CORONERS ACT, 2003

SOUTH *AUSTRALIA*

FINDING OF INQUEST

An Inquest taken on behalf of our Sovereign Lady the Queen at Adelaide in the State of South Australia, on the 25th, 26th, 27th and 29th days of February 2008 and the 14th day of March 2008, by the Coroner's Court of the said State, constituted of Anthony Ernest Schapel, Deputy State Coroner, into the death of Jarrod David Stehbens.

The said Court finds that Jarrod David Stehbens aged 23 years, late of 1/15 Arnold Drive, Mitchell Park, South Australia died in waters off Glenelg, South Australia on the 24th day of August 2005 as a result of injuries sustained in a shark attack. The said Court finds that the circumstances of his death were as follows:

1. Introduction and reason for Inquest

1.1. Jarrod David Stehbens was 23 years of age when he died on 24 August 2005. He was a Research Assistant employed by the University of Adelaide ('the University') in its Discipline of Environmental Biology, School of Earth and Environmental Sciences. Mr Stehbens was employed on a full-time basis. He met his death when he was taken by a shark during a University diving operation. No trace of Mr Stehbens' body has ever been located.

1.2. The evidence reveals that Mr Stehbens was a qualified and relatively experienced open water SCUBA[1] diver. Diving formed part of his occupational activities in his employment with the University. There was a suggestion in the course of the Inquest that his diving was better characterised as an educational, as opposed to occupational, activity. I reject that contention. While the pursuit of knowledge may have formed part of, or even been at the forefront of his diving activity on the day in question, the

[1] Self-Contained Underwater Breathing Apparatus

fact remains that he was engaged in this activity in the course of his paid employment by the University. Thus seen, the duties and responsibilities placed upon an employer by virtue of the Occupational Health, Safety and Welfare Act 1986, which include the provision of a safe working environment and safe systems of work, applied.

1.3. There are intrinsic risks associated with the occupation of diving in the open sea. Among these risks is the possibility of injury sustained in an attack by a predatory marine animal including a shark. A significant body of evidence was presented to me about the risk of shark attack as it existed in the waters of the Gulf of St Vincent at the relevant time. Much of that is based upon the statistical infrequency of shark attack and of sightings in this region. I deal with this issue below. There are, of course, other risks associated with diving such as drowning, decompression sickness and injury caused by impact with a vessel. Some of those risks may be heightened by a lack of competence or training on the part of the individual diver or on the part of those supervising the diver. I was not concerned in this Inquest with risks of that nature.

1.4. The issue with which this Inquest was concerned was whether the risk of shark attack associated with this diving expedition had been fully understood and appropriately considered and whether the necessary precautions had been taken in order to minimise that risk. In particular, I examined the issue as to whether the deceased ought to have been wearing an electronic shark repellent device at the time he executed the fatal dive and whether if he had been wearing such a device, the outcome in this case may have been different.

1.5. I say at the outset that these Findings and recommendations are not intended to address issues of risk identification and management in settings other than occupational settings. I have already referred to some aspects of an employer's duty of care towards its employees. Differing considerations may well apply to diving in a recreational setting where such a duty may be either non-existent or different. Nevertheless, recreational divers and those training or invigilating over them may draw from these findings and recommendations their own conclusions as to the approach they should take to the possibility of shark attack.

2. The fatal incident

2.1. The fatality occurred in the course of an expedition that involved four members of the relevant University Department. All four of those members were employed on a full-time basis by the University. The four members were Jarrod Stehbens, Justin Rowntree, Melita deVries and Bayden Russell. The deceased and Mr Russell were the most experienced divers in the team. The purpose of the expedition was to search for cuttlefish eggs. The exercise was part of a Departmental project in which Ms deVries had an involvement.

2.2. At their disposal was an aluminium boat with twin outboard motors. It was configured to enable divers to have easy access to and egress from the water. The divers were all in possession of the necessary equipment which included wet suits. Also on the boat were two Shark Shield devices that belonged to the University. These devices had been acquired by the University in about May 2002. They were meant to provide some measure of protection against shark attack. The particular models involved were the SeaChange Shark Shield Dive01 model. The Shark Shields were stowed away on the boat. Their presence on the boat was not exactly conspicuous and in any event not known to any of the diving party. Neither of these devices was used by any member of the diving party on the day in question. I return to the utility and state of repair of the two devices in due course.

2.3. The group set off at about 9:30am on 24 August 2005. Three separate dives were undertaken during the course of the expedition. The dives occurred at three different localities in the Gulf of St Vincent. The first two dives were undertaken without incident. They involved different members of the party. The first dive occurred at the Glenelg dredge which is approximately 6 kilometres offshore from Glenelg. The second dive occurred on the Seacliff reef which is about 1 kilometre offshore. The third and last dive occurred at approximately 3:30pm at a location known as the Glenelg tyre reef which is 5 or 6 kilometres off Glenelg. The Tyre Reef, as the name suggests, is constructed out of tyres and is intended to form a reef that will attract marine life. It is situated in approximately 17 or 18 metres of water. The locality of the tyre reef was established by the group by means of GPS coordinates. I was told that both before and since the fatal expedition, recreational diving expeditions have taken place at the Glenelg tyre reef without incident. I was not told of the precise frequency at which such expeditions take place, but I am prepared to infer that they

were reasonably regular. In any case, there is no suggestion that any of these expeditions, be they recreational or otherwise, involved any dangerous incident. Certainly no fatality has occurred there, and as far as I am aware, no serious injury has ever been occasioned there as a result of contact with marine life. On the other hand, I have no information as to whether or not sightings of dangerous sharks have occurred in the waters at that location, either below the surface or on the surface. However, it is fair to say that if sharks have been sighted regularly or even spasmodically at that location, none of that was ever reported to me.

