12. As a joint Service expedition, BSME20 was conducted under the auspices of the Joint Services Adventurous Training (JSAT) scheme and was required to follow the policy and guidance set within JSP 419 (Adventurous

Witness 01
Exhibit 82
Exhibit 02

1.4 - Page 5 of 67

Training in the UK Armed Forces).⁵ The RAF was the lead service responsible for delivering BSME20 and the Commandant of the Robson Academy of Resilience, HQ 22 Gp, was responsible for ensuring that the requirements laid down in AP3342 (Management of Physical Education in the RAF), Section 5 (Adventurous Training) were adhered to.⁶

1.4.13. BSME20 used the RAFMA Safety Management Plan (SMP) and AP8000 (Air Top Level Budget (TLB) Safety and Environmental Management System) as the guiding authority for safety policy. The SMP was underpinned by a framework of SOPs.

Witness 01
Exhibit 82
Exhibit 83
Exhibit 84
Exhibit 85
Exhibit 86
Exhibit 87
Exhibit 99
Exhibit 203

Analysis of factors

1.4.14. The panel analysed the following events during BSME20 to determine any accident factors. For each event, the panel identified lines of inquiry for further investigation and analysis.

- a. Death of Wg Cdr Henderson – 19 July 2022.
- b. Rockfall accident – 26 July 2022.
- c. Expedition planning, preparation, and approvals.

Death of Wg Cdr Henderson – 19 July 2022

Death certificate

1.4.15. The body of Wg Cdr Henderson was unable to be recovered from Broad Peak and he was declared missing believed killed (MBK) on 21 July 2022. The Defence Accident Investigation Branch (DAIB) utilised the significant amount of evidence that was collected in Pakistan to produce a technical report in support of establishing the death of Wg Cdr Henderson. The DAIB technical report was supplied to the JCCC on 13 December 2022 and was subsequently submitted to the General Register Office (GRO) UK by them as part of the portfolio of evidence in support of confirmation of death. The GRO supported the submission of the JCCC and issued a death certificate for Wg Cdr Henderson on 19 December 2022. The JCCC updated

Exhibit 27
Exhibit 28
Exhibit 54
Exhibit 283

⁵ The Joint Service Adventurous Training (JSAT) Scheme consisted of ten authorised activities: Sub-Aqua Diving, Canoeing/Kayaking, Caving, Mountaineering, Mountain Biking, Offshore Sailing and Skiing, Gliding, Parachuting and Paragliding. The JSAT Scheme was detailed at JSP 419, Part 2, Chapter 1.

⁶ The Resilience Wing within Robson Academy of Resilience supported HQ 22 Gp in the administration of Adventurous Personal Development Training (APDT) as defined in AP3342 (Management of Physical Education in the RAF).

the status of Wg Cdr Henderson from MBK to non-operational death on 19 December 2022.

1.4.16. The conduct of an SI without confirmation of death was uncommon. The panel noted that production of a technical report that collated all of the available evidence, in support of confirmation of death, had not been conducted by DAIB previously.

1.4.17. The panel concluded that the production of the technical report was instrumental in the issue of the death certificate and should be taken forward as best practice if required for future SIs. The panel found that the production of a technical report to assist with confirmation of death, was an **other factor**.

1.4.18. Recommendation: The Head of the Defence Accident Investigation Branch should capture the use of a technical report, where deemed appropriate and feasible, to establish death in order to avoid delays in issue of a death certificate where personnel are listed as missing believed killed.

1.4.19. Following the accident, the BSME20 team recorded interviews with key witnesses and collected a significant amount of evidence in the form of an incident log, photographs and items of equipment. This information was particularly useful due to the remote nature of the expedition and the inability for DAIB and the SI panel to attend the scene of the accidents.

1.4.20. The panel concluded that the evidence gathering conducted by BSME20 personnel went beyond the accident response instructions detailed within the BSME20 administration order and JSP 419 and should be taken forward as best practice. The panel found that the significant amount of evidence gathered by the BSME20 team to assist with the accident investigation was an **other factor**.

Exhibit 02
Exhibit 272

1.4.21. Recommendation: The Chief of Defence People should include evidence gathering guidance in JSP 419 for high risk and remote activity in order to assist with accident investigations where investigators may not be able to access the scene of the accident.

Lines of inquiry

1.4.22. The following lines of inquiry were identified for further investigation and analysis by the panel. These were derived using themes identified during interviews, evidence provided to the panel, and from specialist input requested by the panel.

- a. Timeline analysis.
- b. Qualifications and experience of Wg Cdr Henderson and the Expedition Leader (EL).
- c. Fatigue.

- d. High-altitude illness (HAI).
- e. Communication.
- f. Decision analysis.
- g. Descent route.
- h. Descent technique.
- i. Main Team instructor qualifications and remit.
- j. Main Team group management and supervision.
- k. Buddy-buddy system.
- l. Equipment.
- m. Weather and climate.
- n. Medical suitability and physical fitness requirements.
- o. Risk management.
- p. Body recovery effort.

Timeline analysis

1.4.23. Wg Cdr Henderson and the EL departed Camp 3 together on 18 July 2022 and remained within proximity of each other until approximately 12:30 on 19 July 2022 when they had reached Rocky Summit.⁷ The EL did not observe Wg Cdr Henderson turn around and begin to descend from the summit ridge. Wg Cdr Henderson was later observed to fall from an area just below Rocky Summit at approximately 14:00.

Exhibit 92

1.4.24. The panel was able to acquire GPS data from GoPro™ images/videos of the summit team's ascent from Camp 3 and Wg Cdr Henderson's last confirmed sighting. This assisted in producing a timeline image (Figure 1.4.2).

⁷ Camp 3 was at an altitude of 7050m and was the last camp before Broad Peak Summit.

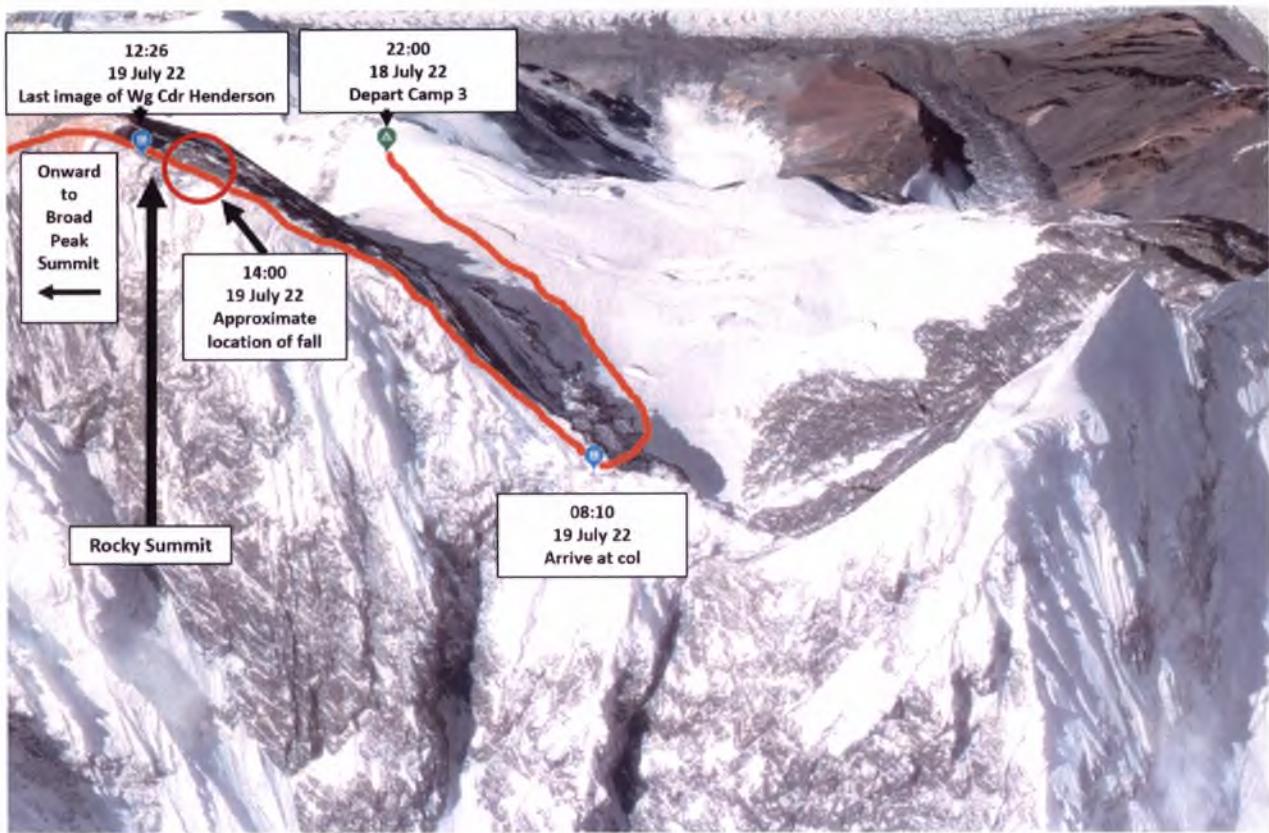


Figure 1.4.2 –Timeline image.

1.4.25. Direction of travel. To confirm Wg Cdr Henderson's direction of travel at the time of accident, the panel analysed video, photographic, GPS, and interview evidence. The analysis provided the panel with the GPS location of the last sighting of Wg Cdr Henderson at 12:26 at a point beyond the Rocky Summit area. This was compared against witness interviews placing Wg Cdr Henderson descending from Rocky Summit, towards the col at approximately 14:00.

Witness 16
Exhibit 17
Exhibit 19
Exhibit 23
Exhibit 52
Exhibit 124

1.4.26. The panel was unable to determine a definitive time and precise location at which Wg Cdr Henderson turned around and started to descend alone from the summit ridge. However, the panel concluded that it is almost certain that between 12:26 and approximately 14:00, Wg Cdr Henderson continued, for a time, in the direction of Broad Peak Summit before turning around and descending alone. Further analysis of this decision is detailed in paragraphs 1.4.65-1.4.74.

Qualifications and experience of Wg Cdr Henderson and the EL

1.4.27. Wg Cdr Henderson served in the RAF. He was a member of the RAFMA and held a number of climbing and mountaineering related AT qualifications, with his first qualification gained in 2008. Those that were relevant for this expedition were Joint Service Rock Climbing Instructor (JSRCI) and Joint Service Mountain Expedition Leader (JSSEL) Winter. In the alpine mountaineering environment, he was qualified to Alpine Mountain

Exhibit 33
Exhibit 15
Exhibit 04
Exhibit 14

Leader Training (AMT) level which he achieved in 2019.⁸ He had attended previous BSME high-altitude expeditions and prior to BSME20 had climbed to over 6000m on four occasions with the highest altitude achieved being 6300m. He was the communications and information systems lead and second-in-command (2IC) of BSME20.

1.4.28. The EL served in the RAF. They were a member of RAFMA and held a number of climbing and mountaineering related AT qualifications. Those that were relevant for this expedition were JSRCI, JSMEL (winter), and Joint Services Winter Climbing Instructor (JSWCI). In the alpine mountaineering environment, they were qualified to Alpine Mountain Instructor (AMI) level which they achieved in 2013. They had attended previous BSME high-altitude expeditions and prior to BSME20 they had climbed to over 6000m on at least five occasions. The highest altitude that they had climbed to was 8043m in 2008.

Witness 01
Exhibit 04
Exhibit 55
Exhibit 56
Exhibit 122

1.4.29. The panel determined that Wg Cdr Henderson and the EL were the most experienced mountaineers on the BSME20 expedition. Both had in excess of 15 and 20 years of mountaineering experience respectively and were competent summer and winter mountaineers and rock climbers. They both possessed considerable logbook experience gained in all mountaineering disciplines and in multiple locations in the UK and overseas. Although Wg Cdr Henderson had not climbed to 8000m before, he had been at extremely high-altitude on four occasions.⁹ The EL had been on 8000m peaks before and on prior BSME iterations. Both had RAF Mountain Rescue Service experience.

Witness 01
Witness 27
Exhibit 34
Exhibit 55
Exhibit 56
Exhibit 122
Exhibit 123

1.4.30. No defence policy existed that detailed specifically the required AT qualifications to undertake extremely high-altitude mountaineering and as a consequence, the panel assessed the level of qualifications held against the alpine mountaineering scheme detailed in JSP 419. Against this criterion, and based upon their alpine mountaineering qualifications, the panel determined that both Wg Cdr Henderson and the EL were suitably qualified and experienced to undertake extremely high-altitude activity.

Witness 01
Exhibit 277

1.4.31. The panel concluded that the level of qualifications and experience held by Wg Cdr Henderson, and the EL did not contribute to the accident and were **not a factor**.

Fatigue

1.4.32. Fatigue is a physiological state of reduced mental or physical performance capability, resulting from sleep loss or extended wakefulness, workload (mental and/or physical activity) that can impair alertness and ability to perform safety related duties.

Exhibit 115
Exhibit 114

⁸ Alpine mountaineering scheme qualifications were detailed in Joint Services Publication (JSP) 419 Part 2 Chapter 2 Section 6.

⁹ JSP 419, Part 2, Chapter 1, Paragraph 5c defined high-altitude between 2,500 and 3,500 metres, very high-altitude between 3,500 and 5,500 metres and extremely high-altitude beyond 5,500 metres.

1.4.33. Risk to life (RtL) from fatigue was detailed in the BSME20 risk assessment. The risk assessment stated that mountaineering days would be physically and mentally demanding and combined with high-altitude and loss of sleep this could lead to fatigue and poor decision making.	Exhibit 116
1.4.34. As fatigue was classified as a medium risk with a remote likelihood and critical severity (using the RAF Total Safety Risk Matrix (TSRM)) the fatigue risk was required to be escalated from the Delivery Duty Holder (DDH) to the Operating Duty Holder (ODH) using a Duty Holder Advice Note (DHAN). ^{10,11,12}	Exhibit 117 Exhibit 118 Exhibit 119
1.4.35. Prior to the attempt to summit, Wg Cdr Henderson had operated on Broad Peak for 40 days and had stated that he had felt tired and fatigued. During the summit attempt, which commenced from Broad Peak Base Camp on 16 July 2022, he ascended 1800m to Camp 3 in a period of 36hrs including a rest period at Camp 2. His summit attempt from Camp 3 commenced after a period of 12hrs rest. Having departed Camp 3 at approximately 22:00 on 18 July 2022, Wg Cdr Henderson and the EL had been climbing for approximately 14hrs by the time they reached Rocky Summit, with an additional altitude gain of approximately 950m. Once at Rocky Summit, Wg Cdr Henderson and the EL stopped to discuss their physical and mental state. Although both were tired and very fatigued, the pair made the decision to continue towards Broad Peak Summit.	Witness 01 Witness 27 Exhibit 16 Exhibit 120 Exhibit 248
1.4.36. The panel determined that it was highly probable that fatigue contributed towards Wg Cdr Henderson's decision to turn around.	
1.4.37. The panel noted that the risk controls for the management of the fatigue risk included personnel managing and assessing each other. ¹³ When Wg Cdr Henderson and the EL became separated, this risk control was no longer in existence, thereby more likely than not increasing the likelihood of an accident occurring.	Exhibit 116
1.4.38. The panel concluded that Wg Cdr Henderson was fatigued and that the level of his fatigue highly likely contributed to his decision to turn around. In combination with him being alone on his descent, this increased the likelihood of the accident occurring. The panel found that the combination of Wg Cdr Henderson being fatigued, and the reduction of the fatigue risk management controls was a contributory factor .	

¹⁰ The RAF Total Safety Risk Matrix (TSRM) is covered in more detail at paragraph 1.4.175 and Figure 1.4.13.

¹¹ Risk escalation and the DHAN process was detailed in Air Publication (AP)8000 – AIR TLB Safety and Environmental Management System (SEMS), Leaflet 8007 – Safety Risk Management Process and Leaflet 8008 – Duty Holder and Risk Owner Advice Notes (DHAN/ROAN).

¹² Duty holding referred to enhanced duty of care arrangements and clearly defined roles and responsibilities that were required so that legally accountable individuals could carry out their duties to mitigate and make judgments on risk effectively.

¹³ Risk control was defined in JSP 375 (Management of Health and Safety in Defence), Volume 1, Chapter 8 (safety risk assessment and safe systems of work) as 'A measure that can be taken to reduce the possibility of a risk arising or to reduce the effect of any risk that arises. The control measures are elimination, substitution, engineering controls, administrative controls and personal protective equipment (PPE).'

High-altitude illness (HAI)

1.4.39. As altitude increases, the air becomes less dense and contains fewer molecules of oxygen. This lack of oxygen impacts on the body tissues and is called hypoxia. If untreated and/or prolonged, hypoxia results in high-altitude illnesses (HAI). HAI describes the conditions caused by the effects on the body of being at high-altitude. The three conditions are acute mountain sickness (AMS), high-altitude cerebral [o]edema (HACE), and high-altitude pulmonary [o]edema (HAPE).

Exhibit 74

1.4.40. **Acute mountain sickness (AMS).** JSP 419 listed the following symptoms that could be experienced in combination with a headache when suffering from AMS:

- a. Nausea.
- b. Vomiting.
- c. Fatigue.
- d. Loss of appetite.
- e. Dizziness/light headedness.
- f. Sleep disturbance.

Exhibit 74

1.4.41. AMS was a mild altitude illness that could delay further ascent. Someone with AMS should not be left alone as the condition could progress to the life threatening HACE or HAPE. The following immediate actions when suffering with AMS were advised in JSP 419:

- a. Stop further ascent (symptoms usually disappear within three days).
- b. Descend if there is no improvement or conditions worsen.
- c. Descend immediately if there are more serious symptoms.
- d. Take pain relief such as paracetamol or ibuprofen.
- e. Rest.

Exhibit 74

1.4.42. **High-altitude cerebral [o]edema (HACE).** HACE is rare but life-threatening. It is an accumulation of fluid in and around the brain. Pressure within the skull increases and can cause death due to compression of the brain.

Exhibit 74

1.4.43. **High-altitude pulmonary [o]edema (HAPE).** HAPE is the leakage of fluid into and around the lungs. The lungs become soggy and are unable to function properly. Cold and physical exertion make the condition worse in susceptible individuals. Death occurs when the lungs are unable to extract

Exhibit 74

enough oxygen from breath to sustain essential functions such as brain activity.

