

ACLARACION DE www.radarmalvinas.com.ar

El siguiente informe se encuentra en el sitio

<http://www.mod.uk/DefenceInternet/AboutDefence/CorporatePublications/BoardsOfInquiry/LossOfHmsSheffieldBoiPhase3Part1SupplementaryDocuments.htm>

en donde usted puede leerlo directamente en su formato original y acceder al resto del sitio.

Copyright © 2008 MoD UK

Se refiere al hundimiento de la SHEFFIELD, publicado por el Ministerio de Defensa de Gran Bretaña.

A efectos de preservarlo como documento histórico para el caso en que el archivo original o el sitio que lo contiene no figurasen más en internet, a continuación se ha realizado una copia.



COMMANDER-IN-CHIEF FLEET

**LOSS OF HMS SHEFFIELD
BOARD OF INQUIRY**

Annex R

ANALYSIS OF CASUALTIES, FIRST AID AND MEDICAL FACTORS

1. Scope This annex describes the Medical Staff and their qualifications, the Medical Organisation and Medical Stores availability. It discusses casualties at impact, and causes of death both on impact and later, together with the causes, and subsequent treatment of all significant injuries. The use of the AGR in smoke and the protection afforded by clothing is covered. The effects of stress, seasickness and tiredness on the Ship's Company is investigated.

2. XX
XX
XX
XX
XX
XX
XX
XX

335,
SAC,
SACF

3. Medical Stores Medical stores for war had been delivered at Ascension. Although these were generally satisfactory, the controlled drugs, Morphine monojects, were out of date and some of the extra equipment was considered superfluous to requirements. In SHEFFIELD, the medical stores had been distributed for action. However, Morphine in ampoules or as Omopon Monojects, was under the control of the medical staff and held in the Sick Bay, in the First Aid Box (FAB) in the Hangar, the FAB on the Bridge and in the Emergency Operating Station, (EOS), 2P. At Action Stations Morphine was distributed to the Petty Officers in charge of each First Aid Party (FAP) by the Medical Staff. Thus, at Defence Matches, Morphine had not been distributed in accordance with BR 2170 Volume 2, Chapter 36 which requires Morphine to have been distributed and not locked in cupboards. Accounting for Morphine is at Appendix 1.

Q2726

Q6200
Q6234
Q6169

Q6307
Q6133 - Q6134
Q6171
Q6173
Q6174
Q6264

4. Medical Organisation The distribution of First Aid Lockers (FAL) and position of the FAPs at Action Stations was not as expected (1). The forward FAP was in the EOS, 2P. The CPO's Mess, 1J, was found to be an unsatisfactory FAP at Action Stations due to inaccessibility. The fitted FAL remained there as an additional stock. The After FAP was sited in the Port POs' Mess, 2P, with a complete FAL. Thus the Sick Bay was free to receive serious casualties from either FAP. The Board considers this a sensible arrangement. Extra FABs had been fitted in some machinery and workshop spaces, in addition to those listed (1). First aid bags were held by all members of FAPs, but the orders for carrying these in Defence Matches were unclear. Some bags were being carried while some had been left in the EOS.

Q6169
Q6171

Q6151

Q6170

Q6169
Q6156
Q6169
Q6172

5. Casualties at Impact Those killed or injured at impact (see Annex Q) were invariably close to the site of missile entry. The most serious injuries occurred in H, J and K Sections on 1, 2, 3 and 4 Decks and relatively minor injuries in the MCR/HQ and in the Ops Room. Many of the injured received burns, others sustained cuts and

(1) DG Ships Section D131 Drawing No 013010236/11 issue Jan 80.

penetrating wounds from flying debris. Some saw a blinding flash, others felt a hot blast, while others again witnessed fireballs, sparks with intense heat or flames. As 2 Deck access was cut off midships, casualties proceeded forward or aft for treatment. Later, the normal FAPs became untenable due to smoke, as did the Sick Bay. Emergency FAPs were set up in the Hangar and on the Pcc'sle. The serious casualties were evacuated to ARROW and HEMNES.