2.4. The dive at the Glenelg tyre reef was undertaken by Jarrod Stehbens and Mr Rowntree. Of the two young men, Mr Rowntree was the less experienced diver. The dive was the shortest dive of the day. This dive involved a joint final ascent from a depth of 17 or 18 metres. The location from which they commenced their ascent was some distance from where the boat was anchored. The ascent involved a safety stop at 5 metres for a period of 3 minutes. This is not a decompression stop, but is nevertheless routinely undertaken by ascending divers out of an abundance of caution. As the two men were preparing to ascend the last 5 metres to the surface, tragedy struck.

2.5. It appears that the presence of the shark was first detected from the boat by Mr Russell. Mr Russell, who gave evidence in the Inquest, said that from where he was situated on the boat he could see the approximate position of the divers as they were ascending. He was able to determine this from their bubbles. Mr Russell told me that before any evidence emerged that there had been an attack below the surface, he saw what he described as a 'big grey shape'[2] in the water. This not unnaturally caused him to start the motor of the boat. Mr Russell had the impression that the big grey shape, which he associated with the presence of a shark, was right on top of where the deceased and Mr Rowntree were submerged. Mr Russell drove the boat as quickly as he could to that location. Mr Rowntree surfaced and yelled for help.

2.6. From Mr Russell's evidence, it appears that he may have seen the shark at a time before it actually attacked. However, it also appears that he saw the shark at a location that was in very close proximity to the two divers. From Mr Russell's observations, it is difficult to infer anything about the shark's behaviour before it attacked.

[2] Transcript, page 82

2.7. The actual attack was described by Mr Rowntree who was at that stage still in the water with the deceased. Mr Rowntree gave evidence at the Inquest. As well, I received in evidence a signed record of interview that an officer appointed under the Occupational Health and Safety and Welfare Act 1986 had conducted with Mr Rowntree on 31 August 2005[3]. A statement that Mr Rowntree had given to the police on 24 August 2005 was also tendered in evidence[4]. Both of these documents record very detailed descriptions of the events with which this Inquest was concerned. In his evidence Mr Rowntree confirmed that the two documents accurately recorded the events in question.

2.8. A distillation of Mr Rowntree's account of this shocking incident from the no less than three occasions on which he has been asked to describe it is as follows. The pair were about to ascend the last 5 metres to the surface when Mr Rowntree felt an impact to his back which was forceful enough to rotate him in the water. He was looking at Mr Stehbens at the time. At that point he saw a large body which he initially thought was a dolphin or dolphins, but which was a shark. After it struck Mr Rowntree it went straight for Mr Stehbens who initially tried to strike it on the snout. The shark seemed to retreat momentarily but came back and grabbed Mr Stehbens' leg below the knee. All of this happened very quickly. Mr Stehbens was pulled down deeper into the water by the shark. Mr Rowntree then surfaced and looked around for the boat. At that point the boat was about 50 or 70 metres away. Mr Rowntree called for help and the boat quickly motored to his position. He was able to safely embark.

2.9. Although details of what then took place differ slightly from one witness to the other, it is clear that at one point Mr Stehbens ascended. Mr Stehbens had clearly by then suffered serious injury as there was blood in the water at the location where he ascended. The shark then took Mr Stehbens leaving his buoyancy control device, regulator and tank, all still attached and intact, in the water. Remarkably none of this equipment was damaged. It was retrieved. Mr Stehbens' mask and snorkel were later found by a police diver on the bottom at this same approximate location.

2.10. Although Mr Russell may have seen the shark at a time before it attacked, Mr Rowntree, who was in the water with Mr Stehbens, only became aware of the shark's presence when it first struck him on the back and then attacked Mr Stehbens. The

[3] Exhibit C13
[4] Exhibit C13a

shark was judged by Mr Rowntree to have been a Great White Shark. Estimates as to its size appear to put it around the 5 metre mark in length. Great White Sharks are known to attack human beings aggressively.

2.11. There is little evidence of the shark's behaviour before it actually attacked. The only thing that seemed to have deterred the shark was Mr Stehbens initially endeavouring to strike its snout which, according to Mr Rowntree, caused it momentarily to desist. In any event, there is no evidence as to whether or not the shark had circled the two men or had scrutinised them from a distance before its attack. However, it is safe to infer that the attack was particularly violent and involved a movement towards the two men at a significant velocity. There is no evidence as to what, if anything, caused the shark to identify Mr Stehbens in particular as an object of interest.

2.12. Emergency services were called and attended the scene. In spite of what appears to have been a thorough search, no trace of Mr Stehbens' body has ever been located.

2.13. Other than Mr Stehbens striking the shark on the snout, which seems to have only momentarily postponed the attack, there seems that there was little that he could have done to avert the fatal attack. There is no evidence that Mr Stehbens witnessed the shark at any time before it attacked. It seems highly unlikely that he did see the shark any appreciable time before it attacked him because Mr Stehbens' prior behaviour does not evince any concern on his part.

2.14. While it is possible that the cause of Mr Stebhens' death was drowning, I think it is more likely that he died as the result of the undoubted injuries that he sustained in the attack. I find the cause of Mr Stebhens' death to be injuries sustained in a shark attack.

