

1
2 Again, US Coast Guard and US Navy data suggests that
3 the probability of a shark attack on someone who is
4 floating in an ocean increases significantly when the water
5 temperature increases above 20 degrees C.
6

7 THE PRESIDENT: But the high probability is that none of
8 these bodies would have risen?
9

10 MR de YONG: The high probability is that none of the
11 bodies would have risen, that's correct.
12

13 CMDR RUSH: I have no further questions, sir, at this
14 stage. Thank you, Mr de Yong.
15

16 Sir, I wish to call Mr Gamble and Ms Suendermann in
17 relation to a couple of matters - the operational aspects
18 of Sydney in relation to fire and also in relation to
19 damage control.
20

21 <BRIGITTA SUENDERMANN, affirmed: [4.20pm]
22

23 <GRANT IAN GAMBLE, affirmed: [4.20pm]
24

25 CMDR RUSH: Mr Gamble, would you state your full name and
26 address to the Commission, please?
27

28 MR GAMBLE: Grant Ian Gamble [REDACTED]
29 [REDACTED]
30

31 CMDR RUSH: And your qualifications?
32

33 MR GAMBLE: A Bachelor of Science degree, majoring in
34 physics and computer science.
35

36 CMDR RUSH: You are employed, and have been for some time,
37 by the DSTO?
38

39 MR GAMBLE: I'm a Defence scientist within the DSTO. I've
40 been there since 1991.
41

42 CMDR RUSH: Your particular area?
43

44 MR GAMBLE: I work in an area that deals with fire and
45 smoke, damage control and lifesaving and evacuation
46 systems.
47

1 CMDR RUSH: Is that in relation to the Maritime Platforms
2 Division?

3
4 MR GAMBLE: In support of Navy submarines and surface
5 ships.

6
7 CMDR RUSH: Could you state your full name and address,
8 please, Ms Suendermann?

9
10 MS SUENDERMANN: Brigitta Suendermann, [REDACTED]
11 [REDACTED]

12
13 CMDR RUSH: And your qualifications?

14
15 MS SUENDERMANN: I have a Bachelor of Applied Science and
16 a Masters of Applied Science.

17
18 CMDR RUSH: You are employed by the DSTO, and have been
19 for some time, in what area?

20
21 MS SUENDERMANN: Also with the Maritime Platforms Division
22 in fire and damage control research, undergoing analysis of
23 fire risk assessments on ships, mathematical fire modelling
24 and fire trials.

25
26 CMDR RUSH: Did you jointly attempt to examine the
27 organisation of the ship, doing so without a watch and
28 station bill?

29
30 MR GAMBLE: Yes.

31
32 CMDR RUSH: From that examination, did you produce
33 a table - table 14 on page 104 - based on other ships and
34 other Navies, of the likely distribution of personnel
35 through the ship?

36
37 MS SUENDERMANN: Yes, we did.

38
39 THE PRESIDENT: At Action Stations?

40
41 MS SUENDERMANN: At Action Stations, yes.

42
43 CMDR RUSH: Just to show that, at page 104, if we go down
44 the column to the fourth, we're dealing with the painter,
45 the plumber, the blacksmith and the joiner. At Action
46 Stations, they are at a damage control station?
47

1 MS SUENDERMANN: At a guess, an educated guess. The
2 painter I don't know about. The plumber is obviously quite
3 useful, and the same with the joiner and the blacksmith.
4 They're useful for damage control purposes.

5
6 CMDR RUSH: You went to US Navy data and the like to try
7 to establish a pattern in relation to the distribution of
8 men in Sydney?

9
10 MS SUENDERMANN: That's correct. We went to the US Damage
11 Control Book of 1945, because information from the British
12 Navy wasn't available to us. That was four years later.
13 The organisation will not have changed significantly. We
14 used this information for where we expected people to be at
15 Action Stations.

16
17 CMDR RUSH: From that information and also other material,
18 firstly, did you work out where the damage control sections
19 would be located at Action Stations on Sydney?

20
21 MS SUENDERMANN: Yes. Looking at information from
22 HMAS Hobart, which had an incident on torpedo hit a few
23 years later, they detailed three damage control stations,
24 which have been indicated already today.