1.4.44. There are no specific factors such as age, gender, or physical condition that pre-dispose an individual to altitude sickness. Previous experience of AMS following exposure to high altitudes can correlate to an increased susceptibility to symptoms of altitude illnesses. The most important risk factors in the development of AMS are the altitude gained and the rate of ascent. Altitude illness is best prevented by the adoption of a sensible and controlled ascent profile that provides enough time for all expedition members to acclimatise progressively and at their own pace.

Exhibit 74

1.4.45. **Supplementary oxygen.** BSME20 chose to deploy on the expedition without supplementary oxygen, which could be utilised at high-altitude, particularly above 7500m. This decision was made to reduce the logistical burden of carrying oxygen and to increase the challenge of the summit attempt of Broad Peak. In addition, it was to reduce the over-reliance and the sudden exposure of the BSME20 team to the effects of HAI if oxygen supplies ran out. Emergency oxygen was held at Broad Peak Base Camp for medical treatment purposes.

Witness 01
Exhibit 245
Exhibit 246
Exhibit 247

1.4.46. The decision to deploy on BSME20 without supplementary oxygen was highlighted as a medium risk that was transferred to the ODH. This risk was formally approved by the ODH in the DHAN.

Exhibit 245
Exhibit 246

1.4.47. The panel understood the risk balance between deploying with or without supplementary oxygen, but determined that when operating at altitudes at over 7500m without oxygen, the likelihood of an individual experiencing HAI was greater.

1.4.48. **Ascent profile.** The BSME20 expedition ascent profile was dictated by geographical distance between the camps during the ascent of Broad Peak and as such had to operate outside of JSP 419 guidelines. This was pre-approved at a 'high risk & remote panel' in the initial stages of planning.

Witness 01
Exhibit 74
Exhibit 76
Exhibit 149

1.4.49. The panel noted that exceeding the recommended daily ascent of 500m per day, as detailed in JSP 419, was unavoidable and was outside of the EL's control. However, evidence showed that the risk associated with ascents above 500m per day was mitigated by appropriate subsequent rest days. Additionally, the panel noted that BSME20 members had several trips or 'rotations' up and down the mountain between Camps 1, 2 and 3 and followed the 'climb high, sleep low' process associated with mountaineering at altitude.¹⁴ Teams that wished to stay longer at lower camps to rest and recover further, had the opportunity to do so.

Exhibit 74
Exhibit 149
Exhibit 183
Exhibit 184
Exhibit 185

1.4.50. The panel determined that the BSME20 ascent profile was dictated by geographical reasons and, whilst the risks from altitude illness were mitigated

¹⁴ 'Climb high, sleep low' process was detailed as an ascent profile in JSP 419 Part 2, Chapter 1, Annex J and was described as 'at above 3,000m, try to site each camp at an elevation no more than 500m above the previous night's camp'.

as far as practicable, it remained possible that there was an increased risk of high-altitude illness to BSME20 members.

1.4.51. Previous exposure to HAI. Climbers who had previously experienced symptoms of AMS when operating at high-altitude had an increased likelihood of experiencing symptoms of AMS when next at altitude. Wg Cdr Henderson had experienced AMS on previous high-altitude expeditions.

Exhibit 14
Exhibit 74

1.4.52. Due to the length of time he had spent above 8000m, it is likely that Wg Cdr Henderson would have developed some of the symptoms of AMS. However, the panel was unable to definitively determine whether or not Wg Cdr Henderson was suffering from a HAI.

1.4.53. The panel concluded that if Wg Cdr Henderson was suffering from HAI, this may have contributed to his reason for turning around and descending alone. In addition, if he was suffering with any HAI symptoms this would have increased the likelihood of an accident occurring. The panel concluded that, due to the combination of the operating altitude, ascent profile and lack of supplementary oxygen being carried, there was a possibility of Wg Cdr Henderson suffering high-altitude illness and this, in combination with fatigue, was a **contributory factor**.

Communications

1.4.54. The BSME20 risk assessment detailed the RtL if there was a failure in the ability of mountaineers to communicate with basecamp and each other. The inability to pass timely information externally could delay access to medical care. This risk was mitigated by the communications equipment that the BSME20 team deployed with and was detailed within the risk assessment and the BSME20 communications plan.

Exhibit 71
Exhibit 249

1.4.55. The BSME20 team requested the following communications equipment for the expedition:

- a. 6x handheld VHF radios with base station (Figure 1.4.3).
- b. 2x BGAN (Figure 1.4.4).
- c. 2x low orbit satellite phones (Figure 1.4.5).
- d. 2x high orbit satellite phones (Figure 1.4.5).

Witness 01
Witness 17
Exhibit 94
Exhibit 95
Exhibit 72
Exhibit 71
Exhibit 73
Exhibit 70

1.4.56. All the communications equipment that was requested, was received. The VHF handsets and base station were sourced from 90 Signals Unit, RAF Leeming. The low orbit satellite phones were sourced from the Adventurous Training Centre (Army). The high orbit satellite phones and BGANs were acquired on loan from Inmarsat.¹⁵ The satellite phones and BGANs were split

¹⁵ Inmarsat was a British satellite telecommunications company.

equally between the Main Team and Development Team and the VHF radios were held by the Main Team. The Development Team did not require VHF radios as it was intended that they would stay together as one guided team throughout the expedition.



Figure 1.4.3 – VHF radio base station (left) and VHF radio handset (right).



Figure 1.4.4 – Broadband global area network (BGAN) device.



Figure 1.4.5 –Satellite phone.

1.4.57. Summit attempt communication equipment. The Main Team located the VHF base station at Broad Peak Base Camp for the duration of the summit attempts. The six VHF radios were distributed throughout the Main Team with three held by Summit Team 1 and three held by Summit Team 2.

Witness 01
Witness 02
Witness 04
Witness 20
Exhibit 121
Exhibit 250
Exhibit 251

	Exhibit 252
1.4.58. Summit Team 1 initially operated as two teams of three personnel and Summit Team 2 operated as two teams of two personnel and another support team consisting of two personnel.	Witness 14 Exhibit 253
1.4.59. It was determined that Summit Team 2 and the support team would remain in pairs throughout their summit attempt and the descent of the support team from Camp 1. Each pair possessed a radio throughout and complied with the communications procedure to ensure that all mountaineers were able to communicate with each other and Broad Peak Base Camp.	Witness 08 Exhibit 254
1.4.60. During their ascent from Camp 3, Summit Team 1 split from their original team composition at various times. ¹⁶ MT-2 remained at Camp 3 without any other BSME20 personnel and without a radio. MT-1 returned to Camp 3 alone with a radio. MT-3 and MT-4 returned to Camp 3 together with a radio. Wg Cdr Henderson commenced his descent alone without a radio. The EL continued to the summit and descended alone with a radio. The panel noted that by splitting into five separate groups during the summit attempt from Camp 3, Summit Team 1 could not maintain the risk control of all mountaineers having the ability to communicate with Broad Peak Base Camp or each other. As such, there were periods where MT-2 and Wg Cdr Henderson were not able to communicate by radio with other BSME20 mountaineers or Broad Peak Base Camp.	Witness 01 Witness 05 Exhibit 98 Exhibit 106 Exhibit 108 Exhibit 111
1.4.61. The panel determined that during the periods where MT-2 and Wg Cdr Henderson were alone and without access to a radio, the communications plan risk control could no longer be maintained and the likelihood of an accident increased.	
1.4.62. The panel determined that there was no redundancy in the number of radios taken to cater for losses/unserviceability, emergency situations or changes of plan.	
1.4.63. The panel concluded that by virtue of Wg Cdr Henderson being both separated from the EL, and not holding a radio, he would have been unable to request any assistance from the BSME20 team if required. The panel believe that this increased the likelihood of the accident. The panel found that personnel operating on the mountain without immediate access to a radio was a contributory factor .	
1.4.64. Recommendation: The Chief of Defence People should provide guidance in JSP 419 for communication plans for high risk and remote expeditions in order to ensure communications plans are sufficiently robust to maintain risk controls.	

¹⁶ Summit Team 1 consisted of the EL, Main Team members 1 to 4 (MT-1 to 4) and Wg Cdr Henderson.

Decision analysis

1.4.65. **Decision to turn around.** At some point between the video taken at 12:26 and approximately 14:00, when he fell from the steep section below Rocky Summit, Wg Cdr Henderson turned around and started to descend alone.

1.4.66. The panel considered that the following were possible reasons for this:

a. **High-altitude Illness (HAI).** As previously discussed, the risk of HAI had been identified in the expedition risk assessment. One of the controls for HAI included the rule to never ascend with HAI symptoms, and to descend if symptoms persisted. The panel noted that the BSME20 team had received training on HAI prior to the expedition and believed that Wg Cdr Henderson would have known the required action to take if suffering from HAI. The altitude at which he decided to turn around (approximately 8035m), combined with his previous history of suffering with HAI at lower altitudes on previous expeditions, led the panel to opine that it was highly likely that Wg Cdr Henderson was suffering some effects of HAI. The panel noted that at 12:15, the EL and Wg Cdr Henderson discussed their physical and mental state and had decided to continue towards the summit. The panel considered that it was possible that in the period between that discussion and the point at which Wg Cdr Henderson turned around and began to descend, that he may have begun to display increased symptoms of HAI, influencing his decision to turn around and descend alone.

b. **Fatigue.** The BSME20 Main Team had been operating on Broad Peak for 40 days prior to the accident. In addition, Wg Cdr Henderson had departed Broad Peak Base Camp on 16 July and had been climbing for approximately 14hrs continuously between departing Camp 3 at 22:00 on 18 July and reaching Rocky Summit at 12:15 on 19 July. The panel noted the EL's description of the tiredness both him and Wg Cdr Henderson were feeling during their last discussion at 12:15. The panel considered that Wg Cdr Henderson was feeling the effects of fatigue and that it was highly probable fatigue may have contributed to his decision to turn around and descend alone.

c. **Injury.** The panel noted the [REDACTED] (covered in more detail at paragraphs 1.4.163-1.4.168) that Wg Cdr Henderson had experienced prior to the expedition. Wg Cdr Henderson appeared to be moving well in the last video of him taken at 12:26 and had not reported to the EL that he had been struggling with any injuries prior to this time. The panel considered that although it was possible an injury may have contributed to his decision to turn around, it was unlikely as with an injury, he would be more likely to wait for the EL to return, than to descend alone.

Witness 01
Witness 27

Exhibit 07
Exhibit 14

Exhibit 93
Exhibit 96

d. **Personal objectives.** Wg Cdr Henderson had stated that as well as achieving the summit of Broad Peak his other objective was to reach 8000m and had described BSME20 as his last chance to do so. The panel considered that it was possible that, having reached Rocky Summit at 8035m and, therefore, his main altitude objective, this may have contributed to the decision to turn around and descend alone. The panel concluded that this was unlikely as there had already been an opportunity to make this decision at 12:15, when he was with the EL and already over 8000m. He chose not to do so and was content to continue towards the summit.

1.4.67. It was possible that Wg Cdr Henderson stopped behind the EL due to a combination of fatigue and HAI, during which time the degree of separation between the pair became greater. It was also possible that Wg Cdr Henderson waited for a period of time for the EL to return, unaware that the EL was also waiting for him further along the ridge to ascend to the summit together. Therefore, having waited for a period of time at over 8000m, it would be reasonable to assume that fatigue and the effects of any HAI that he may have been experiencing, may have increased to a point which forced his decision to turn around and descend alone, with the assumption that the EL, who was faster over the ground than himself, would catch him up en-route.

Witness 01
Exhibit 92

1.4.68. Ultimately, the panel was unable to conclusively determine what drove Wg Cdr Henderson's decision to curtail his summit attempt, turn around and descend alone.

1.4.69. **Communication of intention to turn around.** The EL was not aware of any attempt by Wg Cdr Henderson to verbally communicate with him before he turned around.

Witness 01
Exhibit 92

1.4.70. The panel considered that the following were possible reasons why Wg Cdr Henderson did not communicate his intentions to turn around.

Witness 01
Witness 09
Witness 12
Exhibit 92
Exhibit 97
Exhibit 98

a. **Inability to communicate.** Wg Cdr Henderson did not have a radio at this point and was unable, therefore, to contact either the EL or Broad Peak Base Camp. The panel was unable to determine the distance separating Wg Cdr Henderson and the EL when he decided to turn around, however, at that altitude (8035m), it is likely that voice communication would have been difficult should he have tried to attract the EL's attention. Similarly, the undulating nature of the terrain, combined with the EL not looking back until just short of the summit, meant that hand signals would likely have been ineffective. All BSME20 personnel were issued with a whistle for emergency situations. The EL did not hear any whistle being blown during the period that they were separated from Wg Cdr Henderson.

b. **Decision whether to communicate.** The panel considered that it was possible that Wg Cdr Henderson, having reached an altitude of 8035m and having made the decision to turn back, did not wish to jeopardise the EL's successful summit attempt. Signalling his intention to turn back could, in his mind, have led the EL to curtail his own

attempt - and thus the overall success of BSME20 - and descend with him. Due to the fact that solo mountaineering was contrary to the operating procedures of BSME20, and not permitted, the panel considered this to be an unlikely reason for not communicating his intention.

1.4.71. The panel was unable to fully determine why Wg Cdr Henderson did not communicate his intention to turn around and descend, but it was more likely than not that it was due to his inability to communicate as opposed to a conscious decision not to.

1.4.72. The panel noted that to ensure that the risks remained as low as reasonably practicable (ALARP) and tolerable, solo mountaineering was not allowed within the operating procedures of the expedition.^{17,18} The panel determined that risk control failures contributed to Wg Cdr Henderson becoming separated from the EL and not communicating his intention to descend alone. These risk control failures are covered in more detail in paragraphs 1.4.177-1.4.180. The panel considered that if these risk controls had been maintained and Wg Cdr Henderson had been with the EL when he decided to turn around, it is likely that they would have descended together and maintained the ALARP and tolerable position. The group management and supervisory shortfalls that allowed Wg Cdr Henderson and the EL to become separated are covered in more detail at paragraphs 1.4.108-1.4.113. The panel concluded that the combination of not communicating his intention to turn around and then descending alone, culminated in the failure to maintain the ALARP and tolerable position and was a **contributory factor**.

1.4.73. Recommendation. The Joint Services Mountaineering Committee Chair should capture the risk control failures during the BSME20 expedition as a lesson identified and ensure that, for future mountaineering club/association led expeditions, agreed risk controls to maintain the ALARP and tolerable position are maintained throughout.

Descent route

1.4.74. The path leading up to and down from Rocky Summit, where Wg Cdr Henderson fell, followed a steep and exposed route.¹⁹ The video footage taken by a civilian mountaineer (referred to as CM-1 in this report) showed a rope partially buried under a steep bank of snow, a few metres to the left of the path taken by climbers on the day of the accident (Figure 1.4.6). It was highly likely that this rope had been placed prior to Wg Cdr Henderson's

Exhibit 282

Exhibit 19

¹⁷ As low as reasonably practicable (ALARP) was defined in JSP 375 (Management of Health and Safety in Defence), Volume 1, Chapter 8 (Safety risk assessment and safe systems of work) as 'when risk has been reduced to a level where applying further control measures would be grossly disproportionate to the benefit that would be gained'.

¹⁸ Tolerable (risk) was defined in JSP 375 (Management of Health and Safety in Defence), Volume 1, Chapter 8 (Safety risk assessment and safe systems of work) as 'a level of risk that we are willing to accept in order to perform an activity or achieve an outcome. A tolerable risk is one that is considered to be worth taking, if it has been evaluated and is being managed.'

¹⁹ Sections of a hiking path or climbing route are described as 'exposed' if there is a high risk of injury in the event of a fall because of the steepness of the terrain.

summit attempt (maybe in a previous climbing season) and then subsequently partially buried by snowfall.

1.4.75. The panel compared a still image from the video taken by CM-1 with an image taken at the same location in 2017 (Figure 1.4.6). The panel was able to determine that the descent route taken by Wg Cdr Henderson, compared to the route taken by another expedition in 2017, was steep, directly above, and therefore exposed to, the steep mountain face (Figure 1.4.7).

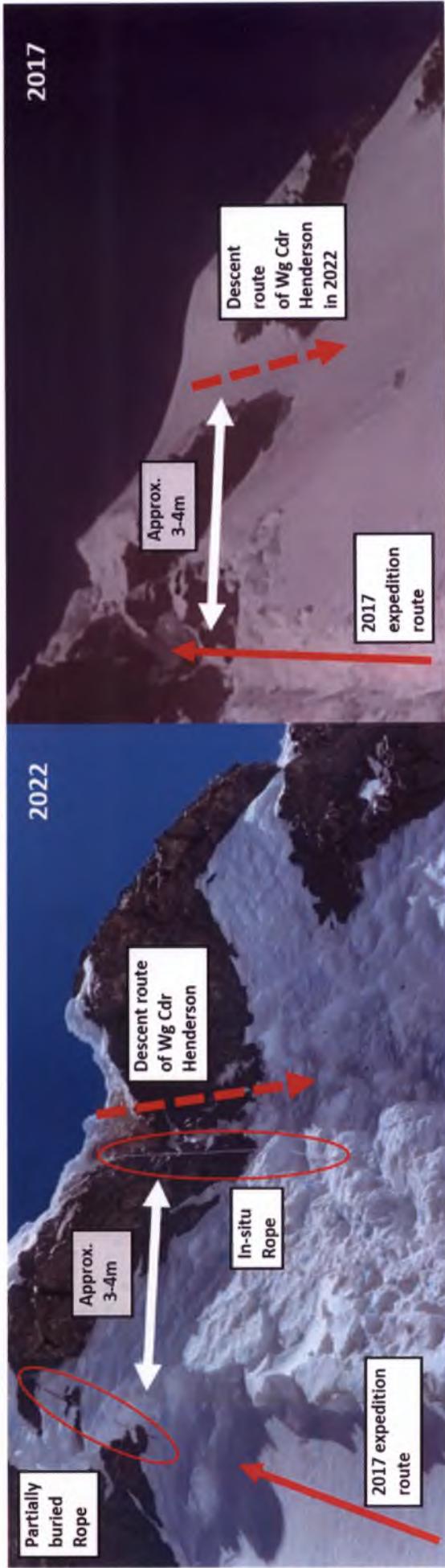


Figure 1.4.6 – Comparison of 2022 route (left) and 2017 route (right).²⁰

²⁰ Source: Broad Peak – An overview of the final ridge's topography, 8000ers.com, Rodolphe Papier, image credit: Alireza Norouzi, 2017.