3. The risk of shark attack associated with diving in open water in the Gulf of St Vincent

3.1. Sharks that are capable of inflicting a fatal injury upon a person are present in the Gulf of St Vincent. Although fatal shark attacks in the Gulf over the last one hundred years have not been frequent, it has to be recognised that predators exist in Gulf waters and that they may attack a human being. The most recent fatal attack in the Gulf occurred just off West Beach on 16 December 2004, about 8 months prior to the occasion with which this Inquest is concerned. On that occasion a young man by the

name of Nicholas Peterson was fatally attacked by a shark or sharks as he was being towed on a surfboard behind a boat. This incident was well publicised at the time and not one person associated with the events examined by this Inquest denied having heard about it. On the other hand, thousands of bathers enjoy the waters at Adelaide suburban beaches day in and day out, year after year without incident. Reported sightings of sharks at metropolitan beaches are not routine. If the risk associated with bathing in the waters of metropolitan beaches is measured in terms of frequency of attack or sightings of dangerous sharks, and by the number of bathers who enter the water without incident, then clearly the risk of shark attack is not very high. Added to that is the fact that when one enters the water at a suburban Adelaide beach there may be other beachgoers present, lifeguards and aerial observers, who might alert bathers to the presence of a shark. In addition, egress from the water can be achieved relatively quickly and easily if the presence of a shark is detected. In the open water, however, things are different. A diver in open water is significantly exposed to whatever marine life is there, and is at the mercy of the propensities that the species or the individual creature might have to attack a human being. One's only refuge is the bottom or the boat. In this case, the deceased was attacked when he and his diving companion undertook a safety stop in 5 metres of water for 3 minutes having ascended from about 17 metres. They ascended at a point some distance from where their boat was anchored. The separation from their boat naturally increased their exposure. No doubt the length of time in the water and the frequency of individual dives within the same expedition also affected the exposure.

3.2. I heard evidence from, and received the report[5] of, a Mr Barry Bruce who is a Senior Research Scientist and Research Group Leader with the CSIRO. Mr Bruce is a diver himself. He leads a group of 35 scientists whose specialties include the movement patterns and behaviour of sharks. Mr Bruce has been working as a Research Scientist for 24 years in a variety of institutions including South Australian Fisheries. In particular, Mr Bruce has spent many years examining the movement patterns and behaviour of Great White Sharks. Mr Bruce is a member of a number of committees that are dedicated to the study and preservation of marine life including sharks. He has alone or together with other experts published several papers and journals concerning the movement, tracking and behaviour of sharks, in particular Great White

[5] Exhibit C19

Sharks. Mr Bruce is familiar with the location in the Gulf of St Vincent known as the Glenelg tyre reef. He has himself dived on the reef.

3.3. Mr Bruce expressed the view, both in his report and in evidence, that the risk of attack by Great White Sharks in the waters off Adelaide is very low. Indeed in his report he described the risk in relation to the possibility of shark attack by Great White Sharks at the Glenelg tyre reef as being, whilst not zero, extremely low. Mr Bruce's opinions in the main were based upon two considerations. Firstly, Great White Sharks in the Gulf of St Vincent as compared to other locations, such as identifiable feeding areas in the vicinity of Neptune Island and other locations west of the Gulf, are not prevalent. Secondly, in the last 108 years the incidence of shark attack in the waters of the Gulf of St Vincent is low. Since 1900 there have been nine such shark attacks, not all fatal, of which five have been attributed to Great White Sharks. These attacks include the attack upon the young man being towed on a surfboard off West Beach in December 2004 and the fatal attack upon Mr Stehbens. There was no evidence before me of any attack, fatal or otherwise, since the attack on Mr Stehbens in August 2005.

3.4. As to the first of these considerations, Mr Bruce's work with the CSIRO has included the tagging of sharks and the monitoring of their movements by satellite once tagged. Mr Bruce told me, and I accept his evidence, that Great White Sharks have a tendency not to remain in the one location for a substantial period of time, but that they tend to migrate from place to place, sometimes covering extraordinary distances. Mr Bruce told me that in South Australian waters there are a number of identifiable '*hot spots*' that appear to attract their fair share of sharks, for the most part because of the existence of a ready supply of marine life upon which Great White Sharks in particular feed. There are obvious hot spots in the waters of Spencer Gulf and around the West Coast generally where there are a number of seal colonies. As to the Gulf of St Vincent, Mr Bruce told me that one such hot spot has been an identified which he described as being between 10 and 30 kilometres off the coast of metropolitan Adelaide where there is believed to be an abundance of snapper. Mr Bruce did not purport to assert that the presence of Great White Sharks in the Gulf of St Vincent waters created no risk of attack at all, but expressed the view that as far as the Glenelg tyre reef was concerned, there was nothing to indicate that it was or is a hot spot for the aggregation of Great White Sharks[6]. Mr Bruce holds that view notwithstanding

[6] Transcript, page 315

the fact that only a matter of months prior to the attack upon Mr Stehbens another young man had been attacked and killed off West Beach. Mr Bruce opined that the attack in December 2004 had been no accurate predictor of whether or not there would be a similar attack either in the shallow waters off the beaches or in the open sea. However, Mr Bruce did say in his report that the attack in December 2004 had at the time been a tragic reminder that Great White Sharks are present in waters off the Adelaide metropolitan coast and at times present a risk to public safety. In assessing the risk presented today, Mr Bruce expressed a similar view and said:

> 'No, I think its just a tragic reminder that white sharks visit metropolitan waters and where the circumstances evolve that put a white shark that is in predatory mode with a person that can lead to dangerous situations.' [7]

3.5. Mr Bruce acknowledged what is obvious, namely that his group of scientists was not able to tag and track every Great White Shark in South Australian waters. Although his research had established a loose pattern of behaviour as far as the movement of Great White Sharks is concerned, the fact that a tagged shark was not in a particular location did not of itself mean that there were no other dangerous sharks at that location. Clearly, that is simply a matter of common sense. On the whole, in my opinion Mr Bruce's evidence about the risk of shark attack in the Gulf of St Vincent, based as it is upon the perceived movement and behaviour of Great White Sharks, and upon the infrequency of shark attack, establishes that the risk of attack both in August 2005 and now, whilst not negligible, is not high. Whether it is very low, extremely low or just low in my view is a matter of semantics. One has to recognise that within the space of less than a year there were two fatal attacks off metropolitan waters. Such a statistic would render meaningless any estimate of risk calculated in mathematical or even quantitative terms. Although these two separate attacks appear to have been totally random and out of keeping with the frequency and pattern of attacks that we know of over the past hundred years or so, to my mind they very much put to the test the suggestion that risk of shark attack in the Gulf is extremely low. One matter that perhaps ought to be considered is the fact that for not all of that hundred year period have divers had access to the open water and been able to remain submerged for significant periods of time. The technology that enables that to occur has only existed in relatively recent times. On the other hand, we hear of very few attacks upon divers in open waters in the Gulf, although there has been one fatality off

[7] Transcript, page 315

Marino Rocks. Again, it is worth remembering that the Glenelg tyre reef in particular, according to the evidence that I heard at any rate, is visited not infrequently by divers without incident. I am told that organised recreational expeditions to the tyre reef now involve the wearing of Shark Shields. However, it is clear to me, and ought to be clear to others, that the possibility of shark attack when diving in the open water of the Gulf of St Vincent is a matter to be seriously taken into account.

3.6. I heard evidence from Sergeant Robert McDonald who is the Officer In Charge of the Water Operations Unit of the South Australia Police (SAPOL). Sergeant McDonald gave evidence about the utilisation of shark repellent devices within his Unit. He also made certain observations about the risk of shark attack in the Gulf. Sergeant McDonald expressed what he described as a personal view that sharks are a threat to divers and that they have to be given very serious consideration in any underwater activity in sea water or where sharks are likely to be. Sergeant McDonald referred to the fact that heightened public awareness of the issue of possible shark attack had resulted in SAPOL receiving reports of '*quite a number of sightings*' from all over South Australia[8]. Sergeant McDonald was of the belief that there had been an increase in the number of reported sightings of sharks in South Australian waters over the last few years, especially with better reporting mechanisms, to the point where SAPOL were becoming more aware of their presence. He referred to the snapper ground or grounds within the Gulf as a source of food for sharks. Nevertheless, I do not believe that this evidence impacts on the general position as expressed by Mr Bruce that the risk of shark attack in Gulf waters was and remains not high. Sergeant McDonald was in effect articulating the view that the risk of shark attack was a matter that needed to be guarded against, particularly in an occupational setting.

3.7. Much of the questioning of Mr Stehbens' diving companions by Mr Slee, the OHW&S Officer, was centred upon whether or not the group on 24 August 2005 had properly considered the risk of diving in the open water on that day. Naturally, any risk assessment would necessarily involve a consideration of the possible presence of predatory sharks, as well as an evaluation of the possibility of an attack by sharks. How does one make such an assessment? In the absence of information about recent shark sightings at a particular diving location it is difficult to see how a risk assessment of that nature could ever be made with absolute precision, given the

[8] Transcript, page 360

random and apparently opportunistic nature of shark attack in these waters. It would involve an element of guesswork. It is very much a case of not knowing what you do not know. One would simply have regard to the fact that statistically such attacks have been infrequent. That is a matter that, unless something unforeseen occurs, will remain relatively static. In addition, there does not appear to be any reliable body of knowledge available at any given time as to the frequency of shark sightings within the Gulf, and in any case at particular locations. Some evidence was given that efforts in the recording and reporting of shark sightings are now being made, and that this data, such as it is, can be accessed. In any event, apart from the attack that had occurred off West Beach in December 2004, there is no evidence that there was any body of knowledge available to the divers on 24 August 2005 that suggested that the risk of shark attack was so high that they should not have entered the waters at any of the locations on which they dived, including the Glenelg tyre reef. If the suggestion were to be made that the divers should never have entered the waters that day, I would reject that suggestion. A proper risk assessment would not have dictated that they should not have dived. That observation brings me to a discussion as to whether there was any other circumstance that could have prevented the attack once the waters were entered.

4. Precautions against shark attack – Shark Shields

4.1. As seen earlier, the dive boat utilised by the four divers was equipped with two Dive01 Shark Shields. I heard a great deal of evidence about the utility of these devices. The devices were designed, and their manufacture was initiated, by a company known as SeaChange Technology Pty Ltd and its associated corporate entities (SCT). SCT is a South Australian company. It is said to be one of the few, if not sole, distributors of such devices in the world. The Shark Shield Dive01 device in question was first brought onto the market in late 2001. The University acquired their pair of devices in about May 2002. In creating the Dive01 Shark Shield, SCT had adapted earlier technology that had been invented by a South African entity which had furnished SCT with the licence to manufacture and distribute the product. The prototype, as originally distributed by the South African concern, was called a Shark Pod. I heard evidence during the course of the Inquest that the Shark Pod was effectively reworked by SCT into a more user-friendly device. The original Shark Pod was the size of a football and weighed several kilograms and was very difficult,

for the recreational diver in particular, to wear. Secondly, there were some reliability issues in relation to the mechanics of the device. The Shark Pod was said to have been perfected by SCT into a less cumbersome device that could be worn by both occupational and recreational divers, and which could be used relatively simply. This was the Dive01 device.