25
26 CMDR RUSH: That's at figure 78.

27
28 MS SUENDERMANN: They are the green blobs. They are all
29 on the lower deck. The forward one is underneath, in the
30 mess area, between the two turrets. The central one, DC2,
31 is in the electrical engineer's workshop and predominantly
32 would deal with the engine spaces, which are distributed
33 either side. The aft one is also in a mess area and is
34 fairly close to the wardroom flat. The damage control
35 headquarters is in the lower steering compartment on the
36 platform deck.

37
38 CMDR RUSH: So the damage control headquarters is on the
39 platform deck in the forward steering compartment?

40
41 MS SUENDERMANN: The lower steering compartment.

42
43 CMDR RUSH: Who was the officer in charge of damage
44 control?

45
46 MS SUENDERMANN: We have a discussion about that, whether
47 it is actually the executive officer or possibly the senior

1 engineer on board. There is usually a group of officers
2 involved in damage control with the overseeing of the
3 organi sation.

4
5 CMDR RUSH: You set out the damage control and examples of
6 damage control at figure 81.

7
8 MS SUENDERMANN: Yes.

9
10 CMDR RUSH: That is at page 115, which we are just coming
11 to. The splinter boxes and the wood shoring and the like
12 would look, according to the diagram, to be a fairly
13 old-fashioned method of damage control.

14
15 MS SUENDERMANN: It is still in current use today.

16
17 CMDR RUSH: If we can look at the individual sections in
18 that figure, at (a) we're dealing with a system of plugging
19 using pieces of timber.

20
21 MS SUENDERMANN: Correct. If you have a hole in a
22 bulkhead, the more obstacles you can put into that hole the
23 less leakage you are going to have through it. The idea of
24 this method is to stop the ingress ion of water into your
25 compartment, so if you can jam objects into it, that will
26 slow down the leakage.

27
28 They have on board wedges and lumps of wood
29 speci fically for blocking holes, and obviously the hammer,
30 but they could use anything on hand to block holes.

31
32 CMDR RUSH: Figure (b) shows bracing. What is the purpose
33 of that?

34
35 MS SUENDERMANN: You can see that there is a bow in the
36 vertical, which means that there is some pressure on the
37 other side - presumably water - so you can try to brace it;
38 you can try to strengthen that bulkhead. The bracing
39 pieces usually are lengths of wood, four-by-two typically.
40 Again, still carried on board ships today.

41
42 CMDR RUSH: Then there is a figure demonstrating a
43 splinter box.

44
45 MS SUENDERMANN: A splinter box is made from steel. Some
46 of them, I think, were made on board. They carried them.
47 As the central part of this diagram shows, you put them

1 over the damaged hull to cover the entire hole, if
2 possible. You would presumably do this to a deck that is
3 still above the waterline. It is a bit hard to do it when
4 you are under the water.

5
6 CMDR RUSH: Then the splinter box, as we see, is shored in
7 place.

8
9 MS SUENDERMANN: Yes. It has to be held in place. There
10 should be men in place to watch these various types of
11 repair.

12
13 CMDR RUSH: Apart from the repair types set out in those
14 figures, are you aware of any other types of damage control
15 for the plugging of holes in ships?

16
17 MS SUENDERMANN: There are other forms. These are just
18 examples of how you would use the shoring. You could block
19 them up in various ways. You can shore over hatches; you
20 can brace doors.

21
22 MR GAMBLE: There was an example from the Second World War
23 where a split in a bulkhead or a deck was sealed with wads
24 of clothing and then shored in place with timber. That's
25 another method that could be used.

26
27 CMDR RUSH: From your examination of the systems that were
28 available, having regard to the damage that we've seen that
29 was sustained by Sydney, have you any view as to the
30 effectiveness of this form of damage control?

31
32 MR GAMBLE: There were examples in the Second World War of
33 ships sustaining torpedo damage, both forward and aft. In
34 those examples, bulkheads were shored to be reinforced, to
35 ensure that they didn't collapse under the pressure of
36 floodwater. In the cases where that happened, they were
37 single events, so just a torpedo hit; there weren't
38 subsequent torpedo hits or shell hits to those ships.

39
40 CMDR RUSH: Were the damage control parties equipped by
41 number and by resources to cope with the sort of damage
42 that Sydney sustained?