Q6146
Q6147
Q6294

6. Cause of Deaths at Impact Eight duty watch chefs were in the Galley, 2J. It is most likely that they were all killed outright by the impact. If not they died of asphyxia from the very dense acrid black smoke which rapidly filled the 2J, 2K and 2L and spread up to 1H, 1J and 1K.

7. Cause of Deaths After Impact Nine men died after impact:-

a. Many bulkhead doors were ruptured, buckled or sprung at impact, and one man was trapped by his leg in 2Q/H door starboard. Attempts to free the door from forward were unsuccessful and the trapped man most probably died from asphyxia soon after impact. Two men who escaped from the Naval Stores and comforted this casualty reported that the smoke was very thick in 2H starboard passageway within two to three minutes of impact and that their AGRs were not entirely effective at that time.

Q5501
Q5502 - Q550

Q6489
Q5005

b. One man who was last seen in the Naval Stores, 3H, failed to escape with the two other survivors from that space. No confident cause of death can be given but eventually he must have died from smoke asphyxia and carbon monoxide poisoning.

Q5005

c. One man was felt at the foot of the ladder between 1K and 2K port, immediately forward of the 2K/L port door which was jammed. It appears likely that he was asphyxiated; he may also have been injured. He was unable to climb the ladder. A survivor was unable to pull him out (see Annex W).

d. Five members of the Ship's Company died in the Computer Room, 3G. They appear to have remained at their place of duty unaware that the entire forward section of the ship had been evacuated due to smoke. Their reasons for not leaving this space when the Ops Room was abandoned are not known. It is highly likely that they died in the Computer Room or trying to escape later. The cause of death in either case is most likely to have been asphyxia or carbon monoxide poisoning.

Q3192
Q3237

e. Only one man was positively pronounced dead. He had carried out two re-entries forward, wearing only an AGR, to retrieve Damage Control equipment from the Forward DC Base. His heavy breathing and frothing at the mouth, coupled with the milder symptoms of weakness and dizziness in other personnel who were affected at the same time indicate that he died from carbon monoxide poisoning, despite heroic efforts by several members of the Ship's Company to rescue him and full cardiopulmonary resuscitation by the MO and staff on the Pcc'sle.

8. Cause of Death Unknown Three members of the Ship's Company were not sighted immediately before or after impact and cannot be accounted for in any way. They are therefore missing presumed dead.

9. Causes of Injuries at Impact Eighteen ratings were injured at impact:-

- | | |
|---|---|
| <p>a. <u>Forward Auxiliary Machinery Room, 4J</u> The seriously injured man in this space was thrown down to the deck plates and probably knocked unconscious. On recover, he was unable to reach the normal access ladder due to a major fire in the starboard after corner. His overalls were on fire, he beat these out, turned forward but found a wall of fire. He covered his face with his hands and traversed the fire. The compartment was full of smoke. He then proceeded to the port escape ladder and ascended to 2J port passageway. He proceeded forward and received first aid and medical treatment. His serious burns, 44% variable skin thickness, are compatible with this ordeal.</p> | <p>Q5465 - Q548
Q5467
Q7321

Q7321
Q7330</p> |
| <p>b. <u>Forward Engine Room, 4K</u> The seriously injured man reported a blinding flash which lingered and that the compartment rapidly filled with smoke. He covered his face with his hands and then attempted to climb the access ladder to the starboard passageway. The ladder was too hot to hold and he tried to put his arms around the ladder to climb up. Because of the ingress of smoke and the heat he retreated and made an escape via the escape hatch and Olympus uptake space to the Drying Room 01L. He proceeded aft and was given treatment in the Sick Bay. His burns were assessed as 10 - 15% which are compatible with a serious flash and holding the very hot ladder.</p> | <p>Q5389 - Q544
Q5400 - Q540.
Q5434
Q6213 - Q621