4.2. I do not need to go into the scientific detail as to how these devices are said to work. Suffice it to say, the evidence before me was that the electronic device, powered by a battery, creates an electric field around the wearer. This field is detected by certain anatomical features of the shark. As a result, the shark is said to be deterred from coming any closer to the device as worn by the diver.

4.3. The use of shark repellent devices, and in particular the use of a Shark Pod, the precursor of the Shark Shield, has been the subject of coronial scrutiny in the past. I refer here to the Inquest into the death of Paul William Buckland who died at sea off Smoky Bay in South Australia on 30 April 2002 as the result of an injury sustained in a shark attack. The Finding and recommendation of the then State Coroner, Mr Wayne Chivell, was handed down on 11 April 2003. Mr Buckland had been wearing a Shark Pod while diving for scallops. Evidence had been given during the course of that Inquest that Mr Buckland had not been wearing the Shark Pod device in strict accordance with the manufacturer's instructions. The State Coroner found that Mr Buckland had been wearing the device in such a way that it may have been rendered less effective and may have robbed Mr Buckland of the protection that it might otherwise have provided. There had been no suggestion during the course of that Inquest that the device, if properly worn, was anything other than an effective device as far as its ability to deter the approach of sharks was concerned. Indeed, the State Coroner made the following recommendation:

> 'I therefore recommend, pursuant to Section 25(2) of the Coroners Act, that commercial and recreational divers, when operating in waters where there is a risk of the presence of sharks, should wear a shark repellent device of the 'Shark Pod' or 'Shark Shield' type, provided that the equipment should be used in accordance with the manufacturers instructions, and should be turned on for the entire duration of time in the water.' [9]

Mr Buckland had been wearing a Shark Pod. By the time of the Inquest into his death and the consequent Finding in 2003, the new and improved Shark Shield had been

[9] Inquest 6/2003

made available, and the Adelaide University had taken possession of two such devices.

4.4. In considering the materiality to the issues before me that Mr Chivell's Finding might have, I bear in mind that in the Buckland Inquest the idea that these devices actually deter the approach of sharks was not seriously contested, and there was no suggestion that as a concept they have no efficacy. This is to be contrasted with the situation before me where a number of objections to the wearing of these devices was voiced, particularly by the surviving members of Mr Stehbens' diving party.

4.5. The two Dive01 devices that had been on the University's boat on the day in question were examined by a Mr Michael Wescombe-Down who in 2005 was the Technical Director of SCT, the distributor of the devices. By the time of the hearing of this Inquest, Mr Wescombe-Down no longer had any direct association with the operations of SCT, but it was clear that he still retained a financial interest in the company, if not the technology. In addition, it seems reasonably clear that in respect of one or more issues Mr Wescombe-Down is in dispute with those currently responsible for the operation of that corporate entity. Mr Wescombe-Down gave evidence to the Inquest. I take all of those matters into account in assessing his evidence. Mr Wescombe-Down's involvement in the investigation of Mr Stehbens' death had originally consisted exclusively of the examination of the two devices belonging to the University. I received into evidence a report that he had prepared in respect of that issue[10]. When Mr Wescombe-Down gave evidence to the Inquest he covered a number of other issues including the intrinsic efficacy of the devices as a shark repellent.

4.6. As far as the two devices that belonged to the University were concerned, Mr Wescombe-Down's examination revealed that unit M000286A functioned correctly, although the battery had been allowed to discharge below the recommended voltage. This had led Mr Wescombe-Down to consider as a possibility that the battery had not been used for an extended period of time. Indeed, the device had layers of dust all over its components. As far as the second device is concerned, namely unit M000271A, it too was heavily coated with dust. Like the other device, the battery had been allowed to discharge below the recommended voltage, leading to the possibility that it too had not been utilised for an extended period of time. Otherwise,

[10] Exhibit C18

this device was in proper working order. Naturally, none of Mr Wescombe-Down's observations about these two particular devices indicated anything about its ability to repel or deter the approach of a shark. As indicated earlier, much of the evidence in this Inquest concerned the efficacy of these devices as a concept. In other words, do they work? Do they repel sharks? Another question raised during the course of the Inquest was whether, even if they did have an ability to repel sharks, there were other contraindications to their use, such as a supposed ability to actually attract the presence of sharks. It was also suggested that the long term effects on a male wearer's fertility were not fully understood. This latter objection to my mind was specious and in any case was unsupported by any evidence.

4.7. I make it plain here that it is no function of this Court to apply its seal of approval to this product or any other product for that matter. Nor does this Court act as a branch of the Consumer Affairs Office, if say the suggestion were to be made that the general diving public were being duped by false claims that the devices worked. However, after carefully considering all of the evidence, I have taken the view that there is good reason to believe that these devices have an ability, to a greater or lesser degree, to repel or otherwise deter the approach of sharks and that they do offer a measure of protection to divers. As well, insofar as there were positive objections to the wearing of these devices, over and above the mere suggestion that they did not work and that therefore their use was superfluous, there is little or no evidence to suggest that any such objection has validity. Before I turn to an analysis of those issues, it is as well to examine the practices and attitudes of the surviving three members of the diving party and that of their supervisor, a Mr Sean Connell, who was not actually present during the course of this expedition but was at the time working in California.