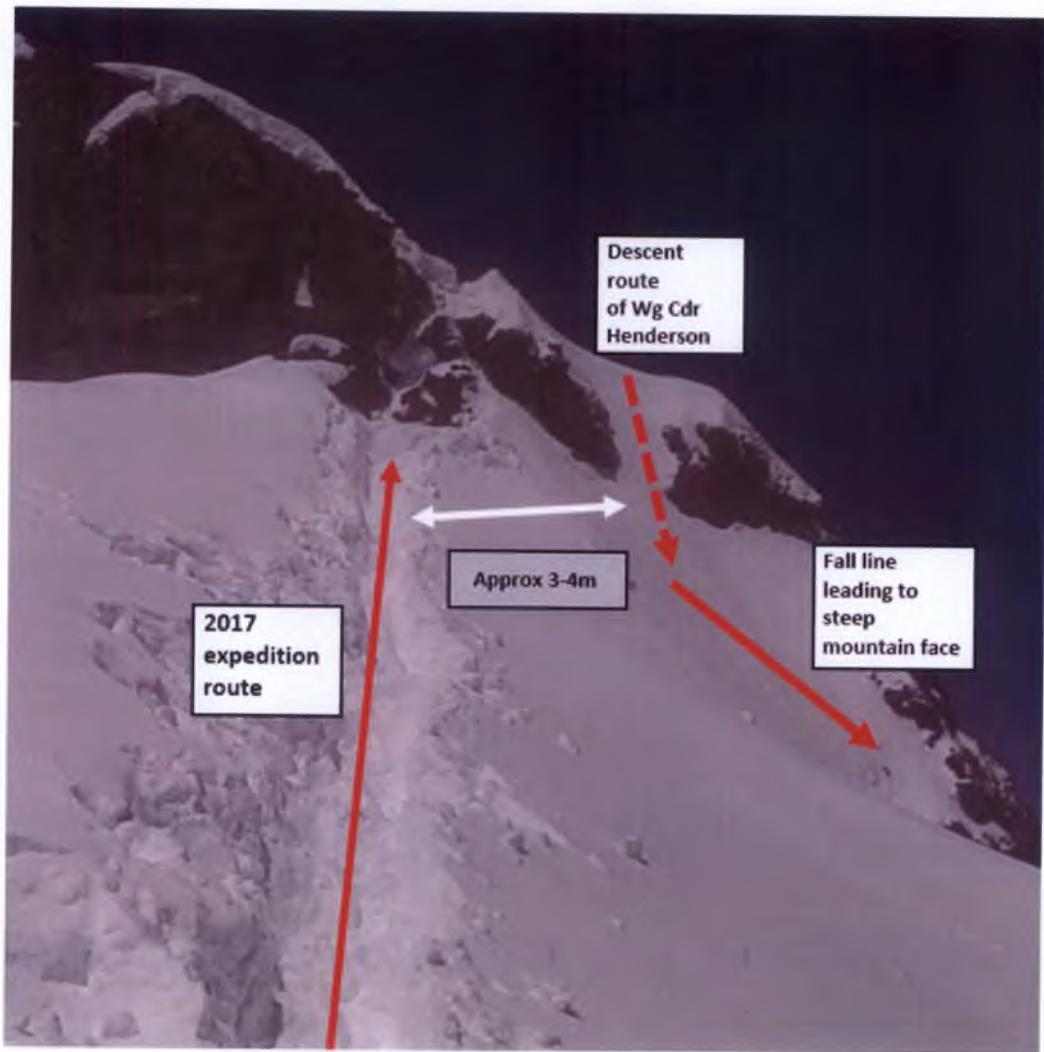


Figure 1.4.7 – 2017 Expedition route.²¹

1.4.76. The 2017 expedition route appeared to lead directly from the ridge, and did not deviate towards the exposed area in the same way as the route that Wg Cdr Henderson took (Figure 1.4.7). It was highly likely that the descent route taken by Wg Cdr Henderson was based on the route that other mountaineers had taken on that day.

1.4.77. The panel concluded that the descent route taken by Wg Cdr Henderson resulted in the final outcome being worse, as a fall from the exposed route was more likely to result in a fatality. The panel found that the descent route taken by Wg Cdr Henderson from Rocky Summit, was an **aggravating factor**.

²¹ Source: Broad Peak – An overview of the final ridge's topography, 8000ers.com, Rodolphe Popier, image credit: Alireza Norouzi, 2017.

Descent technique

1.4.78. **Body position during descent.** Wg Cdr Henderson was witnessed by CM-1, to be facing away from the mountain during his descent from Rocky Summit.

Witness 16
Exhibit 255

1.4.79. The descent from the Rocky Summit area where Wg Cdr Henderson fell, was described as a short, almost vertical gully, or 'chimney,' approximately 2m in vertical height (Figure 1.4.8). The terrain directly beneath this section was exposed and led steeply down the face.

Witness 28
Exhibit 256

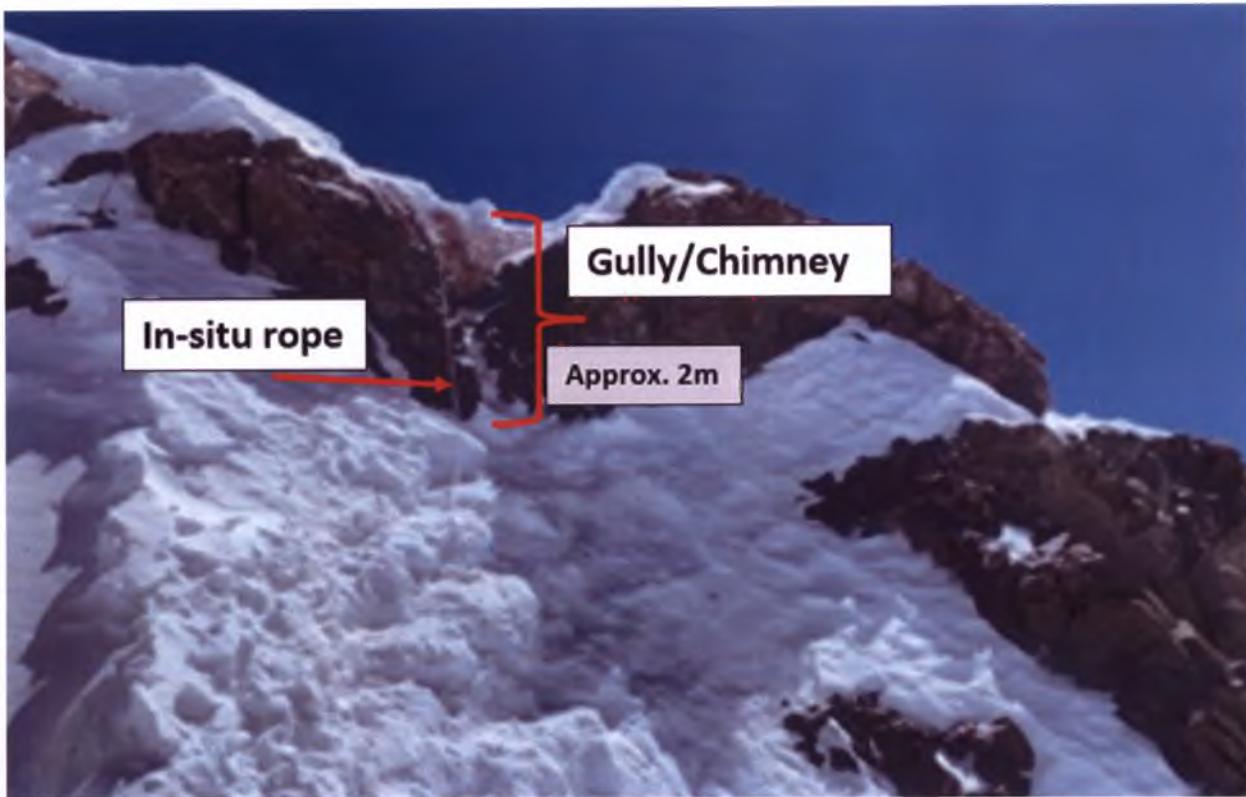


Figure 1.4.8 – High ground from where Wg Cdr Henderson fell (just below Rocky Summit).²²

1.4.80. When mountaineering, it would be more common to descend steep sections of rock, snow, and ice facing towards the mountain, but this can be dependent upon many factors. These factors include; personal ability; equipment being carried; the exact nature of the terrain e.g. angle, size, length, snow, ice or rock; areas being available to hold to support the descent and, the ground directly beneath the steep sections i.e. size, exposure, and steepness. It is less common to face away from the mountain during descent

²² Screenshot taken from Exhibit 19.

when the area is steep and exposed or where the consequences of a fall are severe.

1.4.81. The panel was unable to determine why Wg Cdr Henderson chose to descend facing away from the mountain. The panel considered that he may have assessed the terrain and decided an outward facing descent was appropriate. It is possible that he descended the steep section slightly to get into, what he considered to be, a better position to then turn around and face the mountain before continuing his descent. The EL could not recall this specific area of the mountain nor how they ascended or descended it. However, they stated that given the altitude and their fatigue, it was highly likely they would have faced the mountain during their descent. The civilian mountaineer who fixed the in-situ rope (CM-2), an international mountain guide of 10 years' experience, stated that they faced into the mountain when they descended the area immediately below Rocky Summit.

Witness 01
Witness 16
Witness 28
Exhibit 255
Exhibit 256
Exhibit 257

1.4.82. The panel concluded that by facing away from the rock, Wg Cdr Henderson's body position, in combination with the steepness of that section, increased the likelihood of the accident. The panel found that the body position, facing away from the rock whilst descending a particularly steep and exposed segment of the mountain, was a **contributory factor**.

1.4.83. **Use of in-situ rope.** The use of fixed ropes was detailed as a risk control in the BSME20 risk assessments in order to minimise the impact of any slip/trip or fall. Fixed ropes were available up until the col and some were available in the technical sections between the col and Rocky Summit. Wg Cdr Henderson was observed to descend from Rocky Summit without using the in-situ rope.

Witness 16
Exhibit 02
Exhibit 255

1.4.84. Knowing they would have to negotiate the section upon their return, and to aid the passage of other climbers, CM-2 had felt that the steep section leading to Rocky Summit carried enough risk to warrant the fixing of a rope. During their ascent of the steep section, they attached a length of rope, fixed at one end, to an anchor at the top (Figure 1.4.8). The panel determined that during their ascent of Broad Peak, CM-2 was several hours ahead of Wg Cdr Henderson and the EL. As such, the rope would have been in position during their ascent of the segment leading to Rocky Summit. The panel was unable to determine whether Wg Cdr Henderson used the in-situ rope during his ascent of Rocky Summit, but believe it is unlikely that he would have been unaware of the rope's existence.

Witness 28
Exhibit 256
Exhibit 262
Exhibit 258

1.4.85. The panel was unable to determine why Wg Cdr Henderson did not use the in-situ rope to assist with his descent from Rocky Summit.

Witness 16
Exhibit 255

1.4.86. With the equipment he carried, and if he was aware of its existence, Wg Cdr Henderson could have used the rope in two ways:

Witness 16
Exhibit 255

- a. Holding the rope - Using the rope as a handrail to steady himself during the descent. This could have been done with one hand on the rope and an ice axe held in the other hand that is placed in the snow at regular intervals, or with both hands on the rope and the ice axe

stowed. CM-1 could not recall if Wg Cdr Henderson was carrying an ice axe at the time of the accident.

b. Abseil setup - Attaching an abseil device between the climber and the in-situ rope and descending that way. The abseil set up could include the use of a French Prussik.²³

1.4.87. CM-2 had previously descended the accident area using the rope with one hand. However, they could not recall if they used an ice axe.

Witness 28
Exhibit 256

1.4.88. The panel concluded that not using the in-situ rope, which was available and a BSME20 risk control for managing the slip, trip and fall risk, increased the likelihood of the accident and was, therefore, a **contributory factor**.

Main Team instructor qualifications and remit

1.4.89. There were no formal qualifications, either civilian or military that related specifically to mountaineering in the greater ranges such as the Karakoram in Pakistan and as BSME20 took place outside of the UK, it was unable to operate under RAFMA's mountaineering qualification SOPs. Instead, the expedition was required to adhere to the qualifications, and associated instructor/student ratios stated within the Joint Service Alpine Mountaineering Scheme, as detailed in JSP 419.²⁴

Witness 01
Exhibit 84
Exhibit 128
Exhibit 129
Exhibit 134

1.4.90. Within JSP 419, 'qualification remit' referred to the number of personnel a leader or instructor was allowed to lead or instruct and outlined the difficulty, or grading, of the terrain they were permitted to lead those personnel on. This was dictated by the level of qualifications that the leader or instructor held.

1.4.91. The International French Adjectival System (IFAS) evaluated the overall difficulty, or grade, of a route.²⁵ In increasing order of difficulty, the grades were:

Exhibit 129

- a. F - Facile (easy). Straightforward, snow and ice often at an easy angle.
- b. PD - Peu Difficile (not very difficult). Routes may be longer at altitude, with snow and ice slopes up to 45 degrees.
- c. AD - Assez Difficile (fairly difficult). Fairly hard, snow and ice at an angle of 45-65 degrees.

²³ French Prussik was a small piece of cord attached to the climber and twisted around the rope that acted as a brake if suddenly loaded but could be easily released to allow a controlled descent.

²⁴ Joint Services Publication (JSP) 419, Adventurous Training in the UK Armed Forces, Part 2, Chapter 2, Section 6 – Joint Service Alpine Mountaineering Scheme.

²⁵ International French Adjectival System (IFAS) grading definitions were detailed in Joint Services Publication (JSP) 419, Adventurous Training in the UK Armed Forces, Part 2, Chapter 2, Section 6 – Joint Service Alpine Mountaineering Scheme.

- d. D - Difficile (difficult). Hard, snow and ice slopes at 50-70 degrees.
- e. TD - Très Difficile (very difficult). Very hard with sustained snow and ice at an angle of 65-80 degrees.
- f. ED1/2/3/4 - Extrêmement Difficile (extremely difficult). Extremely hard with vertical ice slopes.

1.4.92. During the approvals phase of the expedition planning, the overall grade for Broad Peak was detailed in the Joint Services Adventurous Training Form Alpha (JSATFA) for BSME20 as AD. The EL stated that the AD grading took into consideration the length and altitude of the route on Broad Peak. The panel was also able to receive an independent assessment of the grade of Broad Peak from a witness who was not part of the BSME20 expedition but had reached the summit of Broad Peak on 19 Jul 2022. Their opinion of the grade of Broad Peak was also AD.

Witness 01
Witness 28
Exhibit 132
Exhibit 133
Exhibit 04
Exhibit 140
Exhibit 141

1.4.93. **Joint Service alpine mountain instructor (AMI) qualification.** JSP 419 stated that 'AMIs could climb as equals with other AMIs on technical ground commensurate with the team's capability and experience. When leading groups, AMIs could lead teams on non-technical terrain, up to F+, with a maximum ratio of 1:4, and could lead teams on technical ground commensurate with the group's capability and experience at a maximum ratio of 1:2. AMIs were advised to seek further guidance from the chief instructor at the Joint Services Mountaineering Training Centre if they wished to lead groups on routes of a more remote and technical nature. Such routes may have required a ratio of 1:1.'

Exhibit 129

1.4.94. The EL held an AMI qualification and on AD graded terrain was authorised to lead at a maximum ratio of 1:2. They led MT-2 and Wg Cdr Henderson on the summit attempt of Broad Peak. They also provided indirect supervision to MT-1, MT-3 and MT-4 who were operating as equals.

Witness 01
Exhibit 55
Exhibit 56
Exhibit 122
Exhibit 89
Exhibit 110

1.4.95. The panel concluded that the EL, when leading MT-2 and Wg Cdr Henderson and providing indirect supervision to MT-1, MT3 and MT-4 on Broad Peak during the summit attempt of Summit team 1, operated within the level of their qualification and remained within JSP 419 policy.

1.4.96. **Alpine mountain leader (AML) qualification.** JSP 419 stated that 'when operating as equals AMLs can climb with at least one other AML on terrain commensurate with the team's capability and experience.²⁶ When leading groups AMLs can lead a group on non-technical terrain, up to F+, with

Exhibit 129

²⁶ 'Operating as equals' was defined in JSP 419 Part 2, Paragraph 14d, 'as a scenario where suitably trained and experienced personnel may participate in activity where each person is charged with maintaining an equitable duty of care for the others (i.e. there is no nominated leader). However, when 'operating as equals,' those individuals, whose remit does not allow them to lead a group, must fall under the indirect supervision of a qualified and nominated individual who is responsible.'

a maximum ratio of 1:4 or lead a group on technical ground up to alpine PD at a maximum ratio of 1:2.'

1.4.97. MT-5 and MT-8 held an AML qualification and on technical ground were permitted to lead up to PD graded terrain at a ratio of 1:2. MT-8 led MT-6 and MT-5 led MT-7 during their team's summit attempt.

Exhibit 138

1.4.98. The panel concluded that as AMLs, both MT-5 and MT-8 operated outside their qualification as detailed within JSP 419 and were not permitted to lead on AD graded terrain. The panel considered this to be an **other factor**.

Exhibit 129

Exhibit 140

1.4.99. **Alpine mountain leader training (AMT) qualification.** JSP 419 stated that 'when operating as equals, AMTs can only climb as equals with other AMTs up to PD graded terrain when under the indirect supervision of an AML or higher. AMTs cannot lead groups but can participate as a team member in a led group under the supervision of an AML on terrain commensurate with the team's capability and experience.'

Exhibit 129

1.4.100. MT-1,2,3,4 and Wg Cdr Henderson held an AMT qualification. MT-1,3 and 4 operated as equals during their summit attempt and were only permitted to operate up to PD graded terrain and then only when under the indirect supervision of the EL, who held the appropriate higher qualification.

Exhibit 110

1.4.101. The panel concluded that MT-1, 3 and 4 operated outside their qualification as detailed within JSP 419, and were not permitted to operate as equals on AD graded terrain. The panel considered this to be an **other factor**.