Q6177</p> |
| <p>c. <u>Main Communications Office, 3E</u> Two personnel were seriously injured in this space. One man was about to open the starboard door to the passageway. The blinding flash and blast blew his trousers off completely and left him with flash burns to his hands, face, head and both legs. He was blown six feet and covered in debris. The other man was approximately 12 feet from the door but in line with and facing the door. He was blown four to five feet and sustained flash burns to his face, legs and ankle. Both had foreign body particles in small wounds on their faces. Of the other four injured personnel, three had relatively minor flash burns to unprotected skin on necks, faces and hands. One man was thrown approximately six feet forward and sustained concussion; another in the MEO area was injured by the shredding machine. All these injuries are commensurate with blast, flash and debris.</p> | <p>Q6725
Q6726

Q6721

Q4965
Q6179

Q5230
Q5280
Q5307
Q5291</p> |
| <p>d. <u>Chief Petty Officers' Mess, 1J</u> All three injuries were relatively minor; two had deep lacerations to the head and minor burns, the other had a head injury and minor burns to the back. All the injuries were probably caused by flying debris. The occupants described complete collapse of all the fittings.</p> | <p>Q4912
Q5255, Q5333</p> |
| <p>e. <u>Operations Room, 2G</u> The injuries to all three are compatible with the blast entering the compartment via the starboard door; the head injuries were caused by the door and other equipment.</p> | <p>Q5046</p> |
| <p>f. <u>Wardroom, 1H</u> The two Stewards had head injuries and bruises caused by flying debris and blast.</p> | <p>Q5093
Q5132</p> |
| <p>g. <u>966 Office Lobby, 02H</u> The acute smoke inhalation and facial burns sustained by the casualty looking down the hatchway while retrieving his anti-flash gear was caused by flash, blast and smoke.</p> | <p>Q5107</p> |

h. MCR/HQ1, 2K The one minor back injury was caused by the man being thrown across the MBUD Officer's desk.

Q5925

10. Causes of Injuries After Impact Eight ratings were injured after impact:-

a. Five personnel suffered with smoke inhalation/carbon monoxide poisoning. Of these one was probably affected because he was the last person to evacuate the Ops Room. Of the other four one initially inhaled a significant quantity of smoke in the MCR/HQ1 soon after impact and then re-entered aft to retrieve clothing. Twenty-four hours later he suffered from severe chest pain, indicative of Nitrous fume inhalation. He had not worn an AGR. Two re-entered to the Forward Section Base without Breathing Apparatus (BA) but donned AGRs. They became dizzy and weak, and were recovered by other personnel wearing BA. The history suggests carbon monoxide poisoning. The final one was affected by smoke but had worn BA throughout. It is not clear whether the face seal on the BA leaked or whether he was breathing fumes at 1½ escape hatch prior to donning BA. He was also feeling exhausted.

Q6425
Q6434
Q6435

Q6466
Q6487

Q5071

b. Two men were seriously shocked, one also suffering from mild hypothermia. The latter arose from a prolonged period on the port and starboard waists and being thoroughly drenched wearing only No 8s and a woolly pully.

Q5361-Q5

c. One man had a lifting injury to his back while handling a Rover Gas Turbine.

Q4903

11. Treatment of Casualties Casualties were treated as follows:-

a. Trapped Man The man trapped at the Q/H starboard door received no treatment. He was briefly comforted by a First Aider from the Naval Stores but no Morphine was carried and therefore none given.

Q6489

b. Burns The three seriously burnt casualties were treated in different areas. One was treated with intravenous pethidine and flaxaline bandages in the Sick Bay. The ~~XXXXXXXXXXXX~~ noted that polyester overalls were stuck to the skin behind both knees. The second was escorted to the Poo'le and treated by first aiders initially and then given intramuscular Morphine by the ~~XXXXX~~. Treatment to his burns was with wetted dressings and flaxaline. The third was treated by several members of the Ship's Company and First Aiders near the Forward Section Base before transfer to the Poo'le where he received intra-muscular Morphine from the ~~XXXXXX~~. His overalls were in a poor state but any interaction with oil or melting was not observed. The ~~XX~~ made a deliberate decision not to put a drip on as conditions on the Poo'le were very poor and his transfer to ARROW was rapid.