4.8. The wearing of shark repellent devices had been the subject of a section in the Diving Procedures Manual of the Discipline of Environmental Biology, School of Earth and Environmental Sciences, University of Adelaide[11]. This document of some 50 pages deals with many aspects of diving safety. One section in particular is entitled '*10.0 Other Hazards*'. Within that section is a section entitled '*10.1 Sharks*'. I set out that subsection in its entirety:

[11] Exhibit C2c

> 'Although shark attacks on divers can occur, most sharks do not present a hazard. If diving operations must be carried out in an area of recent shark sightings, the following precautions should be implemented:
>
> Consideration should be given to the use of Electronic Shark Repellent Devices, which offer a proven level of physical protection.
>
> An injured or bleeding diver should leave the water immediately; other divers should also exit the water for a period of time following any blood in the water, this is especially relevant in areas where there has been significant blood spills, e.g., tuna transfers and harvesting.
>
> Consideration should be given to diving around aquaculture farms that contain fish and are known to attract sharks.
>
> Diving operations should be cancelled if there has been a recent shark attack in the area of diving operations. ' [12]

4.9. It will be observed that this subsection was only said to apply when diving operations were to be carried out in an area of recent shark sightings. There is no evidence in this case that any of the areas that were dived on on 24 August 2005 had been the subject of recent shark sightings. The only matter that may have given pause to anyone making multiple dives in the Gulf that day was the attack upon the young man off West Beach in December 2004. However, I have already made the observation earlier in these Findings that there was, in my opinion, nothing that should have prevented the party from entering the water on the occasion in question. Of particular note, however, is the claim in the manual that Electronic Shark Repellent Devices '*offer a proven level of physical protection*'. This claim, promulgated as it was by the relevant University Department in question, seems in practice to have been viewed with casual disregard if not cynicism. Mr Rowntree had never used a Shark Shield device. He was aware that they had been made available but he had not used them. The University had provided no training on the use of Shark Shields. Mr Rowntree did not know what the University's policy was in relation to the wearing of Shark Shields in circumstances where there was a perceived risk of shark attack. Mr Rowntree received no instruction by the University to use Shark Shields when diving in areas where there was the possibility of a shark attack. He did not know that the Shark Shields were onboard the diving vessel on 24 August 2005. Among Mr Rowntree's reasons for not wearing a Shark Shield during University diving activities, and in particular on 24 August 2005, was the notion that one of the shark's sensory organs picks up electromagnetic pulses in the water such that the shark was actually

[12] Exhibit C2c, page 28

drawn to the device. Mr Rowntree maintained in his interview with Mr Slee, the Occupational Health and Safety Officer, that a shark expert in his laboratory had espoused this theory. In evidence, Mr Rowntree told me that when he had worn a device subsequent to these events he had received electric shocks from the device.

4.10. In her interview with Mr Slee, Ms deVries said that she had no experience with Shark Shields and that the University had not provided her with Shark Shields when performing diving activities in areas where there was a risk of shark attack. She had no knowledge about Shark Shields being trialled by the University and had received no training in relation to their use from the University. She did not know of any policy about the use of Shark Shields and was never instructed by anybody at the University to use them. She did not know that Shark Shields were onboard the diving vessel on 24 August 2005. When asked by Mr Slee as to why she had not used a Shark Shield on 24 August 2005 in the dive or dives that she had undertaken, she replied that they had never used them and that they were '*not really thought of*'[13]. Ms deVries said that she had heard conflicting information about Shark Shields.

4.11. Mr Russell had been the most experienced diver of the group. In his interview with Mr Slee, Mr Russell indicated that he had used shark repellent devices, but not as part of his University activities. He told Mr Slee that the University had provided some training on the use of Shark Pods, the predecessor to the Shark Shield. His understanding of the University policy in relation to Shark Shields was that if a risk of shark attack was perceived in respect of a particular operation, then consideration should be given to using Shark Shields. Mr Russell told Mr Slee that there had been no instruction by the University management to wear Shark Shields during diving activities. Mr Russell had not seen the Shark Shields onboard the diving vessel but had learned at the conclusion of the expedition that they had been present. When asked by Mr Slee as to why he did not use a Shark Shield on 24 August 2005, Mr Russell said that he had several reasons, among which was the suggestion that they can cause a hazard with the cord becoming tangled, that they often do not work and that there was '*a certain amount of evidence to suggest that at a distance they actually attract sharks*'[14]. Mr Russell also raised the issue about the device administering electric shocks. Mr Russell also maintained in his interview that he did not believe

[13] Exhibit C14, page 20
[14] Exhibit C15, page 19

there to be any evidence that the devices actually deterred sharks. In his evidence Mr Russell confirmed that he did not know about the presence of the Shark Shields on the boat and said the following:

> 'Certainly within the diving circles that I've been involved with most people thought that there was no need to wear them, certainly, there wasn't a high enough risk, and some people obviously thought that they probably didn't work anyway and other people thought that there wasn't enough evidence to say that they did work. But I think the general feeling in the scientific diving circles was that they weren't necessary, certainly. I mean that was my personal opinion, was that the risk was so low that they weren't necessary.' [15]

4.12. Mr Russell told me that he thought that Mr Stehbens' attitude towards the wearing of Shark Shields was very similar to his. He said:

> 'I think if you had have offered him a Shark Shield to wear, he probably would've said 'Well why, there's no real risk anyway'. I don't think he would've worn one had he have been given one.' [16]

4.13. None of the surviving members of the diving party had considered that there was any intrinsic risk of shark attack in respect of the dives that were executed that day. In particular, no association between the fatal attack in December 2004 and the risk of shark attack during the course of their expedition was made by any of them. In the light of that, I suspect that for the most part none wore a Shark Shield that day because it never occurred to any of them to do so.