1.4.102. The panel determined that whilst the BSME20 Main Team members understood and were able to describe their remit within the qualification's held, they could not determine whether they knew that, overall, the expedition could not operate on AD graded terrain with the qualifications that expedition members held. The panel found that the only expedition documentation that detailed Broad Peak's grade as AD, was the JSATFA and it was therefore possible that, as it was produced in the organisational phase of the expedition, some of the Main Team members would not have seen it and were unaware of Broad Peaks grade. The EL explained that the AD grade was agreed at a high risk and remote panel and detailed in the JSATFA accordingly, but during the period between approval of the JSATFA on 28 October 2019, and the final names of those attending BSME20 on 21 May 22, the number of instructors had reduced. The EL stated that although they were concerned, they were running out of instructors as they got closer to the expedition, they believed the final instructor list still met the requirements of JSP 419.

Witness 02

Witness 01

Witness 05

Exhibit 139

Exhibit 143

Exhibit 144

Exhibit 141

Exhibit 140

Exhibit 188

1.4.103. There was a requirement on the JSATFA to check and sign that the instructor/student ratios were correct and in accordance with JSP 419. The panel determined that this was correctly undertaken and signed for on the JSATFA by the RAFMA Training Development Officer (TDO) on 28 October 2019. The panel identified that no formal check was undertaken to ensure that the initial instructor/student ratios check remained valid when the final

Exhibit 146

Exhibit 147

Exhibit 148

Exhibit 05

instructor list was detailed on the BSME20 admin order, dated 21 May 2022. The panel noted that the instructor list within the JSATFA was not updated when the composition of the instructors for BSME20 changed. As a consequence, a further instructor student/ratio compliance check was not undertaken by the RAFMA TDO. The panel noted that at the high risk and remote panel on 8 Oct 19, it was observed by Robson Academy of Resilience that the instructors named within the JSATFA were not all due to deploy and that the final team would be named closer to departure. The recommendation detailed that all instructors were to be detailed in the final admin order, but it did not detail the requirement to ensure, once the final instructor list was known, that another formal instructor/student ratio check was conducted.

1.4.104. The panel noted that if there was an awareness prior to the expedition that there were not enough instructors to remain within the direction given in JSP 419, a mechanism existed where dispensation could have been requested from the Delivery Duty Holder (DDH), as the risk owner. The DDH stated that no dispensation request to operate outside the JSP 419 required instructor/student ratios had been received prior to the expedition.

1.4.105. The panel determined that, although Wg Henderson and the EL when operating as a pair conformed with the JSP 419 requirements, there was an insufficient amount of suitably qualified instructors in the Main Team to remain within the requirements of JSP 419 policy. This was caused by a lack of instructor/student ratio checks when the instructor composition for BSME20 changed.

1.4.106. The panel concluded that, although it did not directly contribute to this accident, the process failure that allowed the Main Team to deploy without enough instructors and without dispensation, could contribute to accidents in the future. The panel found that the lack of a check to confirm that the instructor/student ratios remained valid, in accordance with JSP 419, was an **other factor**.

1.4.107. Recommendation. The Chief of Defence People should amend the Joint Services Adventurous Training Form Alpha (JSATFA) process to ensure that if the instructor composition changes from the originally signed JSATFA a mechanism exists to ensure that the approval remains valid.

Main Team group management and supervision

1.4.108. As discussed, BSME20 operated under the auspices of JSP 419: Adventurous Training in the Armed Forces. In accordance with the JSP, and by virtue of the qualifications they held (Wg Cdr Henderson – AMT and the EL – AMI), the EL was responsible for supervision of the group members. In this context, this meant maintaining line of sight, stopping to wait for others to catch up when required and assisting or coaching at technical or difficult sections on the mountain. The EL became separated from and lost sight of Wg Cdr Henderson on the summit ridge, meaning the pair were not together when the accident occurred.

Exhibit 99
Exhibit 15
Exhibit 34
Exhibit 89
Exhibit 97

1.4.109. Wg Cdr Henderson and the EL ascended as a pair during their summit attempt and were at various degrees of separation throughout their final ascent. The EL was often 20-30 metres ahead of Wg Cdr Henderson on the fixed rope section up to the col, but stopped at regular intervals to regroup, enabling the pair to discuss and assess their physical condition. The EL took various selfies, videos and photos of their route, the surrounding mountain range and of Wg Cdr Henderson and could be heard conversing with him.

Witness 01
Exhibit 76
Exhibit 17

1.4.110. After taking the final footage of Wg Cdr Henderson at 12:26, the EL walked ahead. At 12:38, the EL took a selfie with Broad Peak Summit in the frame. This meant they were looking back in the direction they had come from, thus facing towards Wg Cdr Henderson. The EL could not recall if they saw Wg Cdr Henderson at this point. The EL then proceeded towards Broad Peak Summit, stopping 30m short, at approximately 13:30, to rest behind a rock and to wait for Wg Cdr Henderson so that they could summit together. Having become concerned for Wg Cdr Henderson's whereabouts, the EL then proceeded to Broad Peak Summit to ask other climbers, external to BSME20, if they had seen him. None of the other climbers provided a positive response that they had seen Wg Cdr Henderson, although the EL stated that due to language barriers, some may not have understood the question. The EL started their descent from Broad Peak Summit at approximately 14:15.

Witness 01
Exhibit 17
Exhibit 18
Exhibit 100
Exhibit 101

1.4.111. The EL described the ground on the ridge as undulating and did not recall seeing Wg Cdr Henderson in the period between them taking the selfie photograph at 12:38 and stopping at approximately 13:30 just prior to Broad Peak Summit. The EL believed that the distance of separation between themselves and Wg Cdr Henderson was likely to have ranged between 20-50m on the ridge and described the ridge beyond the point at which they had last seen Wg Cdr Henderson 'as a pleasant winter walk', contributing to them 'being less vigilant'.

Witness 01
Exhibit 92
Exhibit 101
Exhibit 102

1.4.112. The panel determined that although the level of technical difficulty on the ridge had reduced, other risks, including HAI and fatigue still remained. A consequence of the reduction in awareness of Wg Cdr Henderson's progress meant that key supervisory controls for those risks were not maintained.

Exhibit 02

1.4.113. The panel concluded that the level of group management and supervision during the final stages of the summit attempt was not adequate to prevent Wg Cdr Henderson from turning around and descending alone. This increased the likelihood of an accident occurring and is considered to be a **contributory factor**.

1.4.114. **Recommendation.** The Joint Services Mountaineering Committee Chair should capture the group management and supervision shortfalls during the BSME20 expedition as a lesson identified and ensure that for future mountaineering club/association led

expeditions, leaders are reminded of their supervisory responsibilities in order to avoid separation of personnel.

1.4.115. The panel noted two other occasions of inadequate group management and supervision. These were analysed chronologically as follows.

1.4.116. **MT-2 remained at Camp 3 on 18 July 2022.** MT-2 had not rested well and elected not to attempt the summit of Broad Peak on the evening that the rest of the team departed for their attempt. MT-2 remained at Camp 3 without any other BSME20 personnel and without any communication or medical equipment.

Witness 09
Exhibit 105

1.4.117. The EL had no concerns about MT-2 remaining at Camp 3 and stated that MT-2 'was quite happy to stay at Camp 3'. The EL conducted a dynamic risk assessment and concluded it was safe to allow MT-2 to remain at Camp 3 without any other BSME20 personnel.²⁷ The panel noted that MT-2 had no medical equipment but did not display any signs or symptoms of illness at that time. MT-2 did not have a radio, but the EL stated that 'there were many other mountaineers and VHF handsets and sat phones at Camp 3'.

Witness 01
Exhibit 106
Exhibit 107

1.4.118. The panel considered that at an altitude of 7000m there was a definite risk of HAI and that as MT-2 did not have access to any medication, if their condition deteriorated, they would have been unable to treat it. The panel also considered that it was likely that the use of the civilian mountaineers' communication equipment could not be guaranteed as BSME20 personnel had little or no knowledge of their plans to move up and down the mountain.

Witness 05
Exhibit 80
Exhibit 109

1.4.119. The panel concluded that although MT-2 did not become ill, or require the use of a radio, group management and supervision controls were not maintained when they were left at Camp 3 without other BSME20 personnel. The panel found the insufficient level of group management and supervision for MT-2 to be an **other factor**.

1.4.120. **Recommendation.** The recommendation for this factor is the same recommendation as detailed in paragraph 1.4.114.

1.4.121. **MT-1 descended alone to Camp 3 on 19 July 2022.** During their ascent MT-1 was slower than the other four members of the summit team and was visibly further behind. MT-1 communicated to the EL by radio, at approximately 23:30 on 18 July 2022, to say that they were going to rest and then continue. At approximately 01:00 on 19 July 2022, MT-1 was looked after, turned around, and sent back down towards Camp 3 by a group of civilian mountaineers outside of BSME20. MT-1 descended to Camp 3 alone without communicating their intentions to the EL. They were later treated for

Witness 01
Witness 12
Exhibit 111
Exhibit 112

²⁷ A dynamic risk assessment was defined in JSP 375 (Management of Health and Safety in Defence), Volume 1, Chapter 8 (Safety risk assessment and safe systems of work) as 'a risk assessment that is carried out immediately before or while an activity is underway and builds on existing risk assessments'.

AMS symptoms when found alone in a tent at Camp 3 when MT-3 and MT-4 returned at approximately 08:00 on 19 July 2022. At this point MT-1 had been on their own for over 8 hours as MT-2, already in camp, was unaware that they had returned and were in a separate tent.

1.4.122. MT-1, 3 and 4 operated as equals which meant there was no leader or instructor qualification held by any member of the group. Although the EL was responsible for their indirect supervision, they were still operating as an independent group. Exhibit 110

1.4.123. As the AMI, the EL was responsible for the indirect supervision of the group who were operating as equals and was required be on the same or adjacent slope and contactable. The panel determined that the EL met this requirement. The EL was aware that MT-1 had fallen behind the group and was unlikely to catch up and continued to ascend with Wg Cdr Henderson, MT-3 and MT-4. Exhibit 98
Exhibit 99
Exhibit 111

1.4.124. The panel determined that the decision for the EL, Wg Cdr Henderson, MT-3 and MT-4 to continue to ascend, with MT-1 behind and unlikely to catch up, resulted in MT-1 having to descend alone when they turned back. This was noted by the panel as the first occurrence during the summit attempt of a member of the BSME20 team descending alone, when solo mountaineering was not permitted. Exhibit 98
Exhibit 111

1.4.125. The panel concluded that there was a lack of sufficient group management and supervision for MT-1, culminating in them having to be managed by personnel external to BSME20. The inadequate level of group management and supervision for MT-1 was considered to be an **other factor**.

1.4.126. **Recommendation.** The recommendation for this factor is the same recommendation as detailed in paragraph 1.4.114.

Buddy-buddy system

1.4.127. The BSME20 risk assessments detailed the buddy-buddy system as a control against risks including HAI and fatigue. Exhibit 02

1.4.128. The panel **observed** that the buddy-buddy system is not formally defined in any defence policy, although 'buddy-buddy' is a widely used term in the military. It implies that, when operating in pairs or small teams, personnel look out for one another's wellbeing, their safety and/or that drills or practices are conducted correctly. During interview, witnesses described the buddy-buddy system as assessing and managing each other's physical condition and helping each other to conduct tasks on the mountain and at Broad Peak Base Camp. Some described it to mean that no one went up or down the mountain alone. Witness 05
Witness 12
Exhibit 104
Exhibit 103

1.4.129. In lieu of an official description, the panel agreed that the description of a buddy-buddy system as defined by members of BSME20, was Witness 12
Exhibit 104

akin to an additional check of a team members clothing, equipment and wellbeing, undertaken by everyone on the team and not solely by leaders and instructors. Some witnesses described it as something that happened continually throughout the expedition.

1.4.130. The panel sought advice from the Chief Instructor at the Joint Services Mountaineering Training regarding the definition of the buddy-buddy system. The Chief Instructor advised the panel that it was not a term utilised within Joint Services Adventurous Training (JSAT) mountaineering policy and stated that it likely referred to checking each other over and was more applicable when 'operating as equals'.²⁸

Exhibit 279

1.4.131. The panel noted that the three occasions where BSME20 personnel were on their own without other BSME20 personnel, contradicted the statement that buddy-buddy meant that no one moved up or down the mountain alone. However, because the EL was the qualified instructor and, therefore, directly responsible for their group, the panel determined that on the occasions where Wg Cdr Henderson became separated from the EL and MT-2 was left at Camp 3 without other BSME20 personnel, it was primarily a lack of group management and supervision that led to this and not specifically a lapse in the buddy-buddy system. The panel, therefore, did not analyse these two occasions in the buddy-buddy context.

Exhibit 89

1.4.132. In the case of MT-1, 3 and 4 operating as equals, where there was no leader or instructor qualification held by any member of the group, the panel deduced that the closer adherence to the buddy-buddy system, as stated in the BSME20 risk assessments, was necessary. MT-1, 3 and 4 were an independent group with an equitable duty of care, however, when MT-1 became further behind the other two group members and eventually descended alone, the buddy-buddy system had ceased to work as a risk control measure.

Witness 05
Exhibit 110
Exhibit 103
Exhibit 99

1.4.133. The panel concluded that there was a lack of adherence to the buddy-buddy system for MT-1, culminating in them having to be assisted by personnel external to BSME20. The panel found the lack of adherence to the buddy-buddy system for MT-1 to be an **other factor**.

1.4.134. Recommendation. The recommendation for this factor is the same recommendation as detailed in paragraph 1.4.73.

Equipment

1.4.135. **Equipment supply.** The equipment used during BSME20 was partly sourced from central AT equipment stores at MOD Bicester, however due to factors outside of the EL's control, several equipment deficiencies

Witness 09
Exhibit 259
Exhibit 260

²⁸ 'Operating as equals' was defined in JSP 419 Part 2, Paragraph 14d, as a scenario where suitably trained and experienced personnel may participate in activity where each person is charged with maintaining an equitable duty of care for the others (i.e. there is no nominated leader). However, when 'operating as equals,' those individuals, whose remit does not allow them to lead a group, must fall under the indirect supervision of a qualified and nominated individual who is responsible.

existed. The equipment deficiencies were overcome by approved local purchases that were conducted by the EL. Some members of BSME20 also used their own personal equipment.

Exhibit 261

1.4.136. The panel determined that all requested expedition equipment was in place by the time BSME20 deployed.

Exhibit 261

1.4.137. The panel concluded that BSME20 personnel held all the requested equipment for the expedition and that equipment supply was **not a factor**.

1.4.138. **Personal Protective Equipment (PPE)**. The majority of PPE was either supplied new or was personal equipment belonging to each member of BSME 20.²⁹ As such, for new and personal equipment, no inspection or maintenance records were held apart from the harnesses used by the Development Team.

Witness 01
Exhibit 260
Exhibit 261
Exhibit 268

1.4.139. The majority of Wg Cdr Henderson's PPE was not recovered, therefore, all equipment condition or potential failures, could not be investigated. However, the boot that was recovered was analysed. In addition, from video, photographic and witness evidence, the panel identified the following equipment lines of inquiry.

1.4.140. **Lanyard** - From the last video footage of Wg Cdr Henderson, taken approximately 90 minutes prior to his fall from the mountain (Figure 1.4.9), the panel observed that Wg Cdr Henderson wore a helmet, a lightweight climbing harness, Scarpa 8000HD boots fitted with crampons and he carried an ice axe. He had removed his outer down jacket and was wearing a base layer top, down trousers held up by braces, and fingered winter gloves. He had a lanyard attached to the front and side of his harness which was previously used to attach himself to the fixed rope sections of the mountain. It dangled across the front of his right leg in the middle of the shin below the knee.

Exhibit 17

²⁹ The term PPE referred to all equipment which was intended to be worn or held by personnel which protected them against one or more risks to their health and safety e.g. clothing, safety helmets, harnesses, goggles, etc.



Figure 1.4.9 – Still from last video footage of Wg Cdr Henderson taken at 12:26 on 19 July 2022.

1.4.141. During mountaineering activities where a harness is required to be worn, items that are attached to it should be connected in such a way that the wearer does not risk tripping over them. Where items are attached to the harness there exists a risk of them being stood upon if climbers are required to lift a leg, sit down or crouch for example. Keeping equipment neatly attached to the harness during winter mountaineering when crampons are worn, is particularly important as the crampon spikes pose an additional risk of catching on clothing and equipment.

1.4.142. The panel deduced that it was highly likely Wg Cdr Henderson's state of dress did not change after he decided to turn around and descend and it was possible that he could have tripped over his lanyard or caught it on his crampons.

1.4.143. The panel concluded that although his stowing of the lanyard introduced a trip hazard, there was no evidence of Wg Cdr Henderson tripping over it during his descent from Rocky Summit and as such could not determine if it was a factor in the accident.

1.4.144. **Rucksack.** A rucksack, when carried, adds size and weight and requires additional care and spatial awareness especially when negotiating rock, snow or ice steps, and constricted spaces. During his descent from Rocky Summit, Wg Cdr Henderson's rucksack was observed to come into contact with the rock face just prior to his fall. The panel noted that it was

Witness 16
Exhibit 255

possible that the interaction of the rucksack with the rock face could have contributed to a slip, trip or fall.

1.4.145. The panel concluded that although there was evidence of Wg Cdr Henderson's rucksack interacting with the rock face, there was no evidence to show that this played a part in the accident sequence. As such, it could not be determined whether it was a factor in the accident.

1.4.146. **Crampons.** Wg Cdr Henderson wore Grivel G12 crampons (Figure 1.4.10) during his ascent of Broad Peak.³⁰ He was observed to be wearing them at various stages throughout his summit attempt, including at the time he fell.

Witness 16
Exhibit 269
Exhibit 270



Figure 1.4.10 – Wg Cdr Henderson's Grivel G12 crampons.

1.4.147. During mountaineering activities, crampons can occasionally become loose or separated from the boot. This can be caused by incorrect or poor fitment e.g. not being tightened sufficiently, or because of a failure of the crampon itself. Crampon securing straps can also loosen naturally throughout the day and require regular tightening.

1.4.148. Wg Cdr Henderson was an experienced mountaineer who would have almost certainly fitted crampons to his boots on numerous occasions. The panel found no evidence to suggest that Wg Cdr Henderson's crampons were incorrectly fitted.

³⁰ Grivel G12 crampons were manufactured by Grivel. They had 12 points, 8 of which were in the front and 4 in the back and designed to allow perfect stability and performance in all snow and ice conditions. Description sourced from www.grivel.com/products/g12.