S338
S40,
S444

c. Spoke Two unconscious casualties rescued through the forward escape hatch were resuscitated by the ~~XXXXXXXXXX~~. Others recovered in the fresh air.

S338
S40,
S444

Comment The above and all other casualties were treated very well by first aid measures.

12. Use of AGE The use of the AGE for re-entry is contrary to BR 2170. Although it appears to have been effective in filtering out fumes, it was less effective in heavy smoke where the filter probably blocked. Its ineffectiveness against carbon monoxide is highlighted by one death and the fact that two survivors were pulled out unconscious and another two were close to unconsciousness. Their symptoms are classic for carbon monoxide poisoning.

Q6504, Q2074-5
 Q5027 - Q5039
 Q5148 - Q5197
 Q6138, Q6670
 Q7060

13. Stress Factors, Seasickness and Tiredness The Board carried out a survey of all those interviewed and on watch at 1400Z on 4 May to assess the above factors. An example questionnaire is at Appendix 2. An analysis of the replies for Ops Room personnel is at TABLE R1.

TABLE R1

FACTOR	RESULT
No. on watch in Ops Room at 1400Z	31
No. of questionnaires completed	23
Time on Watch (watch assumed at 1200Z)	2 hrs
Previous watch (Except Sonar Watch (1 man))	0200Z - 0800Z (0200Z - 0600Z)
Average sleep before assuming watch (range in brackets)	3 (2 - 5)
Average hours watchkeeping per 24hrs over previous 2 days (range in brackets)	11 (10 - 13)
Average hours sleep per 24hrs over previous 2 days (range in brackets)	8.5 (5 - 11)
No. affected by seasickness	1
No. routinely taking Stugeron (Cinnarazine)	1
Time of taking Stugeron XXXXXXXXXXXX	0800Z
No. reporting consumption of alcohol in previous 24hrs	2

338,540
 Sept

TABLE R1 (cont)

FACTOR	RESULT
Time of consumption before assuming watch	
a. XXXXXXXXXXXXXXXXX	1 hour
b. XXXXXXXXXXXXXXXXX	17 hours
(Quantity not known)	
Consumption of food:	
Breakfast 0900Z	23
Lunch 1130Z	21

S38, S40
S44

Table R1 indicates that alcohol was not generally being consumed, that seasickness was not a major problem, that the crew were sleeping satisfactorily, and none were being overworked. From this questionnaire and statements in evidence there is no indication that the Ops Room team were under unreasonable stress nor suffering any strain.

Q243, Q244
Q245, Q1068
Q6236 - Q624
Q386

14. Clothing In the appendices to Annex Q the Board asked for evidence concerning clothing worn and injuries sustained. Although the Board are unable to give an authoritative answer on this subject, as much of the evidence has been removed or destroyed, two items of clothing have been retrieved and sent to the Stores and Clothing Research and Development Establishment at Colchester for analysis. Their preliminary report is at Appendix 3. From an assessment of the injuries it is clear that protection against fires is best provided by layers of clothing. Nylon is a poor substance, as it melts; in particular a nylon sock led to a burn on one man's ankle. TABLE R2 gives a comparison between two similar casualties. This shows that the casualty further away received a burnt ankle wearing nylon socks.