4.14. Mr Sean Connell, who is a Marine Biologist at the University of Adelaide, was at the material time the University diving officer. He gave evidence at the Inquest and in addition, a record of an interview that had been conducted by Mr Slee was also tendered[17]. One of Mr Connell's responsibilities as the diving officer was to supervise postgraduate and undergraduate students in their diving activities. Mr Connell specifically had managerial and supervisory responsibilities over the four divers including Mr Stehbens. Mr Connell stated in his interview that he had been aware of certain responsibilities in his capacity as a supervisor to ensure that all activities, particularly those in the field, were undertaken in a safe manner. Mr Connell was an experienced diver himself. He had been diving for 25 years and had undertaken thousands of dives. He had dived extensively off the coastline of South

[15] Transcript, page 93
[16] Transcript, page 109
[17] Exhibit C17

Australia. At the time of Mr Stehbens' death, Mr Connell was working in California. Mr Connell succinctly summed up the responsibilities of the diving officer by saying that his duty was '*to ensure the efficient and safe collection of data*' which included the safety of divers[18]. Mr Connell insisted in his interview that the University Dive Program involved a '*culture of safety*'[19].

4.15. In his interview, Mr Connell was asked about risk assessment and the fact that a dive proposal for an operation did not specifically address risk of shark attack. Mr Connell said that the risk of shark attack had been judged to be '*infinitesimally small*'. He went on to say, however, that the University had used Shark Shields in localities where there was a higher incidence of shark attack and where the risk was '*not infinitesimally small*'[20].

4.16. As far as Shark Shields were concerned, Mr Connell acknowledged in his interview that they were present on the dive boat. Mr Connell then recited a litany of objections to the wearing of Shark Shields that included reference to baited Shark Shields being eaten by a shark during trials, the fact that some people are vehemently opposed to the use of them to deter sharks, the possibility that the device would draw in the presence of sharks[21], that it would be '*naïve*' to think that they actually repelled sharks[22], that they were incredibly uncomfortable, that they administered electric shocks[23] and that there were possible '*physiological*' consequences[24]. In his interview, Mr Connell also told Mr Slee that a diver had been taken by a shark while wearing a shark repellent device and that the device, although in operation, had not prevented the attack. Mr Connell was clearly there referring to the death of Mr Buckland to which I have already referred. However, the Finding in the Buckland Inquest was that the device had not been worn in accordance with the manufacturer's instructions and, as well, there had been the recommendation that they should be worn in commercial and recreational settings of risk. As to '*physiological*' consequences, Mr Connell evinced a belief that his fertility deficit was accounted for by his having worn shark pods in the past. As a result of that belief, he had stopped using them and had not required

[18] Exhibit C17, page 7
[19] Exhibit C17, page 11
[20] Exhibit C17, page 25
[21] Exhibit C17, page 27
[22] Exhibit C17, page 37
[23] Exhibit C17, page 38
[24] Exhibit C17, page 39

other people to use them[25]. In this regard, Mr Connell seems to have had an idiosyncratic view about shark repellent devices that does not appear to have been shared with anyone else or by anyone else.

4.17. As to the clause in the Diving Manual that had suggested that the official University view was that shark repellent devices offer a proven level of physical protection, Mr Connell said that the University was no longer of that view and doubted whether it had ever entertained the view in the first place. He acknowledged that he had been responsible for the inclusion of that assertion in the manual but said:

> 'I admit that's probably a silly thing to have put in there with the benefit of hindsight.' [26]

4.18. Although shark repellent devices were perhaps incongruously utilised in high risk scenarios if the objections to their use in any circumstances had any validity, divers in less risky scenarios had clearly received scant encouragement from Mr Connell to wear the Shark Shields that had been acquired by the University for their protection.

4.19. Mr Connell told me that he believed that Mr Stehbens had also been unenthusiastic about shark repellent devices.

4.20. In his evidence it became clear that much of what Mr Connell believed about shark repellent devices was based on anecdotal material and rumour. For example, he had heard about trials where Shark Shields had actually been eaten. I return to this issue in due course, but suffice it to say at this stage this had in fact had happened on one identifiable occasion. An explanation for this was later offered to me in the course of the evidence. Mr Connell could not point to any material that suggested that shark repellent devices actually attract sharks to the location of the wearer. Mr Connell was asked this series of questions by me:

> 'Q. If there is no evidence that the Shark Shield would attract the presence of sharks and if there is a possibility that it might deter a shark from attacking, or at least repel it, what possible harm can there be in wearing one.
>
> A. No immediate harm, except for potentially your long-term health.
>
> Q. Where is the evidence that it may affect your long-term health.
>
> A. It's like smoking, we don't have it. We don't have that evidence now, in the early days of this technology, so there is no evidence.