43
44 MR GAMBLE: We don't believe so. In addition, casualties
45 from the weapon impacts would have caused a loss of numbers
46 in the damage control organisation, making it more
47 difficult to repair the damage.

1
2 CMDR RUSH: You identified the positions on the ship for
3 the various damage control parties. Were they each given
4 responsibility for a particular section of the ship?
5

6 MS SUENDERMANN: Yes, they would have been responsible for
7 the areas around where they were located, but if there had
8 been no damage in their area, they would have been called
9 along to other areas to assist.

10
11 CMDR RUSH: Mr Gamble, I am going to ask you this
12 generally: have you also examined, to an extent, the
13 electrical circuitry of Hobart?
14

15 MR GAMBLE: There is a number of examples of descriptions
16 of electrical systems on British-designed ships in the
17 Second World War, and they give a good overview of how
18 those systems were operated.
19

20 CMDR RUSH: In relation to the damage sustained by Sydney
21 from torpedo and shellfire, overall, do you have an opinion
22 as to the impact that that would have had on the electrical
23 systems?
24

25 MR GAMBLE: We heard a general description earlier of the
26 electrical distribution system which is known as the
27 ring main. The ring main and the electrical generators,
28 four in total, were all located on the platform deck. Also
29 on the platform deck was the switchboard room, which was
30 the control and monitoring system for the electrical
31 distribution system, and six breaker rooms. Basically,
32 these allowed electrical power to be run from the ring main
33 to individual electrical pieces of equipment.
34

35 If we look at the predicted extent of damage plans, at
36 figure 247 --
37

38 CMDR RUSH: That is the damage to the platform deck
39 compartment.
40

41 MR GAMBLE: Yes. As I said, this is where most of the
42 major components of the electrical generation and
43 distribution system were installed. In the forward section
44 of the ship we can see predicted damage to two complete
45 sections of the ship. That is two sections between
46 watertight bulkheads. So it is quite a large area of
47 damage. Forward of this damage and aft of the torpedo

1 damage were two of the breaker rooms which distributed
2 power to individual pieces of electrical equipment in the
3 forward section of the ship. Aft of these two sections
4 were another two breaker rooms and the switchboard room.
5

6 The switchboard room is also predicted to have
7 suffered damage, and while the loss of the switchboard room
8 wouldn't have rendered the electrical system inoperable, it
9 would have caused delays and difficulty as crew would have
10 to move around the ship, particularly on the platform deck,
11 to operate the breakers which opened and closed supply to
12 various pieces of equipment or circuits.
13

14 There is also predicted damage at that level to the
15 forward boiler room and also some to the forward engine
16 room. This is an area where, at the side of the ship, the
17 ring main cables ran, basically.
18

19 So all of that predicted damage combined results in a
20 probable loss of the electrical system to the forward
21 section of the ship, and if we go up to the lower deck, in
22 figure 246, in this case the predicted damage is even
23 greater than on the platform deck in the forward section of
24 the ship.
25

26 So the branch lines from the breaker rooms would run
27 up to the lower deck and then further up the ship to
28 control the various pieces of equipment - lighting and
29 ventilation, motors for the various pieces of equipment and
30 the like - so it is likely that or most of these branch
31 lines would be damaged as well, rendering the system
32 inoperable in the forward section.
33

34 The damage to the aft of the ship is not as severe,
35 and it is possible, particularly on the platform deck, that
36 the ring main in this area and the breakers were intact.
37

38 When the ship moved to Action Stations, the crew would
39 have split the ring main into four sections. Two of those
40 sections would have supplied the forward section of the
41 ship and two supplied the aft section of the ship. So it
42 is possible that the aft two sections remained intact.
43

44 CMDR RUSH: The electrical system relied upon, I think,
45 two generators to maintain --
46

47 MR GAMBLE: There were two steam-powered generators, one

1 in the forward engine room and one in the aft engine room,
2 and two diesel-powered generators which were outside of the
3 aft boiler room. Each of these would supply ring main
4 cables on either side of the ship, and through the use of
5 emergency cables which the ship would have also carried,
6 the generators could have supplied other sections of the
7 ring main or equipment directly using emergency cables.