1.4.149. Wg Cdr Henderson's crampons became detached from his boots at some point after he fell and were not recovered. As such, the panel was unable to determine if crampon failure had occurred. Exhibit 51

1.4.150. The panel concluded that there was no evidence available to suggest that incorrectly fitted crampons or crampon failure played a part in the accident sequence and as such could not determine whether the crampons were a factor in the accident.

1.4.151. **Outer and inner boots.** The Scarpa® 8000HD outer boot (left) that was found by the EL during their descent was observed by the panel to contain traces of blood and displayed a tear in the heel area (Figure 1.4.11).³¹ The Scarpa® 8000HD inner boot (left) was also found to be damaged (Figure 1.4.12).

1.4.152. A full DNA profile was obtained from the bloodstain which matched the DNA profile of Wg Cdr Henderson.³² This enabled the panel to determine that it was almost certain that the boot found was one of the boots worn by Wg Cdr Henderson at the time of the accident. Exhibit 283
Exhibit 284

1.4.153. The damaged boot was sent to the structural materials investigation team at 1710 Naval Air Squadron for expert analysis. Their opinion was '...that the puncture mark on the outer boot and the parallel scores on the orange boot occurred at the same time, most likely as a result of the crampon on the RH boot puncturing the LH boot. It is highly likely that the adhesive failure and tear around the rear of the outer boot occurred at the same time. We cannot establish whether this event occurred during the final ascent, immediately preceding the fall, or during the fall. The presence of melted material smeared on the orange boot is indicative of a high energy event, such as friction caused during the fall...'³³ The panel determined that although it was possible that contact of the right boot crampon with the left boot could have occurred immediately before the fall and, therefore, may have contributed to the accident, the boot analysis results did not provide conclusive evidence that this was the case. As such, the panel was unable to positively determine whether or not the damage to the boot was a factor in the accident. Exhibit 289

³¹ The Scarpa® 8000HD boots were manufactured by Scarpa® and were designed for high-altitude mountaineering. Description sourced from www.scarpa.co.uk/mountain-boots/phantom-8000-hd.

³² Deoxyribonucleic acid (DNA) is the molecule that carries genetic information for the development and functioning of an organism.

³³ When referring to 'orange boot' 1710 Naval Air Squadron were describing the inner boot. LH boot refers to left boot and RH boot refers to right boot.

OFFICIAL - SENSITIVE



Figure 1.4.11 – Photograph of recovered Scarpa® 8000HD outer boot (left).



Figure 1.4.12 – Photograph of recovered Scarpa® 8000HD inner boot (left).

1.4.154. Boot inner liners. In addition to the outer boot and inner boot, the Scarpa® 8000HD boots worn by Wg Cdr Henderson also contained removable inner liners. He had worn the inner liners on the wrong feet for a period of the expedition, before being made aware of this by other BSME20 team members. A zip on one of his inner liners had become damaged and Wg Cdr Henderson had used tape to secure it. The left boot of Wg Cdr Henderson that was recovered from Broad Peak did not include the inner liner.	Witness 01 Witness 27 Exhibit 271 Exhibit 273
1.4.155. The panel sourced a set of boots identical to those worn by Wg Cdr Henderson and found that the inner liner was a soft neoprene type that was roughly shaped to fit a left or a right foot. The panel noted that they could easily be worn on either foot.	
1.4.156. The panel could find no evidence to suggest that wearing the inner liners on the wrong feet, or the damaged inner, hindered Wg Cdr Henderson during the expedition or, specifically, during the summit attempt. The panel concluded that there was no evidence to definitively suggest that the damaged boot inner liner played a part in the accident sequence. As such it is the panel's opinion that it is likely that it was not a factor in the accident.	
Weather and climate	
1.4.157. BSME20 took place within the summer season (April to August), the warmest period for the Karakoram area. The average maximum daytime temperature during the summer season was 21°C. The expedition experienced some period of heavier precipitation from 11 July 2022 to 15 July 2022, which resulted in them halting all activity from Broad Peak Base Camp. This was the only period that the expedition had to cease activity due to the weather. The weather on average was mostly clear, with low wind speeds and little to no chance of precipitation.	Exhibit 180 Exhibit 181 Exhibit 209 Exhibit 210 Exhibit 211 Exhibit 212 Exhibit 213
1.4.158. Visibility. Although the Main Team was restricted in their activity due to localised precipitation between 11 July 2022 and 15 July 2022, this did not affect the summit attempt. The weather during the attempt period was sunny with scattered clouds below 6000m and clear above, with a precipitation chance of 0-10%. The panel determined that the visibility, during the ascent, was clear. It is therefore, extremely improbable that meteorological visibility impacted visual communication across un-obstructed topography.	Exhibit 183 Exhibit 184 Exhibit 17 Exhibit 18 Exhibit 19 Exhibit 214 Exhibit 215
1.4.159. Snow coverage. The Karakoram summer season's increased temperature range was almost certain to result in reduced levels of precipitated snow being retained on Broad Peak's slopes. A lack of snow exposed more of the underlying rock to climbers and was likely to have resulted in a reduction of grip or stability when using crampons. The panel found that during the summit attempt, snow coverage was still present and conditions were appropriate for the use of crampons during the ascent and descent.	Witness 17 Exhibit 17 Exhibit 19 Exhibit 264 Exhibit 265
1.4.160. Body temperature. The seasonal temperature, coupled with the physical exertion of the mountaineering activity, was almost certain to	Witness 01 Exhibit 17

increase body temperature during the ascent of Broad Peak. Both the EL and Wg Cdr Henderson were observed to be managing their body temperatures during their ascent by adjusting their clothing layers. Although in isolation an increased temperature was considered not to have contributed directly to the accident, it was likely to have contributed to fatigue.

Exhibit 266
Exhibit 267

1.4.161. The panel concluded that the weather and climate was extremely unlikely to have contributed to the accident and was **not a factor**.

Medical suitability and physical fitness requirements

1.4.162. Defence policy required service personnel undertaking JSAT to be medically and physically fit. Individuals attending BSME20 were required to hold a Joint Medical Employment Standard (JMES) category of 'medically fully deployable' (MFD) and be current in their single Service fitness test assessment. All individuals were required to complete a pre-expedition medical questionnaire as a medical and fitness declaration as well as obtaining a copy of their operational medical record (FMed965). These documents were then assessed by the expedition medical officers to confirm that individuals met the BSME20 medical and fitness requirements.

Exhibit 57
Exhibit 58

1.4.163. **Medical suitability.** Wg Cdr Henderson had supplied the required medical documentation to the Main Team expedition medical officer on 17 May 2022 for assessment and was subsequently declared fit to take part in BSME20 having met the required criteria.

Witness 03
Exhibit 90
Exhibit 59
Exhibit 14
Exhibit 63

1.4.164. The medical officers for the expedition had elected to produce their own medical questionnaires to gain additional information to that required by the guidance in JSP 950 Leaflet 1-2-12, Assessment of Medical Suitability to Attend Courses and Training.

Witness 03
Exhibit 90
Exhibit 59
Exhibit 14
Exhibit 63

1.4.165. The panel noted in the medical questionnaire completed by Wg Cdr Henderson that, although MFD, he had been experiencing [REDACTED], had been undertaking [REDACTED]

Witness 01
Exhibit 60
Exhibit 14
Exhibit 69

[REDACTED] The panel requested an independent medical history report for Wg Cdr Henderson. The medical report confirmed his MFD status and detailed that his past medical history was 'unremarkable and uncomplicated.' He had at no point been downgraded, remaining MFD throughout his career. The medical history report detailed that Wg Cdr Henderson had commenced [REDACTED] on 4 March 2022.

[REDACTED]
At no point during this period was his medical category altered.

1.4.166. Although the panel had no evidence that Wg Cdr Henderson had [REDACTED] during the expedition, the panel requested an independent medical opinion as to the possible effects of taking the [REDACTED] at altitude. The medical opinion was that 'the

Witness 03
Exhibit 61
Exhibit 68

consumption of these types of medication on high-altitude expeditions was quite common.' They were taken for 'musculoskeletal aches and pains induced by severe exertion, and commonly for headaches associated with being at high-altitude and that if consumed, the prescribed medication would have had no deleterious effect.'

1.4.167. The panel was informed that Wg Cdr Henderson had suffered [REDACTED] since 2014.

Witness 27
Exhibit 91
Exhibit 60

This was not mentioned in his pre-expedition medical questionnaire as an active medical problem. The panel noted that his medical report stated that he had suffered [REDACTED] during his time in the RAF, including treatment for [REDACTED] in 2020. These were related to his high level of physical activity, being a triathlete and mountaineer. There were no reports from BSME20 team members that Wg Cdr Henderson was suffering with [REDACTED] during the expedition and as such, it was the panel's opinion that it was unlikely that this was an issue.

1.4.168. The panel found that Wg Cdr Henderson met the medical requirements for BSME20. The panel determined that the [REDACTED] and [REDACTED] to Wg Cdr Henderson, did not contribute to the accident. The panel concluded that the medical category, medical history, and prescribed medication were **not a factor**.

Exhibit 15

1.4.169. **Physical Fitness.** Wg Cdr Henderson had achieved an 'enhanced pass' for his Royal Air Force fitness test (RAFFT) on 19 Sep 2017, allowing his pass to remain valid for two years. He achieved a further 'enhanced pass' on 7 Nov 2019 and a 'pass' on 6 Sep 21 that kept him in date until 5 Sep 22, after the scheduled end of the expedition.

1.4.170. During the expedition, Wg Cdr Henderson was reported to have been performing well physically and this was evidenced with him being only one of two personnel who were able to continue past the col towards Rocky Summit.

Witness 01
Witness 13
Exhibit 66
Exhibit 67

1.4.171. The panel concluded that Wg Cdr Henderson met the required physical fitness assessment criteria for BSME20 and that this was **not a factor**.

Witness 03
Exhibit 90
Exhibit 59
Exhibit 14
Exhibit 63

1.4.172. **Evidential check of in-date fitness test.** The panel determined that no evidential check of BSME20 personnel being in date for their single service fitness tests was undertaken. No evidence was required to be produced when completing the medical questionnaire and there was no policy within JSP 419 to suggest such a check should be carried out. Personnel were simply required to sign a self-declaration that they were in date for their single Service fitness test.

1.4.173. The panel concluded that the lack of an evidential check to confirm that AT participants are in date for single Service fitness tests, could introduce additional risk if personnel out of date participate. The panel found that that

the lack of an evidential check of personnel being in-date for single Service fitness tests was an **other factor**.

1.4.174. Recommendation. The Chief of Defence People should include in JSP 419, a process for evidential checks to be undertaken to ensure personnel are in date for single Service fitness tests prior to AT activity in order to reduce the likelihood of fitness related accidents.

Risk management

1.4.175. An activity specific risk assessment was conducted for BSME20 which comprised of a total of 34 risks ranging from low to high, based on likelihood and severity using the RAF Total Safety Risk Matrix (TSRM), (Figure 1.4.13). The medium and high risks were required to be escalated from the DDH to the ODH using a DHAN.³⁴ The medium and high risks, with the agreed risk controls in place, were deemed as low as reasonably practicable (ALARP) and tolerable by the ODH thus allowing the expedition to be undertaken.^{35,36}

Exhibit 02
Exhibit 85
Exhibit 117
Exhibit 119

³⁴ Risk escalation and DHAN process was detailed in Air Publication (AP) 8000 – AIR TLB Safety and Environmental Management System (SEMS), Leaflet 8007 – Safety Risk Management Process and Leaflet 8008 – Duty Holder and Risk Owner Advice Notes (DHAN/ROAN).

³⁵ ALARP was defined in JSP 375 (Management of Health and Safety in Defence), Volume 1, Chapter 8 (Safety risk assessment and safe systems of work) as 'when risk has been reduced to a level where applying further control measures would be grossly disproportionate to the benefit that would be gained'.

³⁶ Tolerable (risk) was defined in JSP 375 (Management of Health and Safety in Defence), Volume 1, Chapter 8 (Safety risk assessment and safe systems of work) as 'a level of risk that we are willing to accept in order to perform an activity or achieve an outcome. A tolerable risk is one that is considered to be worth taking, if it has been evaluated and is being managed.'

Total Safety Risk Matrix (TSRM)		Severity			
		Minor PARMIS Green 20<40	Major PARMIS Yellow 40<60	Critical PARMIS Amber 60<80	Catastrophic PARMIS Red 80<100
Likelihood	Environment	Minor impact on the environment. Minor nuisance to local inhabitants	Noticeable impact on the environment. Creates public nuisance	Critical impact to the environment. Media coverage & adverse public opinion	Catastrophic impact to the environment, where multiple receptors have been affected. Significant media coverage & increased adverse public opinion.
		RIDDOR ²⁰ Reportable Injury/injuries to any one person. Minor ²¹ s Illness/Disease to one person. Non-RIDDOR Reportable Injury/injuries to multiple persons.	RIDDOR Specified Injury/injuries to any one person. Life-changing Injury/injuries to any one person. Long-term Major Illness/Disease to any one person. RIDDOR Reportable Injury/injuries to multiple persons or Minor Illness/Disease to multiple persons.	1-2 fatalities of MOD Employees (including contractors engaged in MOD-supervised activity). RIDDOR Specified Injury/injuries to multiple persons. Life-changing Injury/injuries to multiple persons. Critical illness/Disease to multiple persons.	One fatality of a member of the public. 3 or more fatalities of MOD Employees (including contractors engaged in MOD-supervised activity).
Frequent	Likely to occur at least several times a year.	PARMIS Red 80<100	Medium	High	Very High
Occasional	Likely to occur one or more times per year	PARMIS Amber 60<80	Low	Medium	High
Remote	Likely to occur one or more times in 10 years	PARMIS Yellow 40<60	Low	Medium	High
Improbable	Unlikely to occur in 10 years	PARMIS Green 20<40	Low	Low	Medium

Figure 1.4.13 –RAF Total Safety Risk Matrix (TSRM).

1.4.176. Daily risk assessments and dynamic risk assessments were also undertaken by Main Team leaders/instructors during BSME20.

Exhibit 02
Exhibit 89
Exhibit 110
Witness 01
Witness 26
Witness 28
Witness 30
Exhibit 262
Exhibit 263
Exhibit 275
Exhibit 276
Exhibit 02

1.4.177. **Risk controls.** The panel identified three risk controls that failed during the summit attempt of Summit Team 1.

- a. **Supervision/buddy-buddy system.** Supervision and the buddy-buddy system were detailed as risk controls to mitigate the RtL from HAI, fatigue and slip/trip turning into a fall risks. The panel determined that from the time when the EL and Wg Cdr Henderson became separated this risk control could not be maintained. In addition, when MT-1 and MT-2 were operating as individuals this risk control had also not been maintained.
- b. **Communications plan.** The communications plan risk controls to manage RtL included the ability for mountaineers to be able to communicate with Broad Peak Base Camp and each other. The panel determined that when the EL and Wg Cdr Henderson became separated and Wg Cdr Henderson was not in the vicinity of the radio held by the EL, this risk control could not be maintained. In addition, when MT-2 was left at Camp 3 without a radio, this risk control had also not been maintained.
- c. **Use of fixed ropes.** In mountaineering, a 'fixed rope' is the practice of fixing in place ropes at one or both ends to rock or ice to assist climbers in exposed mountain locations. The use of fixed ropes was detailed as a risk control to mitigate the RtL from exhaustion and RtL from slip, trip and fall. The panel noted that the description of the risk control on the risk assessment varied for the different risks as follows:
- (1) Use of fixed ropes at all times to minimise impact of slip or fall.
 - (2) Use of fixed ropes on steep ground.
 - (3) Use of fixed ropes and harnesses when the terrain dictates.

Broad Peak was not fixed with ropes all the way to the summit. Fixed ropes were available up to the col and on some of the technical sections between the col and Rocky Summit. As such the risk control of using fixed ropes at all times was not achievable. The panel determined that the EL, DDH and ODH were aware prior to the expedition, that fixed ropes were unlikely to be available at all times on Broad Peak and were content that fixed ropes would only be used where available. The ODH agreed that the use of fixed ropes when available should be in place to reduce the risk to ALARP. As detailed at paragraphs 1.4.83 to 1.4.88 a rope fixed at one end was available for use at the section where Wg Cdr Henderson fell. This rope was not used by Wg Cdr Henderson. The panel determined that this risk control was not used at the time of the accident.

1.4.178. The panel determined that during the summit attempt of Summit Team 1, agreed risk controls to reduce the risk to ALARP and tolerable were not maintained.

1.4.179. The panel concluded that the absence of these risk controls increased the residual risk away from the ODH agreed ALARP and tolerable position and thus increased the likelihood of the accident.³⁷ The panel found that the failure of the agreed risk controls was a **contributory factor**.

1.4.180. **Recommendation.** The recommendation for this factor is the same recommendation as detailed in paragraph 1.4.73.

Body recovery effort

1.4.181. At 17:15 on 19 July 2022, a report was received over the radio at Broad Peak Base Camp that two paragliding pilots had seen a rucksack and a body in a crevasse field between Camp 3 and the col (between 7000m and 7400m).

1.4.182. On the evening of 20 July 2022, a sherpa from a separate expedition arrived at Broad Peak Base Camp and reported to the BSME20 team that they had found a body, at an altitude of approximately 7500m, around 100m off the main route from the col to Camp 3. They had captured photographic evidence, which members of the expedition used to determine that the body was that of Wg Cdr Henderson.

1.4.183. The EL contracted a team of porters to attempt to recover the body utilising the location information provided by the paragliding pilots and the sherpa.

1.4.184. The body recovery team departed Broad Peak Base Camp on 24 July 2022 to search the area between Camp 3 and the col. They searched the suspected area eight times, but all attempts proved unsuccessful. As the weather had deteriorated to a level that hampered continued search, coupled with concerns for the safety and welfare of the search and recovery team (which had been operating above 7000m for over 20 hours), the search was stopped on 27 July 2022. The body recovery team provided the EL with photographic and video evidence of their attempt to locate the body.