Q4965

TABLE R2

FACTOR	XXXXXXXXXXXX	XXXXXXXXXXXX
Position at impact	MCO Stbd door	12ft from MCO door
Clothes	No 8 shirt Woolly Fully No 8 trousers <u>Nylon underpants</u> <u>Woolen socks</u> DMS shoes	No 8 shirt Woolly Fully No 8 trousers <u>Nylon underpants</u> <u>Nylon socks</u> Standard Shoes

S38, S40,
S44

TABLE R2 (Cont)

FACTOR	XXXXXXXXXXXXXX	XXXXXXXXXX
Injuries	Flash burns face, hands, both legs; hip to ankles. No burns to buttocks, lower abdomen	Flash burns face, 1 hand, slight burn to lower legs. <u>R ankle burnt.</u> No burns to buttocks or lower abdomen.
Clothes	Woolly pully singed, Trousers disappeared except for seams. Socks intact.	Woolly pully singed, Trousers shredded, Slightly hardened socks.

15. Overalls The exact state of the polyester/cotton overalls of the two seriously burnt casualties from the FANR and FER and the extent to which clothing exacerbated their injuries are not known. It is understood that the ~~XXXX~~HERMES found the overalls stuck to burns, as did the ~~XX~~SHEFFIELD in one case (see para 11b). The precise significance of this is not known to the Board.

230, 54
544

16. Summary Fortunately, the injuries sustained in SHEFFIELD were light and the casualties were treated very satisfactorily on board and speedily evacuated where necessary. The deaths at impact, certainly eight and probably all eleven, are likely to have been instantaneous. Nine others died of asphyxia after impact; one of these was in considerable pain. The ineffectiveness of the AGR against carbon monoxide is highlighted. There is no evidence of stress, seasickness or tiredness reducing efficiency.

Appendices:

1. Accounting for Drugs Governed by the Controlled Drugs Act.
2. Specimen Questionnaire.
3. Stores and Clothing Research and Development Establishment Preliminary Report - Clothing Items ex HMS SHEFFIELD - NN/727/01 dated 5 Jul 82.

APPENDIX 1 TO
ANNEX R TO
SHEFFIELD HOI REPORT
DATED 22 JUL 82

ACCOUNTING FOR DRUGS GOVERNED BY THE CONTROLLED DRUGS ACT

1. Issued to SHEFFIELD.

a.	144 Omnopon Monojects	}	Basic Issue
b.	20 Ampoules Pethidine 50mg		
c.	24 Ampoules Morphine Sulphate 15mg	}	Conversion Unit
d.	15 Ampoules Omnopon/Scopolamine		
e.	100 Tablets Pethidine 20mg		
f.	6 Omnopon Monojects	}	Field Service Valise
g.	4 Ampoules Morphine Sulphate 15mg		
h.	2 Ampoules Pethidine 50mg	}	NO's Emergency Pack

2. Used by SHEFFIELD on 4 May. One Ampoule Pethidine. Two (Omnopon) Monojects.

3. Returned by SHEFFIELD to Chief Pharmacist HASLAR.

a.	5 Ampoules Morphine 15mg	}	by XXXXXXXXXXXXXX
b.	2 Omnopon Monojects		

5-88, SuC,

4. Transferred to Other Ships.

a. Nil to ARROW.
b. Returns from YAMOUTH and PORT AUSTIN not rendered.

5. Conclusion. Remaining Morphine not accounted for but probably sank in SHEFFIELD.

6. Recommendation. SHEFFIELD to write off CDA drugs in accordance with QRHN 4280.

In order to assess all personnel on watch at the time of missile impact, it is necessary to consider factors that might affect performance. For example, fatigue, lack of sleep, alcohol and/or medications could be of considerable importance. Accordingly all personnel are required to fill in this chart as accurately as possible.