8
9 CMDR RUSH: Having regard to the damage to the ship and
10 the roll of the ship as depicted, what impact on damage
11 control and personnel involved in damage control do you see
12 that having?
13

14 MR GAMBLE: The roll angles described were quite steep.
15 There is a report from HMAS Australia in 1945 when the ship
16 was damaged by Japanese aircraft deliberately hitting the
17 ship. One of those caused flooding and the ship was
18 deliberately listed to 10 degrees to reduce the water
19 pressure on a particular bulkhead. Comments from that
20 damage report say that the ship would have been unworkable
21 at a greater angle, so greater than 10 degrees would have
22 rendered the ship effectively unworkable. So at between
23 I think 15 and 40 degrees it would have been very difficult
24 to undertake any operations on the ship.
25

26 CMDR RUSH: Can I ask you to turn to page 170. You there
27 examine fire damage. At figure 145 there are set out
28 examples of fire damage to the ship. You have picked four
29 photographs to depict that damage. Perhaps if we examine
30 the officers' galley on the forecastle deck. What are we
31 looking at there to delineate the fire damage?
32

33 MR GAMBLE: Okay. This first example of fire damage,
34 around the outside of the compartment there, along the
35 edges and the corner, we can see paint that has blackened
36 and is damaged from heat, so either from heat transfer from
37 inside that compartment or flames on the exterior of that
38 compartment.
39

40 CMDR RUSH: Perhaps if we go across to the adjacent
41 photograph of the captain's sleeping space on the upper
42 deck.
43

44 MR GAMBLE: This type of patching pattern, if you like, is
45 typical of heat transfer from inside a compartment to the
46 outside. Generally, we see the centre of the steel plating
47 damaged by fire or by heat, and less damage at the top and

1 the bottom and in the corners of those compartments, where
2 there is heavier steel structure which takes longer to heat
3 up and can conduct the heat away, so causing less damage.

4
5 CMDR RUSH: So as a consequence of the photographic and
6 video imagery, were you able to produce a diagram of the
7 various decks of the ship and indicate where the fire
8 damage was to Sydney, based on that evidence?

9
10 MR GAMBLE: We did predict fire damage to the exterior of
11 the ship. We used the damage to the paint as the indicator
12 for this. We disregarded a number of areas where the paint
13 or the metal was degraded. These weren't consistent with
14 fire damage. But large areas of the upper decks were,
15 including from the bridge --

16
17 CMDR RUSH: Perhaps if we look at figure 146.

18
19 MR GAMBLE: On the port side, we see basically from the
20 bridge extending right down to the lower deck we have fire
21 damage, and on the starboard side from the bridge down to
22 upper deck. Amidships we have the structure below the
23 aircraft catapult. You can see that there were fires
24 there. On the aft upper deck and forecastle decks we also
25 have predicted some fire damage in that area.

26
27 CMDR RUSH: The areas that you have just gone to were on
28 both the port and starboard side.

29
30 MR GAMBLE: On port and starboard.

31
32 CMDR RUSH: Then on the forecastle deck?

33
34 MR GAMBLE: The plan images are simply an estimate of the
35 fire internally based on the external damage. While we
36 can't see inside the ship to look at that damage, it is a
37 reasonable prediction of the internal fire spread.

38
39 CMDR RUSH: You have indicated areas there both forward
40 and aft on the forecastle deck and, just below that, the
41 upper deck, of fire damage internally.

42
43 MR GAMBLE: Yes, internally.

44
45 CMDR RUSH: Then on the lower deck, smaller areas of fire
46 damage.

47

1 MR GAMBLE: On the port side forward and starboard side
2 aft.

3
4 CMDR RUSH: That is what you were able to ascertain from
5 what was shown on the evidence provided from the images of
6 the ship.

7
8 MR GAMBLE: Yes, along with the shell impacts, which
9 provide the most probable cause of ignition of combustible
10 materials in those areas.

11
12 CMDR RUSH: Would the fires be limited to that, or is
13 there potential for fire inside the ship that just can't be
14 determined.

15
16 MR GAMBLE: There is potential for greater areas of fire
17 inside the ship that simply haven't transferred to the
18 exterior paint.