1.4.185. The panel analysed the GPS location data from the photographs provided by the sherpa on 20 July 2022 against the GPS data within the video and photographs provided by the body recovery team. The panel determined that at the time the body recovery team stopped their search they were at an altitude of 7400m, in the vicinity of the fixed ropes between Camp 3 and the col. The GPS location data extracted from the photographs provided by the sherpa provided evidence that that the body of Wg Cdr Henderson was at an altitude of 7290m. The direct distance between the two locations was

Exhibit 117

Exhibit 20
Exhibit 21
Exhibit 43

Witness 01
Witness 04
Witness 05
Exhibit 25

Exhibit 26

Witness 01
Witness 08
Exhibit 44

Exhibit 280
Exhibit 281

³⁷ Residual risk was defined in JSP 375 (Management of Health and Safety in Defence), Volume 1, Chapter 8 (Safety risk assessment and safe systems of work) as 'the level of risk remaining after control measures have been applied'.

determined to be approximately 175m, which allowed the panel to calculate, based on the vertical difference of 110m that the perpendicular distance of the body from the fixed ropes (at an altitude of 7290m) was approximately 135m.

1.4.186. The panel concluded that the body recovery team made a reasonable effort to recover Wg Cdr Henderson prior to the search being ceased.

Summary of accident

1.4.187. The panel was unable to positively determine what caused Wg Cdr Henderson to fall but it was highly probable that it was a combination of the contributory factors detailed at paragraphs 1.4.275-1.4.282.

Rockfall accident – 26 July 2022

Lines of inquiry

1.4.188. The following lines of inquiry were identified for further investigation and analysis by the panel. These were derived using themes identified during interviews, evidence provided to the panel, and from specialist input requested by the panel.

- a. Qualifications and experience of the Development Team.
- b. Development Team delay.
- c. Risk management.
- d. Communications.
- e. Medical.
- f. Development Team instructor qualification and remit.
- g. Development Team group management and supervision.
- h. VSI casualty extraction.

Qualifications and experience of the Development Team

1.4.189. The DIN for BSME20 detailed that personnel that applied for the Development Team did not require prior mountaineering experience but were required to commit themselves to the training programme to achieve the required mountaineering competencies before they could be selected. The panel assessed the qualifications and experience of those in a supervisory/medical role or affected during the accident.

Exhibit 01

1.4.190. **Development Team leader.** The team leader (DT-5) served in the Army. In the Alpine mountaineering environment, they were qualified to Alpine

Witness 17

Mountain Leader (AML) level which they achieved in 2005. They had previously led and instructed multiple military mountaineering and rock-climbing expeditions across the UK and Europe, as well as in Alaska and Uganda. Prior to BSME20, the highest altitude that they had climbed to was approximately 4000m.

Exhibit 216

1.4.191. Development Team medical officer. The medical officer (DT-2) served in the Army. In the Alpine mountaineering environment, they were qualified to Alpine Mountain Foundation (AMF) level, which they achieved in 2018, and possessed over eight years of mountaineering experience. They held a Diploma in Mountain Medicine, Diploma in Immediate Medical Care, and a Master of Research degree in high-altitude physiology. Prior to BSME20, the highest altitude that they had climbed to was approximately 4300m. Following the rockfall accident, they provided immediate medical support to the VSI casualty.

Witness 06
Exhibit 217

1.4.192. VSI casualty. The VSI casualty (DT-6) served in the RAF. In the Alpine mountaineering environment, they were qualified to AMF level, which they achieved in 2019. They were struck on the [REDACTED] by a rock, during the rockfall accident.

Witness 21
Exhibit 218

1.4.193. SI casualty. The SI casualty (DT-4) served in the Army Reserves. In the Alpine mountaineering environment, they were qualified to AMF level which they achieved in 2019. They were struck on the [REDACTED] by a rock, during the rockfall accident.

Witness 22
Exhibit 219

1.4.194. The panel concluded that the Development Team leader, Development Team medical officer and the rockfall casualties held the required qualifications and experience to undertake their specific roles on the BSME20 expedition. The panel found that the qualifications and experience of the key personnel involved in the rockfall accident was **not a factor**.

Exhibit 01
Exhibit 129
Exhibit 134

1.4.195. Remainder of the Development Team. The panel determined that the majority of the Development Team held Alpine and winter mountaineering qualifications and competencies, some of which were gained during the BSME20 training programme. It was noted that some members joined the team a few weeks before the expedition departed. They did not undertake the BSME20 training programme and as such did not hold any winter or Alpine mountaineering qualifications or competencies. These individuals were taken on risk, with the risk mitigation of them being supervised more closely.

Exhibit 274

1.4.196. The panel concluded that the lack of experience or competencies held by these individuals played no part in the accident sequence. The panel found that the lack of Alpine and winter mountaineering qualifications and competencies for some members of the Development Team was **not a factor**.

Development Team delay

1.4.197. Both the Main Team and Development Team departed Ali Camp (5000m) at approximately 23:30 on 25 Jul 2022 (Figure 1.4.14). The Main

Witness 20
Witness 18

Team arrived at the summit (5585m) of Gondogoro La at approximately 03:00 on 26 July 2022 and arrived at Xhuspang Camp (4680m) at approximately 07:30, completing the trek in approximately eight hours. The Development Team arrived at the summit at approximately 07:00, four hours after the Main Team.

1.4.198. At the time of the rockfall event at approximately 10:10 and 5200m, the Development Team were still descending. During this period, the likelihood of a rockfall increased due to the fact it was five hours after sunrise and the temperature had increased.

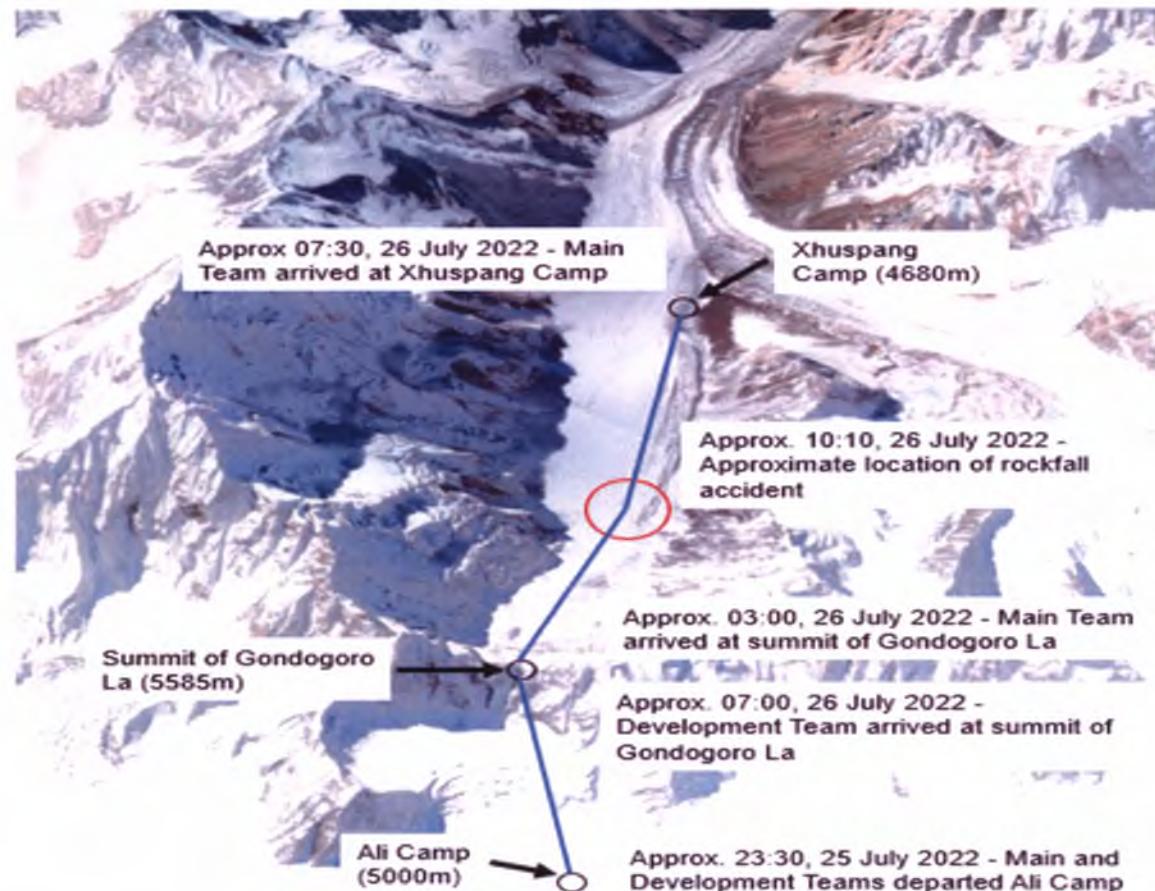


Figure 1.4.14 – Gondogoro La transit timeline.

1.4.199. The panel determined that the Development Team were delayed in both their ascent and descent, compared to the Main Team, for several reasons.

- a. **Team illness.** Two members of the Development Team were treated for diarrhoea & vomiting (D&V) during their ascent. The team stopped to treat the individuals and the individuals were also moving slower over the ground.
- b. **Acclimatisation/fatigue.** The Main Team had been operating at higher altitudes on Broad Peak during the expedition and were better acclimatised than the Development Team. The trek over the

Gondogoro La was the highest altitude that the Development Team had operated at and as such they were naturally slower than a better acclimatised team. Additionally, the tented accommodation at Ali Camp was described as cramped and restricted the amount of sleep team members had. The teams were accommodated together in a larger event shelter as opposed to smaller tents. Consequently, many team members did not get much sleep/rest.

c. **Experience of using fixed ropes.** Both the ascent and descent of the Gondogoro La required the utilisation of fixed ropes. The Main Team were well experienced in the use of fixed ropes from their time on Broad Peak, however, this was the first experience for the Development Team in the utilisation of fixed ropes and ascent/descent equipment during the expedition. The Development Team were therefore naturally slower than the Main Team during the fixed rope sections.

d. **Descent terrain.** Both the Main Team and Development Team members described the descent as difficult, lacking snow and ice and having a risk of loose rocks being kicked down on to other team members. This descent terrain was not expected. The teams envisaged greater snow coverage and therefore an easier descent than that encountered. With a less experienced team, the Development Team leaders were understandably more cautious when safely managing their team members. This closer management of lesser experienced individuals over difficult terrain, naturally caused the Development Team to be slower.

1.4.200. The panel noted that following feedback provided to [REDACTED] by the EL after the rockfall accident, the risks and difficulty of the Gondogoro La for a less experienced trekking group were reassessed.³⁸ [REDACTED] have subsequently withdrawn the Gondogoro La transit option from their trekking routes.

Exhibit 234

1.4.201. The panel concluded that the cumulative delay factors of the Development Team, introduced a significant delay to their progress over the Gondogoro La. The panel concluded that the delay resulted in them remaining in an area of increased rockfall risk for a longer period of time, thus being in the location at the time of the rockfall. The panel found the delay of the Development Team during the transit of the Gondogoro La to be a **causal factor**.

Risk management

1.4.202. The risk of a natural rockfall event was detailed within the BSME20 risk assessment. The controls for the risk included the wearing of helmets at all times and to consider travelling at night when temperatures were colder. As

Witness 17
Witness 20
Exhibit 02

³⁸ BSME20 used [REDACTED], a British mountaineering company, to support the planning of the expedition in Pakistan and prepare itineraries for both the Main and Development Teams.

the temperature rises and ice melts and rocks expand, the likelihood of rockfall increases. The risk of rockfall in the Gondogoro La Pass was known to the Main and Development Team leaders, through online descriptions and information received from both [REDACTED] guides.³⁹ To mitigate this risk both the Main and Development Teams departed Ali Camp at approximately 23:30 on 25 July 2022 and planned to be clear of the pass before the rockfall risk increased the following morning.

Exhibit 220
Exhibit 221

1.4.203. Utilisation of PPE. The panel determined that the rockfall risk control of personnel wearing helmets was undertaken as required and that the leaders managed this effectively. The wearing of this PPE was instrumental in ensuring that the injuries to DT-4 were not more serious. The damaged helmet of DT-4 (Figure 1.4.15) detailed the rock impact area and the protection that it provided, and strongly supported the requirement to wear a helmet as a rockfall risk control.

Witness 17
Witness 22
Exhibit 32
Exhibit 226
Exhibit 227



Figure 1.4.15 – Photograph of DT-4’s damaged helmet after being struck by rockfall.⁴⁰

³⁹ The in-country transport and supply of high-altitude porters and guides was provided by [REDACTED], a local mountaineering company based in [REDACTED].

⁴⁰ Source: BSME20 team member (DT-4).

1.4.204. **Lack of daily risk assessment.** Although the Development Team stated at interview that there was an awareness of the rockfall risk for the Gondogoro La Pass, it was determined that no daily risk assessment (DRA) had been undertaken. The requirement for completion of DRAs by both the Main Team and Development Team was detailed in the BSME20 administration order and was a requirement detailed within the RAFMA SMP. It was determined that the Development Team had not conducted any DRAs at any point during the expedition. The Development Team leader informed the panel, that they did not believe they were required as they were following a set route. The panel opined that the lack of a DRA being produced by the Development Team, although outside the detailed BSME20 risk management requirements, did not impact the awareness or controls of the rockfall risk during the transit of the Gondogoro La Pass.

Witness 17
Witness 19
Exhibit 222
Exhibit 223
Exhibit 224
Exhibit 225

1.4.205. The panel concluded that despite a DRA not being completed, the Development Team was fully aware of the rockfall risk and that the controls as detailed in the risk assessment were followed. Although a DRA not being completed did not contribute to accident on this occasion, the failure to complete a DRA could increase the likelihood of a future accident occurring. The panel found that the lack of completion of DRAs by the Development Team to be an **other factor**.

1.4.206. **Recommendation.** The Joint Services Mountaineering Committee Chair should capture the lack of completion of daily risk assessments (DRAs) by the Development Team during the BSME20 expedition as a lesson identified and ensure that, for future mountaineering club/association led expeditions, safety policy is adhered to and daily risk assessments are undertaken and documented.

1.4.207. **Dynamic risk assessment on the Gondogoro La Pass.** At the start of the fixed rope section of the Gondogoro La Pass the Development Team leaders, re-assessed their position and the risk following the delay, by undertaking a dynamic risk assessment. They discussed whether to continue towards Xhuspang Camp or to return to Ali Camp. The individuals who had experienced D&V had been seen to improve following their medical treatment. Ali Camp was a transitory camp and was determined by the team to possibly be the source of the illness. In addition, the Development Team porters had gone ahead with the equipment of the Development Team and were already on their descent. Content with the physical improvement of the individuals who had experienced D&V, the Development Team leaders made the decision to continue towards Xhuspang Camp. When at the 'summit' of the Gondogoro La, the Development Team leaders re-assessed the rockfall risk following their delay and determined that the risk was unlikely to increase until the afternoon.

Witness 17
Witness 20
Exhibit 224
Exhibit 278

Communications

1.4.208. The risk of an inability to communicate during the expedition, which could delay medical care, was detailed in the BSME20 risk assessment. The key control for this risk was the communications plan and the communications equipment that both the Main Team and Development Team deployed with.

Exhibit 243

1.4.209. During the Gondogoro La transit, the Development Team held a satellite phone, mobile phone (purchased for use in-country) and a BGAN. The satellite phone and mobile phone were held by the Development Team leader. The BGAN was carried by the porters, who at the time of the accident were ahead of the Development Team. Following the rockfall accident, external communications to request support were unable to be established by the Development Team leader. Both the mobile phone and satellite phones failed due to poor signal quality. The EL held the Main Team satellite phone at Broad Peak Base Camp, whilst still involved in the attempted recovery of Wg Cdr Henderson. The Main Team mobile phone was held by MT-10 in Xhuspang Camp, which also experienced poor signal quality. The VHF radios, previously held by the Main Team had been packed away at Broad Peak Base Camp on 25 July 2022 and had exited the Karakoram with porters, via a different route than the Main Team.

Witness 17
Witness 08
Exhibit 242
Exhibit 244
Exhibit 155
Exhibit 156

1.4.210. Due to the communication equipment failures experienced by both the Main Team and Development Team, the communication risk had been realised and as a consequence, information was required to be passed verbally by individuals moving up and down the valley. This delayed the details of the accident and casualties reaching the Main Team and, in conjunction with the phone signal failures and Development Team separation from their BGAN, delayed the request for external support. External communication to request support via the BGAN, was only established once the Main Team were made aware of the accident.

Witness 17
Exhibit 243
Exhibit 156

1.4.211. The panel determined that the use of the VHF radios, if held at the time, would have improved information flow between the team at Xhuspang Camp and the medical officer treating DT-6.

1.4.212. The panel concluded that the separation of communication equipment from the teams increased the likelihood of communication failure both externally and between teams. The panel found that the separation of teams from communication equipment and subsequent delayed request for external medical support to be an **aggravating factor**.

1.4.213. **Recommendation:** The recommendation for this factor is the same recommendation as detailed in paragraph 1.4.64.

Medical

1.4.214. [REDACTED]. DT-6 received [REDACTED], via [REDACTED], approximately 20 minutes after they were struck by a rock.

Witness 06
Exhibit 36
Exhibit 126

[REDACTED] It was administered to DT-6 to [REDACTED].

⁴¹ As defined by the London School of Hygiene and Tropical Medicine, [REDACTED]

1.4.215. BSME20 medical personnel attested to the substantial benefit of [REDACTED] in the treatment of DT-6's injuries. [REDACTED] was not normally carried in expedition medical kits away from base camp, however on this occasion it was carried by DT-2 in the portable medical pack.

Witness 05
Witness 06
Exhibit 127
Exhibit 135
Exhibit 36

1.4.216. The panel believed that [REDACTED] was a key aspect in stabilising DT-6 and was highly likely to have contributed to the positive outcome of their injuries. The panel concluded that the benefit of an expedition medical officer carrying [REDACTED] could well be critical in the treatment of injured personnel in future expeditions and as such, was an **other factor**.

1.4.217. **Recommendation.** The Joint Services Mountaineering Committee Chair should capture and communicate the benefit of [REDACTED], or equivalent, being held by medical officers in portable medical packs for future high risk and remote mountaineering club/association led expeditions in order to allow for improved immediate medical care of casualties with internal injuries.

1.4.218. **Acquisition of medical equipment and controlled drugs.** Defence policy detailed the process for the supply of medical equipment and controlled drugs (CDs). A number of medical modules for specific functions existed within defence.⁴²

Exhibit 240
Exhibit 241

1.4.219. There was no formalised medical module or equipment list for high-altitude mountaineering. In addition, BSME20 lacked a unit identification number (UIN), a reference code required to demand medical equipment. This resulted in difficulties for the expedition medical officers acquiring medical equipment and CDs. As such, the medical officers created an alternative solution via internal prescriptions of CDs and medical equipment supplied from a medical officer's parent unit.