DATE	TIME	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
2 MAY 1982	0000																											
	0100																											
	0200																											
	0300																											
	0400																											
	0500																											
	0600																											
	0700																											
	0800																											
	0900																											
	1000																											
	1100																											
	1200																											
	1300																											
	1400																											
	1500																											
	1600																											
	1700																											
	1800																											
	1900																											
	2000																											
	2100																											
	2200																											
	2300																											
2400																												
3 MAY 1982	0000																											
	0100																											
	0200																											
	0300																											
	0400																											
	0500																											
	0600																											
	0700																											
	0800																											
	0900																											
	1000																											
	1100																											
	1200																											
	1300																											
	1400																											
	1500																											
	1600																											
	1700																											
	1800																											
	1900																											
	2000																											
	2100																											
	2200																											
	2300																											
2400																												
4 MAY 1982	0000																											
	0100																											
	0200																											
	0300																											
	0400																											
	0500																											
	0600																											
	0700																											
	0800																											
	0900																											
	1000																											
	1100																											
	1200																											
	1300																											
	1400																											
	1500																											
	1600																											
	1700																											
	1800																											
	1900																											
	2000																											
	2100																											
	2200																											
	2300																											
2400																												

Fill in boxes as ✓ = on watch.
 X = asleep.
 O = consumption of alcohol.
 + = taking a drug (eg sickness tablet, sleeping pill etc).
 Δ = meal.

WHEN COMPLETED THIS FORM IS STAFF/MEDICAL IN-CONFIDENCE.

Thank you for your co-operation

FROM:XXXXXXXXXXXXXXXXXXXX

APPENDIX 3 TO
ANNEX R TO
SHEFFIELD DOI REPORT
DATED 22 JUL 82



STORES AND CLOTHING RESEARCH AND DEVELOPMENT
ESTABLISHMENT
Ministry of Defence
Flagstaff Road Colchester Essex CO2 7SS
Telephone 0206 (Colchester 0206) ext 4230
575121

XX

HMS Sheffield
Board of Inquiry
Hardy Block
HMS Nelson
Portsmouth
Hampshire

All replies should be addressed
to the Director
Your reference

Our reference HM/727/01
Date 5 July 1982

S32
SuC
S44

XX
XX

CLOTHING ITEMS RE HMS SHEFFIELD

1. We have conducted a preliminary examination of the items you sent to us and can make some observations now.
2. No 8 Trousers. These are standard issue No 8 Trousers; the fabric is an intimate blend of polyester (67%) and cotton(33%). There are small pieces of fabric missing from the centres of some damaged areas and we can obviously make no comment on those.
3. In the damaged areas the fabric has hardened because the polyester component melted, flowed together and subsequently resolidified in a non-fibrous form. This damage is almost exclusively confined to the outer surface of the cloth. At the inner surface, the polyester fibres remain undamaged. Skin damage beneath the cloth will have been caused by thermal energy transmitted through the fairly light weight fabric. The fabric itself did not contribute to the seriousness of the injuries. It is probable that any cloth of similar weight and thickness would have provided no more or less protection to the underlying skin.
4. It seems probable that the thermal energy in the flash caused the outer surface of the fabric to degrade. The immediately following blast wave in the confined space had a cooling effect and threw the man further from the source which may have prevented further destruction of the fabric.
5. I understand that his socks were more completely degraded and that he suffered ankle burns. This is understandable since they were of lighter weight material of 100% nylon and could have been more completely destroyed in the time which only caused degradation of the outer surface of the trouser fabric.
6. Coverall (forwarded with your letter dated 29 June 1982). This is a standard GS Coverall made from a blend of 67% polyester and 33% cotton. The garment is old and the fabric on the back is worn extremely thin to the point that it is translucent.
7. There is no detectable thermal damage to the material. It is probable that the relatively low level of radiant energy in this location was insufficient to cause any degradation to the material but some was able to pass through the open structure of the fabric to cause the "sunburn" type of skin damage.

8. We are carrying out more detailed tests related to the damage to the No 8 Trousers. It is unlikely that the results will be of direct value to the Board of Inquiry but may provide information of use in future decision making about protective clothing. We will of course pass any useful results to you and will be pleased to provide any additional comments or answer questions about these items. We would also welcome opportunity to examine any other items with which you think we can help.



XX
XX
XX
XX
XX

S38, Se
S14