19
20 CMDR RUSH: There are just a couple of other matters. At
21 page 233 of the report, in paragraph 7.2.3, there is a
22 statement that the fires would have eventually joined to
23 form a larger conflagration, joined together. What are we
24 talking about there.

25
26 MR GAMBLE: Because of the large number of hits to the
27 forward bridge structure and below, there were a lot of hot
28 fragments flying around, so it is possible that a number of
29 small fires were initially ignited and eventually those
30 fires would have spread and formed the large area of fire
31 that we see predicted.

32
33 CMDR RUSH: Finally, did you undertake, by looking at the
34 design plans for Sydney, the task of trying to assess, if
35 he was in the forward steering position, how the XO might
36 have got to the after steering position?

37
38 MR GAMBLE: Yes. It is assumed that the XO's position at
39 Action Stations would be the lower steering position, which
40 also acted as damage control headquarters. This practice
41 was in place, and is still used in modern Navies, to
42 separate the commanding officer and the executive officer,
43 so that if the commanding officer becomes a casualty, the
44 executive officer can assume command.

45
46 In this case, there was predicted damage to the bridge
47 early in the battle, in which case the XO would probably

1 have to assume command, being the highest-ranking
2 able-bodied officer on the ship. To do this, he would most
3 likely move to the aft control position.

4
5 There is a number of possible routes to move to that
6 location. The lower steering position is on the platform
7 deck, so the XO would have to move up to the lower deck.
8 There is only one possible route for this. Then there is a
9 number of routes to move along the lower deck for most of
10 the journey or some of the journey, and then move up to the
11 upper deck and eventually up to the aft control position.

12
13 CMDR RUSH: Do all the routes, at one stage or another,
14 have the XO on the upper deck?

15
16 MR GAMBLE: Yes. The XO needs to move to the upper deck
17 at some stage. On the route that offers the most
18 protection, the XO stays on the lower deck and moves up
19 through a hatch which is on the starboard side of the ship
20 and some what protected by the aft structure. That would
21 be the route that would offer the most protection from fire
22 from Kormoran.

23
24 THE PRESIDENT: That practice of separating the captain
25 from the executive officer occurs only when the ship goes
26 to Action Stations; is that right?

27
28 MR GAMBLE: I believe so.

29
30 CMDR RUSH: In general terms, the time taken to move from
31 that steering position to the aft steering position is
32 three to four minutes?

33
34 MR GAMBLE: Somewhere between two and a half and four
35 minutes, depending on the route chosen. The major
36 difference in time is that if the executive officer stays
37 below deck there are more doors to go through and at Action
38 Stations these would be closed and all the clips or dogs
39 would be in place. So it takes some time to open a door.

40
41 CMDR RUSH: What you are saying is, for crew to move from
42 that area of the ship where the XO may be, in general
43 terms, to the aft area of the ship, if the ship be at
44 Action Stations, is quite an intricate and detailed
45 journey?

46
47 MR GAMBLE: It is quite a distance from the base of the

1 area of the bridge to the aft structure of the ship. If we
2 bring up one of the diagrams on page 238, if we move to the
3 bottom, this is the slowest route but that which offers the
4 greatest protection. You will see that the bottom drawing
5 is the platform deck. There is a short movement to a hatch
6 up to the lower deck. There is then movement along the
7 lower deck for quite a distance, going through a number of
8 watertight doors, to a point where movement up through a
9 hatch can be made to the upper deck. Then there is a short
10 movement aft and then up a ladder to the forecastle deck.
11 Then there is another ladder and movement across some open
12 space to the door of the aft control position, which is on
13 the port side of the compartment. This is where, in the
14 case of the loss of the bridge, the ship would be
15 controlled from.

16
17 CMDR RUSH: I think they are the matters that I wanted to
18 raise, sir.

19
20 THE PRESIDENT: Thank you. Could we bring up figure 82,
21 please, on page 116. This, as I understand it, is an
22 illustration of what any person surviving below after the
23 attack would have to do to try to get to a compartment
24 through a watertight barrier; is that right?

25
26 MR GAMBLE: Correct.

27
28 THE PRESIDENT: What is involved in going, for instance,
29 from the 4 inch HA magazine up to the sick bay or,
30 alternatively, up above the galley into the upper deck.
31 Would somebody have to walk up or climb up a series of
32 ladders?