Witness 04
Witness 05
Exhibit 130
Exhibit 131

1.4.220. Despite the difficulties in the supply of medical equipment and CDs, BSME20 deployed without any medical equipment or CD deficiencies. The panel **observed** that the problems experienced with acquiring medical equipment and CDs had been experienced by members on previous high-altitude mountaineering expeditions and was not unique to BSME20.

Witness 04
Exhibit 130
Exhibit 239

1.4.221. The panel **observed** that the BSME20 medical team was unable to demand medical equipment and CDs in line with the issued defence process.

Development Team instructor qualification and remit

1.4.222. The instructor qualification and remit policy requirements for BSME20 have been detailed in paragraphs 1.4.89 to 1.4.91.

⁴² A medical module was a composition of kit made up of medical, and sometimes other, materiel designed to fulfil a medical function and capability, either on its own or as a building block for a medical facility.

1.4.223. The Development Team operated at a different terrain grading to that of the Main Team during the expedition, due to the nature of their trekking programme. Prior to the expedition, the EL consulted with the chief instructor at Joint Services Mountaineering Training Centre in accordance with the guidance within JSP 419 and an instructor/student ratio of 1:3 was agreed.

Exhibit 237

1.4.224. The Development Team consisted of 16 personnel, including four leaders/instructors, two at AML level and two at Alpine Mountain Instructor (trained), (AIT) level.

Exhibit 02

1.4.225. The panel concluded that the Development Team remained within the agreed instructor student/ratio requirement at all times on the expedition and determined that the Development Team instructor qualification and remit was **not a factor**.

Development Team group management and supervision

1.4.226. As previously discussed, BSME20 operated within the policy laid down in JSP 419. In accordance with the JSP and by virtue of the qualifications they held, the two AMLs and two AITs were charged with the supervision of group members.

Witness 17
Exhibit 238

1.4.227. During the transit of the Gondogoro La Pass the Development Team split into four separate groups of four individuals, each with a leader to safely manage the other members of the team. Each group remained as close together as operating on the fixed ropes would allow.

1.4.228. The panel concluded that the group management and supervision of the Development Team did not contribute to the accident and was **not a factor**.

Very seriously injured (VSI) casualty evacuation delay

1.4.229. Due to other priority taskings, a helicopter to assist with the VSI casualty evacuation was not available on 26 July 2022 and they were monitored at Xhuspang camp overnight by the BSME20 medical team. The VSI casualty was evacuated by helicopter at 11:30 on 27 July 2022 and delivered to Skardu Combined Military Hospital (CMH), where they received further medical treatment before returning to the UK, via a contracted civilian aeromedical flight, on 2 August 2022.

Witness 06
Witness 07
Exhibit 287
Exhibit 288

1.4.230. The panel determined that the risk of helicopter availability for casualty extraction was clearly detailed within the expedition medical plan and the Duty Holder's Advice Note (DHAN). The DHAN stated that helicopter availability would be delivered at 'best effort' and that helicopter support would 'not be available above 6000m' and 'was not guaranteed above 5000m'. The panel noted that the casualty extraction occurred just below Xhuspang Camp (4680m). The panel determined that the medical plan detailed the risk

Exhibit 09
Exhibit 285
Exhibit 286

mitigation for the potential lack of helicopter support and not meeting guidelines for timely healthcare.⁴³

1.4.231. The panel concluded that although the VSI casualty's condition most likely would have deteriorated, if there had been further helicopter evacuation delays, their condition did not deteriorate during the initial helicopter delay and as such the VSI casualty evacuation delay was **not a factor.**

Expedition planning, preparation and approvals

Lines of inquiry

1.4.232. The following lines of inquiry were identified for further investigation and analysis by the panel. These were derived using themes identified during interviews, evidence provided to the panel, and from specialist input requested by the panel.

- a. BSME20 training plan.
- b. Medical suitability assessment.
- c. Duty holding.
- d. Tri-service mountaineering governance structure.

BSME20 training plan

1.4.233. Due to the large number of personnel who expressed an interest in participating in BSME20, a selection process was undertaken. This involved using a scoring system based upon specific criteria and assessment of individuals attendance and performance at training weekends. Several training events for personnel selected for BSME20 Main and Development Teams were conducted in the UK and the Swiss Alps over the period October 2018 to May 2022. However, training ceased over the period March 20 until September 21 due to the COVID-19 Pandemic. Due to the 2-year delay to the expedition, some individuals originally selected to attend were no longer available and reserve lists were used. The EL stated that there were no formal training guidelines or objectives in JSP 419 for a high-altitude mountaineering expedition and that they created their own training plan. The plan included preparation in the areas of mountaineering skills, communications equipment, and medical training. Once in Pakistan, refresher training was also completed in each of these areas.

Witness 01
Witness 02
Exhibit 12
Exhibit 53
Exhibit 203
Exhibit 206

1.4.234. A nominal list was detailed on each training event administration order. However, no training records could be provided to confirm if those on the nominal list had actually attended the training events and received training

Witness 01
Witness 13
Exhibit 203

⁴³ The DHAN detailed the mitigation for not meeting guidelines for timely healthcare as 'BSME20 is deploying with a strong representation of medical officers who have high altitude and pre-hospital emergency care competencies and reach back to the UK.'

in specific areas. The panel determined through interviews with BSME20 participants that those who attended the expedition had attended the majority of the training events. As such, the panel opined that the lack of training records did not contribute to the accidents during BSME20.

Exhibit 204

1.4.235. Although the lack of training records did not contribute to the accidents during BSME20, failure to produce and retain training records could increase the likelihood of a future accident occurring and was determined to be an **other factor**.

1.4.236. Recommendation: The Joint Services Mountaineering Committee Chair should ensure that a process is developed for the production and retention of training records for mountaineering club/association led activity in order to provide evidence that defence personnel have undertaken the required training for the activity.

1.4.237. JSP 419 provided guidelines for the conduct of AT expeditions at altitude, predominantly covering the medical aspects.⁴⁴ However, the panel identified a gap in the provision of guidelines for the planning and preparation of AT expeditions at altitude, including training. There was also no discussion of training plans evidenced within the high risk and remote panels undertaken for the expedition.

Witness 02
Witness 13
Exhibit 05
Exhibit 74
Exhibit 204
Exhibit 206

1.4.238. As no high-altitude training plan guidelines existed within defence policy, the panel was unable to fully determine if the BSME20 training plan was adequate. However, the panel opined that considering that no training plan directives existed, the training plan produced and delivered for BSME20 over a period of almost four years due to the COVID delay, was comprehensive in covering training in different skills required for the expedition. It was noted by the panel that the training conducted in UK and the Alps was at a lower altitude than the altitudes experienced by the teams during the expedition, however this was mitigated by continuation training when on the expedition and operating at higher altitudes.

Witness 02
Exhibit 206

1.4.239. The panel concluded that the lack of training guidance could result in future high-altitude expeditions not planning or preparing adequately, introducing additional risk. The panel found the lack of policy guidance to be an **other factor**.

1.4.240. Recommendation: The Chief of Defence People should include guidance in JSP 419 on training planning and preparation for high-altitude activity in order to ensure that defence personnel are adequately trained to undertake the activity.

⁴⁴ JSP 419 Part 2, Chapter 1, Annex J – Guidelines for the conduct of Adventurous Training expeditions at altitude.

Medical suitability assessment

1.4.241. **Possession of JMES category.** Defence policy required service personnel undertaking JSAT to be medically fit. Individuals attending BSME20 were required to hold a JMES category of MFD. All individuals were required to complete a pre-expedition medical questionnaire as a medical declaration, as well as obtaining a copy of their operational medical record (FMed965). These documents were then assessed by the expedition medical officers to confirm that individuals met the BSME20 medical requirements.

Witness 06
Exhibit 57
Exhibit 58
Exhibit 150
Exhibit 152
Exhibit 207

1.4.242. BSME20 comprised of a mixture of regular and reserve personnel. One member of the BSME20 Development Team did not hold a JMES category or FMed965. They were assessed as medically fit to attend by the Development Team medical officer by virtue of their employment as a civilian commercial pilot and the individual being bound by the civil aviation authority (CAA) medical standards, in addition to their previous high-altitude experience and the information contained within their medical questionnaire. All other members of BSME20 held the required medical category to be assessed as medically fit to attend the expedition.

Witness 06
Exhibit 150
Exhibit 57

1.4.243. The BSME20 reservist without a JMES category was a member of the Royal Air Force Volunteer Reserve (Training Branch), RAFVR(T) and was employed as an air experience flight (AEF) pilot. The panel identified that the aircrew medical employment standard policy detailed that RAFVR(T) personnel could not be awarded a JMES category. However, it stated that medical waivers for AEF duties could be achieved by individuals holding a CAA Class 1 medical certificate. The panel confirmed that the BSME20 reservist held such a certificate.

Exhibit 153
Exhibit 154

1.4.244. The panel determined that there was an absence of a formalised waiver process for an individual not holding a JMES category to be classed as medically fit to participate in AT. This lack of formalised waiver process, resulted in the Development Team medical officer being required to undertake a personal assessment of the individual's medical fitness based on their CAA medical certification, information contained within their medical questionnaire and their previous high-altitude experience.

Witness 06
Exhibit 150

1.4.245. The panel concluded that AT policy (JSP 419) and medical policy (JSP 950) did not provide clear guidance on how to determine if SP are medically fit to undertake AT, or detail a waiver process if they did not hold a JMES category. The panel found that the lack of guidance in policy on how to determine if a SP is medically fit to attend AT without holding a JMES category was an **other factor**.

1.4.246. **Recommendation.** The Chief of Defence People should amend JSP 419 to include guidance on the process for determining if individuals without a JMES category are medically fit to undertake AT.

1.4.247. Recommendation. The Surgeon General should amend JSP 950 to include guidance on the process for determining if individuals without a JMES category are medically fit to undertake AT.

1.4.248. Medical screening. JSP 419 detailed that some JSAT activities required additional medical screening before SP could participate in the activity. These activities were listed as gliding, parachuting and sub-aqua diving. JSP 950, Leaflet 1-2-12, provided further detail of the medical screening requirements for specific courses and training including parachuting, flying and diving. There was no formalised requirement to undertake this additional element of medical screening for high-altitude mountaineering detailed in JSP 419 and JSP 950.

Exhibit 75
Exhibit 186
Exhibit 187

1.4.249. The BSME20 medical team conducted an element of additional medical screening through the checking of FMed965 and medical questionnaires. In addition to their JMES category check, this determined if participants were medically suitable to undertake extremely high-altitude mountaineering activity.⁴⁵

Witness 06
Exhibit 150

1.4.250. As BSME20 personnel were exposed to reduced oxygen environments for a prolonged period, the panel determined that the additional medical checks undertaken by the medical team for BSME20 participants to determine medical suitability, outside what was required in JSP 419 and JSP 950, was appropriate.

1.4.251. The panel concluded that mountaineering activity at altitude should be included in JSP 419, and JSP 950 as a JSAT activity that requires medical screening and a formalised medical screening process. The panel found that mountaineering activity at altitude not being a JSAT activity that required formalised medical screening was an **other factor**.

1.4.252. Recommendation. The Chief of Defence People should ensure that mountaineering at altitude is included within JSP 419 as an activity that requires medical screening and that a formalised medical screening process is produced accordingly. This would provide additional evidence that defence personnel were medically suitable to operate at high-altitude and reduced oxygen environments.

1.4.253. Recommendation. The Surgeon General should ensure that mountaineering at altitude is included within JSP 950 as an activity that requires medical screening and that a formalised medical screening process is produced accordingly. This would provide additional evidence that defence personnel were medically suitable to operate at high-altitude and reduced oxygen environments.

⁴⁵ JSP 419, Part 2, Chapter 1, Paragraph 5c defined high-altitude between 2,500 and 3,500 metres, very high-altitude between 3,500 and 5,500 metres and extremely high-altitude beyond 5,500 metres.

Duty holding

1.4.254. **Letters of safety delegation.** The BSME20 JSATFA declared the expedition to be high risk and remote and as such, a high risk and remote panel was conducted in accordance with the requirement in JSP 419. The BSME20 high risk and remote panel suggested that a duty holding arrangement was required, to assist with managing the level of risk on the expedition. The duty holding arrangement for BSME20 was established on 5 March 2020. The RAFMA Chair was the DDH and Air Officer Commanding (AOC) 22 Gp was the ODH.

Witness 01
Exhibit 05
Exhibit 189
Exhibit 190
Exhibit 191
Exhibit 192

1.4.255. The letter of safety delegation to the RAFMA chair as the DDH was issued by AOC 22 Gp, as the ODH for RAF AT. The panel noted that this was not issued in accordance with AP8000 which detailed that the DDH letter of safety delegation should be issued by the Senior Duty Holder (SDH), in this case the Chief of the Air Staff. The letter of safety delegation did not follow the template as detailed in AP8000, Leaflet 8003.

Exhibit 193
Exhibit 194
Exhibit 195

1.4.256. The panel concluded that the RAFMA chair DDH letter of safety delegation was not issued in accordance with the policy requirements of AP8000. As such, the RAFMA Chair could have been unaware of some of their key safety roles and responsibilities as the DDH. The panel found that the failure to issue the RAFMA chair letter of safety delegation in accordance with the requirements of AP8000 to be an **other factor**.

1.4.257. Recommendation. The Chief of the Air Staff should review all Air Officer Commanding 22 Gp issued Delivery Duty Holder (DDH) letters of safety delegation in order to ensure compliance with AP8000.

Exhibit 117

1.4.258. **Lack of digital signature on the DHAN.** As BSME20 contained residual risks that required escalation from the DDH to the ODH, a DHAN was produced in accordance with AP8000. The DHAN was approved by the ODH on 19 May 2022 granting dispensation for the expedition to be undertaken.

Exhibit 117

1.4.259. The panel noted that there was no digital signature approval on the DHAN. In addition, AP8000, Leaflet 8008 (Duty Holder and Risk Owner Advice Notes (DHAN/ROAN)) did not detail any requirement for a digital signature.

Exhibit 118

1.4.260. The panel **observed** that the requirement for a digital signature on a DHAN/ROAN would provide greater clarity of a document being finalised and confirmation of formal approval.⁴⁶

Exhibit 117

1.4.261. **DDH training shortfall.** A training requirement detailed in defence policy, including DSA 01.2, Implementation of Defence Policy for Health, Safety and Environmental Protection, AP8000, and the 22 Gp Functional

Exhibit 196
Exhibit 197
Exhibit 198

⁴⁶ AP 8000, Leaflet 8008 – Duty Holder and Risk Owner Advice Notes (DHAN/ROAN) was amended in March 2023 (AP 8000 Version 2) following this observation. The policy now states 'All stakeholder comments shall be electronically signed and dated before onward staffing. Any/all subsequent changes and comments must be re-staffed and electronically re-signed and re-dated to ensure all comments, recommendations and directed action, align to the updated advice and final version of the document.'

Safety Management Plan, was for the RAFMA Chairs, as DDHs, to attend the Defence Safety Authority (DSA) General Duty Holders' Course (GDHC) within three months of assuming a DDH appointment.

1.4.262. During the key preparation and delivery period for BSME20, the RAFMA Chair and DDH responsibility was handed over twice. The RAFMA Chair that signed the JSATFA was in post from 23 March 2019 until 31 October 2019. The following RAFMA Chair was in post from 19 November 2019 until 26 May 2022. The RAFMA Chair in post for the expedition assumed the role on 26 May 2022, just prior to the expedition departing.

Witness 26
Witness 29
Exhibit 199
Exhibit 200
Exhibit 201

1.4.263. The final two RAFMA Chairs held the safety responsibility as DDH and were issued a DDH letter of safety delegation. The RAFMA Chair responsibility included being the authorising officer for BSME20 and the risk owner of the remaining BSME20 risks that were not transferred to the ODH. The RAFMA Chair for the period 19 November 2019 to 26 May 2022 was unaware of the requirement and had not attended the GDHC. The RAFMA Chair for the period from 26 May 2022 was aware of the requirement, however, was within their first 3 months as DDH at the time of the expedition and had not yet attended the GDHC.

Witness 26
Witness 29
Exhibit 199
Exhibit 200

1.4.264. Both of the RAFMA Chairs stated that the requirement to attend the GDHC was not in their DDH letters of safety delegation. In addition, no requirement was detailed for them to inform the RAF Safety Centre or 22 Gp once they had attended the GDHC, nor were they asked by the RAF Safety Centre or 22 Gp when they planned to attend the required training course.

Witness 26
Witness 29
Exhibit 199
Exhibit 200

1.4.265. The panel determined that Duty Holder letter of safety delegation templates in AP8000 did not detail the mandated training requirements of Duty Holders, including the GDHC, or a requirement to provide confirmation to a particular organisation to confirm attendance. In addition, although a repository of RAF Safety Centre issued letters of safety delegation existed, the panel was unable to locate confirmation or evidence to show Duty Holders' attendance at the GDHC.

Exhibit 202

1.4.266. The panel concluded that there was a shortfall in the RAF duty holding management process to ensure that Duty Holders attended the GDHC in order to be suitably qualified to conduct the role. The panel found the GDHC training shortfall to be an **other factor**.

1.4.267. Recommendation. The Chief of the Air Staff should amend the **RAF Duty Holder letter of safety delegation templates in AP8000** to include reference to the training requirements of the duty holding role, in order to ensure that Duty Holders are aware of their mandated training requirements.

1.4.268. Recommendation. The Chief of the Air Staff should ensure that appointed Duty Holders complete the required training within the required timelines.

Tri-service mountaineering governance structure

1.4.269. BSME was a tri-service mountaineering expedition that occurred every four years. The responsibility for managing and delivering was rotated between each service for each iteration. The EL did not have any terms of reference for their role in the delivery of the expedition and their role and responsibilities for such an expedition extended beyond those detailed with the RAFMA policy framework.

Witness 01
Exhibit 203

1.4.270. The RAFMA Chair informed the panel that following the accidents on BSME20, a Joint Services Mountaineering Committee (JSMC) comprising of the Chairs and President of each of the single Service mountaineering associations/clubs had re-convened in January 2023. This followed an approximate 10-year period of inactivity.⁴⁷ An action to produce a set of terms of reference for the JSMC was created following this meeting. The re-forming of the JSMC was seen by the panel to be a positive step for improving future BSME governance.