33
34 MS SUENDERMANN: Yes.

35
36 THE PRESIDENT: In that instance that I have mentioned, up
37 through some three or four decks?

38
39 MS SUENDERMANN: That's correct. Most of the watertight
40 bulkheads below the lower deck don't have passage across
41 them; there is no doorway, so you need to go up. The
42 exception is the high-angle calculation position. From
43 there you need to traverse a bulkhead at 76 in order to get
44 out of the room. So you go through a series of doors
45 through the transmitting station, through the low power
46 compass room - it actually may not be that room. These
47 rooms are along the centre line. So I'm not sure if the

1 doors are actually along the centre line, but they are
2 within that section of the ship.
3

4 You then need to go up a ladder. If you are at Action
5 Stations, you need to un-dog the hatch at the top of the
6 ladder. You then have to dog it again, because you are
7 still at Action Stations and you still need to maintain
8 watertight integrity in all places. In this case, you then
9 need to go up another ladder, with a hatch again, and you
10 can either go aft to the boiler room or forward through the
11 stokers' mess, and up either a ladder into the galley, or
12 you can go across to the lower mess, again, through a door.
13 The bright red arrows indicate that there is a doorway
14 through the watertight bulkhead. You need to un-dog that
15 door and then re-dog it on the other side.
16

17 THE PRESIDENT: The reason I raise it is because it seems
18 to me that the prospect of anyone being able to achieve
19 that --
20

21 MS SUENDERMANN: Is remote.
22

23 THE PRESIDENT: -- in circumstances where there was no
24 power, so no light, where much of this area had been
25 subject to heavy bombardment and was on fire and
26 smoke-filled, would seem to me to be extremely remote.
27

28 MS SUENDERMANN: Correct. There would be a lot of damage
29 blocking access as well.
30

31 THE PRESIDENT: It would seem to me that the person
32 seeking to do so also wouldn't know if they were going to a
33 safer or a less-safe place.
34

35 MS SUENDERMANN: Correct.
36

37 CMDR RUSH: I have no other matters, sir.
38

39 THE PRESIDENT: LCDR Katter, do you have any questions?
40

41 LCDR KATTER: Nothing further, sir.
42

43 THE PRESIDENT: Thank you.
44

45 CMDR RUSH: Sir, there are two questions that I have which
46 I think Mr Jeremy may be able to answer. They are very
47 brief. I think as a matter of completeness I would like to

1 do that.

2

3 THE PRESIDENT: Yes, very well.

4

5 (Mr Jeremy returned to the witness box.)

6

7 CMDR RUSH: Mr Jeremy, the Commission of Inquiry has
8 received some submissions in relation to the wrecks -
9 including Kormoran, but particularly concentrating on
10 Sydney - suggesting that the ship that we have examined
11 over the course of the last two days is not the Sydney. Do
12 you have any comment on that, or any doubt?

13

14 MR JEREMY: I have absolutely no doubt whatsoever that
15 that is HMAS Sydney.

16

17 CMDR RUSH: The other matter is that in some photographs
18 which don't appear in the report, but it doesn't matter for
19 the purpose of the question, there are leather shoes that
20 have been identified in the debris field near the hull of
21 the ship. Do you have any opinion as to the likelihood of
22 where those shoes came from?

23

24 MR JEREMY: I believe it is possible that they may have
25 come from lockers which were located around the upper deck
26 of the ship for the engine room personnel to change their
27 footwear after leaving the machinery spaces so that they
28 didn't track oil through the ship. So it is possible that
29 those shoes and boots have come from those lockers.

30

31 CMDR RUSH: Thank you. They are all the matters, sir.

32

33 THE PRESIDENT: Thank you very much. Thank you indeed for
34 a very comprehensive report.

35

36 I will now adjourn. There will be further hearings of
37 this Inquiry in Sydney, here, on 19 January, and then there
38 will be some further hearings in Perth commencing on
39 3 February. I will adjourn until 19 January.

40

41 AT 5PM THE COMMISSION WAS ADJOURNED
42 TO MONDAY, 19 JANUARY 2009 AT 10AM

43

44

45

46

47