Witness 26
Exhibit 205

1.4.271. The panel **observed** that a formalised governance structure for tri-service mountaineering was not in place at the time of BSME20.

1.4.272. Table 1.4.1 below is a table of the key events leading up to, during, and after the accidents:

Serial (a)	Date (b)	Time (c) (approx.)	Event (d)
1	July 2018	N/A	Issue of BSME20 Defence Instruction and Notice (DIN)
2	December 2018 – May 2022	N/A	BSME20 training activity undertaken
3	14 February 2019	N/A	RAFMA Chair is made Delivery Duty Holder (DDH) for all RAFMA meets and RAFMA led expeditions by Air Officer Commanding (AOC) 22 Gp
4	26 March 2019	N/A	Preliminary high risk and remote panel undertaken
5	8 October 2019	N/A	High risk and remote panel undertaken
6	18 October 2019	N/A	International expedition technical approval letter issued by Robson Academy of Resilience, 22 Gp

⁴⁷ Single service mountaineering association/clubs were; Royal Air Force Mountaineering Association (RAFMA), Army Mountaineering Association (AMA) and Royal Navy and Royal Marines Mountaineering Club (RNRMMC).

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7	28 October 2019	N/A	BSME20 Joint Services Adventurous Training Form Alpha (JSATFA) approved by RAFMA Chair
8	5 March 2020	N/A	Confirmation of single duty holding construct for tri-service participants by RAFMA Chair
9	March 2020 – December 2021	N/A	Expedition postponed in 2020 and 2021 due to COVID-19 Pandemic
10	14 February 2022	N/A	International expedition technical approval letter re-issued by Robson Academy of Resilience, 22 Gp
11	19 May 2022	N/A	Duty Holder Advice Notice (DHAN) BSME20 safe system of training dispensation approved by Operating Duty Holder (ODH)
12	4 June 2022	N/A	BSME20 Main Team arrived in Pakistan
13	9 July 2022	N/A	BSME20 Development Team arrived in Pakistan
14	18 July 2022	22:00	5 members of Summit Team 1, including Wg Cdr Henderson, departed Camp 3 (7050m) for summit attempt
15	19 July 2022	04:00-08:00	3 members of Summit Team 1 returned to Camp 3
16		12:15	EL and Wg Cdr Henderson arrived at Rocky Summit (8035m)
17		12:30	Last recorded sighting of Wg Cdr Henderson by EL
18		14:00	CM-1 witnessed Wg Cdr Henderson fall
19		15:15	Paragliding pilots reported the sighting of a body (approximately 7400m) in a crevasse field
20		Evening	Initial NOTICAS ⁴⁸ released detailing Wg Cdr Henderson was missing
21	20 July 2022	Evening	CM-1 initial report to BSME20 team of what they had witnessed
22		Evening	A sherpa, from a separate expedition, reported to the BSME20 team that they had found a body at approximately 7500m
23	21 July 2022	N/A	NOTICAS update 01 issued and amended Wg Cdr Henderson's status to missing believed killed

⁴⁸ NOTICAS - Notification of a Casualty, JSP 751 Joint Casualty and Compassionate Policy and Procedures Part 1, Volume 1, Chapter 2, Section 4.

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24	22 July 2022	N/A	DAIB Missing Climber Triage Report issued
25	24 July 2022	N/A	Wg Cdr Henderson's body recovery effort commenced
26	25 July 2022	23:30	Development Team and Main Team departed Ali Camp
27		03:00	Main Team summited Gondogoro La (5585m)
28		07:00	Development Team summited Gondogoro La
29	26 July 2022	10:10	Rockfall incident which resulted in two casualties (VSI and SI) from the Development Team
30		Afternoon	NOTICAS for rockfall casualties released
31		16:00	Information received that helicopter casualty evacuation would not be available until the following morning
32	27 July 2022	11:30	VSI casualty evacuated to Skardu Combined Military Hospital (CMH) by helicopter
33		N/A	Wg Cdr Henderson's body recovery effort ceased
34	1 - 2 August 2022	N/A	All BSME20 Personnel, including VSI, returned to UK
35	19 August 2022	N/A	DAIB deployment record into both incidents issued
36	25 August 2022	N/A	Service inquiry panel convened
37	19 December 2022	N/A	Death Certificate for Wg Cdr Henderson issued by UK General Register Office (GRO)
1.4.273.			

Table 1.4.1 – Key events leading up to, during, and after the accidents.

Death of Wg Cdr Henderson summary of findings

Causal factor.

1.4.274. The panel was unable to positively determine what caused Wg Cdr Henderson to fall but it was highly probable that it was a combination of the contributory factors detailed at paragraphs 1.4.275-1.4.282. 1.4.187

Contributory factors.

1.4.275. The panel found that the combination of Wg Cdr Henderson being fatigued, and the reduction of the fatigue risk management controls was a **contributory factor**. 1.4.38

1.4.276. The panel concluded that, due to the combination of the operating altitude, ascent profile and lack of supplementary oxygen being carried, there was a possibility of Wg Cdr Henderson suffering high-altitude illness and this, in combination with fatigue, was a **contributory factor**. 1.4.53

1.4.277. The panel found that personnel operating on the mountain without immediate access to a radio was a **contributory factor**. 1.4.63

1.4.278. The panel concluded that the combination of not communicating his intention to turn around and then descending alone, culminated in the failure to maintain the ALARP and tolerable position and was a **contributory factor**. 1.4.72

1.4.279. The panel found that the body position, facing away from the rock whilst descending a particularly steep and exposed segment of the mountain, was a **contributory factor**. 1.4.82

1.4.280. The panel concluded that not using the in-situ rope, which was available and a BSME20 risk control for managing the slip, trip and fall risk, increased the likelihood of the accident and was, therefore, a **contributory factor**. 1.4.88

1.4.281. The panel concluded that the level of group management and supervision during the final stages of the summit attempt was not adequate to prevent Wg Cdr Henderson from turning around and descending alone. This increased the likelihood of an accident occurring and was considered to be a **contributory factor**. 1.4.113

1.4.282. The panel found that the failure of the agreed risk controls was a **contributory factor**. 1.4.179

Aggravating factor.

1.4.283. The panel found that the descent route taken by Wg Cdr Henderson from Rocky Summit, was an **aggravating factor**. 1.4.77

Other factors.

1.4.284. The panel found that the production of a technical report to assist with confirmation of death, was an other factor .	1.4.17
1.4.285. The panel found that the significant amount of evidence gathered by the BSME20 team to assist with the accident investigation was an other factor .	1.4.20
1.4.286. The panel concluded that as AMLs, both MT-5 and MT-8 operated outside their qualification as detailed within JSP 419 and were not permitted to lead on AD graded terrain. The panel considered this to be an other factor .	1.4.98
1.4.287. The panel concluded that MT-1, 3 and 4 operated outside their qualification as detailed within JSP 419, and were not permitted to operate as equals on AD graded terrain. The panel considered this to be an other factor .	1.4.101
1.4.288. The panel found that the lack of a check to confirm that the instructor/student ratios remained valid, in accordance with JSP 419, was an other factor .	1.4.106
1.4.289. The panel found the insufficient level of group management and supervision for MT-2 to be an other factor .	1.4.119
1.4.290. The inadequate level of group management and supervision for MT-1 was considered to be an other factor .	1.4.125
1.4.291. The panel found the lack of adherence to the buddy-buddy system for MT-1 to be an other factor .	1.4.133
1.4.292. The panel found that the lack of an evidential check of personnel being in-date for single Service fitness tests was an other factor .	1.4.173

Observation.

1.4.293. The panel observed that the buddy-buddy system is not formally defined in any defence policy, although 'buddy-buddy' is a widely used term in the military.	1.4.128
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Rockfall accident summary of findings

Causal factor.

1.4.294. The panel found the delay of the Development Team during the transit of the Gondogoro La to be a **causal factor**.

1.4.201

Aggravating factor.

1.4.295. The panel found that the separation of teams from communication equipment and subsequent delayed request for external medical support to be an **aggravating factor**.

1.4.212

Other factors.

1.4.296. The panel found that the lack of completion of DRAs by the Development Team to be an **other factor**.

1.4.205

1.4.297. The panel concluded that the benefit of an expedition medical officer carrying [REDACTED] could well be critical in the treatment of injured personnel in future expeditions and as such, was an **other factor**.

1.4.216

Observations.

1.4.298. The panel **observed** that the problems experienced with acquiring medical equipment and CDs had been experienced by members on previous high-altitude mountaineering expeditions and was not unique to BSME20.

1.4.220

1.4.299. The panel **observed** that the BSME20 medical team were unable to demand medical equipment and CDs in line with the issued defence process.

1.4.221

Expedition planning, preparation, and approvals summary of findings

Other factors.

1.4.300. Although the lack of training records did not contribute to the accidents during BSME20, failure to produce and retain training records could increase the likelihood of a future accident occurring and was determined to be an **other factor**.

1.4.235

1.4.301. The panel concluded that the lack of training guidance could result in future high-altitude expeditions not planning or preparing adequately, introducing additional risk. The panel found the lack of policy guidance to be an **other factor**.

1.4.239

1.4.302. The panel found that the lack of guidance in policy on how to determine if a SP is medically fit to attend AT without holding a JMES category was an other factor .	1.4.245
1.4.303. The panel found that mountaineering activity at altitude not being a JSAT activity that required formalised medical screening was an other factor .	1.4.251
1.4.304. The panel found that the failure to issue the RAFMA chair letter of safety delegation in accordance with the requirements of AP8000 to be an other factor .	1.4.256
1.4.305. The panel concluded that there was a shortfall in the RAF duty holding management process to ensure that Duty Holders attended the GDHC in order to be suitably qualified to conduct the role. The panel found the GDHC training shortfall to be an other factor .	1.4.266

Observations.

1.4.306. The panel observed that the requirement for a digital signature on a DHAN/ROAN would provide greater clarity of a document being finalised and confirmation of formal approval.	1.4.260
1.4.307. The panel observed that a formalised governance structure for tri-service mountaineering was not in place at the time of BSME20.	1.4.271

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PART 1.5

Recommendations

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PART 1.5 – Recommendations

1.5.1	Chief of the Air Staff	
a.	The Chief of the Air Staff should review all Air Officer Commanding 22 Gp issued Delivery Duty Holder (DDH) letters of safety delegation in order to ensure compliance with AP8000.	1.4.257
b.	The Chief of the Air Staff should amend the RAF Duty Holder letter of safety delegation templates in AP8000 to include reference to the training requirements of the duty holding role, in order to ensure that Duty Holders are aware of their mandated training requirements.	1.4.267
c.	The Chief of the Air Staff should ensure that appointed Duty Holders complete the required training within the required timelines.	1.4.268
1.5.2	Chief of Defence People	
a.	The Chief of Defence People should include evidence gathering guidance in JSP 419 for high risk and remote activity in order to assist with accident investigations where investigators may not be able to access the scene of the accident.	1.4.21
b.	The Chief of Defence People should provide guidance in JSP 419 for communication plans for high risk and remote expeditions in order to ensure communications plans are sufficiently robust to maintain risk controls.	1.4.64 1.4.213
c.	The Chief of Defence People should amend the Joint Services Adventurous Training Form Alpha (JSATFA) process to ensure that if the instructor composition changes from the originally signed JSATFA a mechanism exists to ensure that the approvals criteria remain extant.	1.4.107
d.	The Chief of Defence People should include in JSP 419, a process for evidential checks to be undertaken to ensure personnel are in date for single Service fitness tests prior to AT activity in order to reduce the likelihood of fitness related accidents.	1.4.174
e.	The Chief of Defence People should include guidance in JSP 419 on training planning and preparation for high-altitude activity in order to ensure that defence personnel are adequately trained to undertake the activity.	1.4.240
f.	The Chief of Defence People should amend JSP 419 to include guidance on the process for determining if individuals without a JMES category are medically fit to undertake AT.	1.4.246
g.	The Chief of Defence People should ensure that mountaineering at altitude is included within JSP 419 as an activity that requires medical	1.4.252

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screening and that a formalised medical screening process is produced accordingly. This would provide additional evidence that defence personnel were medically suitable to operate at high-altitude and reduced oxygen environments.

1.5.3 Surgeon General

a. The Surgeon General should amend JSP 950 to include guidance on the process for determining if individuals without a JMES category are medically fit to undertake AT. 1.4.247

b. The Surgeon General should ensure that mountaineering at altitude is included within JSP 950 as an activity that requires medical screening and that a formalised medical screening process is produced accordingly. This would provide additional evidence that defence personnel were medically suitable to operate at high-altitude and reduced oxygen environments. 1.4.253

1.5.4 Joint Services Mountaineering Committee Chair

a. The Joint Services Mountaineering Committee Chair should capture the risk control failures during the BSME20 expedition as a lesson identified and ensure that, for future mountaineering club/association led expeditions, agreed risk controls to maintain the ALARP and tolerable position are maintained throughout. 1.4.73
1.4.134
1.4.180

b. The Joint Services Mountaineering Committee Chair should capture the group management and supervision shortfalls during the BSME20 expedition as a lesson identified and ensure that, for future mountaineering club/association led expeditions, leaders are reminded of their supervisory responsibilities in order to avoid separation of personnel. 1.4.114
1.4.120
1.4.126

c. The Joint Services Mountaineering Committee Chair should capture the lack of completion of daily risk assessments (DRAs) by the Development Team during the BSME20 expedition as a lesson identified and ensure that, for future mountaineering club/association led expeditions, safety policy is adhered to and daily risk assessments are undertaken and documented. 1.4.206

d. The Joint Services Mountaineering Committee Chair should capture and communicate the benefit of [REDACTED], or equivalent, being held by medical officers in portable medical packs for future high risk and remote mountaineering club/association led expeditions in order to allow for improved immediate medical care of casualties with internal injuries. 1.4.217

e. The Joint Services Mountaineering Committee Chair should ensure that a process is developed for the production and retention of training records for mountaineering club/association led activity in order to provide 1.4.236

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evidence that defence personnel have undertaken the required training for the activity.

1.5.5 Head of the Defence Accident Investigation Branch

- a. The Head of the Defence Accident Investigation Branch should capture the use of a technical report, where deemed appropriate and feasible, to establish death in order to avoid delays in issue of a death certificate where personnel are listed as missing believed killed.

1.4.18

1.5 - Page 3 of 4

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PART 1.6

Convening authority comments

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Part 1.6 – Convening authority comments

Introduction

1.6.1. This service inquiry (SI) was convened on 25 August 2022 to investigate the circumstances surrounding the tragic death of Wing Commander (Wg Cdr) Gordon Henderson Royal Air Force, and separately, the seriously injured casualties whilst participating in the British services mountaineering expedition in Pakistan in July 2022. The fatal accident occurred on 19 July 2022 whilst Wg Cdr Henderson was descending Broad Peak mountain. The second accident, resulting in two seriously injured casualties, occurred on 26 July 2022 whilst the expedition participants were traversing the Gondogoro La pass.

1.6.2. The SI panel has submitted its report to me after 12 months of detailed evidence gathering, interviews and analysis. The panel was unable to positively determine what caused Wg Cdr Henderson to fall but the report identified that the accident was more likely to have occurred due to the combination of several contributory factors. These included the high probability of fatigue and the extreme altitude that he was operating at, in addition to shortfalls in group management and supervision, along with the failure to maintain risk control measures during the accident sequence. The report identified that the cause of the second accident was the delay of the team in transiting the Gondogoro La pass, which forced them to operate in an area of increased rockfall risk for longer than had originally been planned and mitigated for. The panel has submitted its recommendations to me and I would urge all commands to consider their wider applicability; many of these can be applied more broadly across the spectrum of sport and adventurous training. Having reviewed the report, I agree with the panel's findings and recommendations and offer the following observations.

Group management and supervision

1.6.3. Despite the expedition's agreed risk management plan detailing that personnel should remain together and that solo mountaineering was not allowed, the panel identified three occasions in the lead up to the fatal accident where different individuals were not operating with other members of the expedition. The third of which culminated in the fatal accident. The level of group management and supervision during the final stages of the summit attempt was not adequate to prevent Wg Cdr Henderson from turning around and descending alone. It is imperative that, regardless of rank or experience, personnel are appropriately supervised when undertaking mountaineering or any other adventurous training activity, particularly when it forms part of the risk mitigation to the high risk activity.

Failure to maintain risk control measures

1.6.4. Risk control measures to maintain the Operating Duty Holder's (ODH) approved 'as low as reasonably practicable and tolerable' position were not adhered to during the fatal accident sequence. Adventurous training and in particular high-altitude mountaineering often possess risks that can be mitigated but not eliminated. The risks to life from fatigue, high altitude illness, and fall from height along with the identified risk control measures for each of these risks were clearly articulated within the expedition risk

assessments. Some control measures ceased as soon as the expedition members became separated. The panel determined that these were further denuded during Wg Cdr Henderson's descent. The failure to maintain these risk control measures, when operating at extreme altitude and highly likely in a fatigued state, ultimately increased the likelihood of the fatal accident. It, therefore, clearly highlights the importance of maintaining the agreed risk control measures, particularly whilst undertaking activity where the residual risk remains high, even with comprehensive mitigation measures in place.

Medical support

1.6.5. The second accident, resulting in two casualties, underlined the robust medical plan and comprehensive training conducted prior to the expedition. In particular, both the medical care provided to the very seriously injured (VSI) casualty at the scene of the accident by the medical officer and the conduct of the subsequent stretcher carry over arduous terrain are to be commended.

Conclusion

1.6.6. Having read the report, I am content that this tragic accident has been investigated, analysed, and reported thoroughly, accurately, and rigorously. Whilst accidents will continue to happen, we have a responsibility to reduce all risks, particularly in a training environment, to a level that is as low as reasonably practicable whilst maintaining the military purpose. Mountaineering at such extreme altitudes obviously carries significant risk, however, there are lessons that can be learnt for the conduct of all adventurous training activity, particularly in the understanding and management of risk. The recommendations contained within this report have been, or will be, actioned and, where appropriate, will be implemented across defence mountaineering activity to reduce the likelihood of accidents in the future.

1.6.7. On behalf of the Defence Safety Authority, I offer my sincere condolences to Wg Cdr Gordon Henderson's family, friends and loved ones.

**S J Shell CB OBE MA
Air Marshal
Director General Defence Safety Authority**

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