[25] Exhibit C17, page 30
[26] Exhibit C17, page 34

Q. When you say 'long-term health', what aspect of one's long-term health might be affected.

A. I raised it before, that is, people worry about, for example, their health in relation to mobile phone towers.

Q. Some people worry about using mobile telephones, don't they.

A. Yes.

Q. Is there any substance to that.

A. I don't know.

Q. Is there any substance to the suggestion that a Shark Shield might affect someone's fertility.

A. No, it's the same. I don't know, but my position, I'd have to leave that possibility open.

Q. Did you ever express that view to any of the members of your team at the university.

A. No.

Q. Why not.

A. I didn't have evidence to talk about it and we weren't mandating their use.

Q. But you made them available, didn't you.

A. That's right.

Q. Did you not say to some of the members of your team, the male members, 'Well, look, there is no guarantee that this device will not affect your long-term fertility'.

A. No.

Q. I understand that one of your objections to this device was that very issue.

A. That's right.

Q. Why did you not share that with the other members on your team.

A. Because it was something that I was aware of, but again, without evidence, didn't know whether or not it was something that would be worth raising, so I was reasonably unsure.' [27]

4.21. Mr Connell's views about the utility of shark repellent devices, as we will see, are at odds with the views of Sergeant McDonald of SAPOL. Sergeant McDonald's attitude and that of the officers under his command, would not sit comfortably with those of Mr Connell.

4.22. Mr Gerald Buttfield is currently the Manager of Health, Safety and Wellbeing at the University of Adelaide. He provided a statement to the Inquest[28] and he gave

[27] Transcript, pages 183 to 184

evidence. At the time with which this Inquest is concerned he was the Manager of the School of Earth and Environmental Sciences at the University. Much of the material that Mr Buttfield produced to the Inquest concerned a review of University diving procedures that was undertaken after these tragic events. Mr Buttfield had learned of a number of objections to the use of shark repellent devices including reports that Shark Shields administered electric shocks and caused muscle spasm. Nevertheless, Mr Buttfield seems to hold the belief, now at any rate, that although it is still not clear whether sharks are actually attracted by a Shark Shield in the first instance:

> 'They certainly appear to work to repel sharks that are curious and inquisitive at a relatively low range. A Shark Shield only gives you a relatively small radius of effect and a shark that is coming in to have a look to see what you are or to assess whether or not you are a potential food source would be repelled by the device. However I have my doubts as to whether or not it would work against a high speed attacking shark.'

4.23. I return later to Mr Buttfield and his involvement with a revision of the University Diving Manual as far as the wearing of shark repellent devices is concerned.

4.24. Mr Bruce, to whom I have already referred, and who is by far and away the most authoritative person from whom I heard evidence on the subject of shark behaviour, expressed the view that to his knowledge:

> 'Various species of sharks, including white sharks, have been exposed to operational Shark Shields and similar devices. There are numerous reports of such 'tests' on various websites and promotional literature that have demonstrated a response by sharks which usually results in the shark swimming away from the area of the active unit, or reacting in a way that suggests it has experienced some degree of discomfort.'

While acknowledging all of that, Mr Bruce pointed out that there was certainly a number of unanswered questions about the use of Shark Shields, and in particular about their effectiveness in situations where a determined shark attacks at high speed. Nevertheless, Mr Bruce added, in the context of the risks associated with the dive at the Glenelg tyre reef:

> 'Thus any hazard assessment of this site would naturally conclude that the risk of shark attack was very low. However, the consequences of shark attack are high and the wearing of a Shark Shield, whilst not offering unequivocal protection, may reduce the risk of shark attack.'

In his evidence, Mr Bruce said:

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[28] Exhibit C16

> 'I think the issue here with something like a Shark Shield, there is no doubt that Shark Shields elicit responses in sharks, you can see the footage, I know tests have been done and sharks have reacted to the Shark Shield field, whatever it is, in a way that clearly suggests discomfort.' [29]

Mr Bruce repeated the observation that in his view it was highly unlikely that an operational Shark Shield would prevent a determined and violent shark attack, but he did not dispute the suggestion that Shark Shields do work in certain circumstances and that they would deter a shark from approaching the wearer of the device. It was also worthy of note that Mr Bruce did not dwell to any great extent upon the claimed negative aspects of shark repellent devices. I thought that this was quite telling and reinforced my belief that most if not all of the objections to the wearing of shark repellent devices lacked real credibility.

4.25. As well as hearing from Mr Wescombe-Down, I heard from a Mr Rodney Hartley who still holds a current association with SCT. He also advocated the use of Shark Shields and gave a lot of detailed evidence about their history. He provided the Court with an affidavit and he also gave evidence. Mr Hartley readily admitted that adverse publicity regarding the effectiveness of Shark Shields that this Inquest attracted, was not in his interest or that of the company. However, taking all of those matters into account, including the obvious self interest that both Mr Wescombe-Down and Mr Hartley have in respect of the use of Shark Shields, I nevertheless find that I have no reason to doubt their stated beliefs that Shark Shield devices do have a repellent effect on sharks. Both men in my view quite genuinely hold those beliefs, notwithstanding their either present or former association with SCT. Mr Hartley was cross-examined at some length about the effectiveness of Shark Shields, in particular about those designed for surfers and the about latest model of the Shark Shield which is now known as the Freedom7 device. We were not concerned in this Inquest with the effectiveness of the Freedom7 device. The device in question here was the precursor of the Freedom7, namely the Shark Shield Dive01. None of what was put to either Mr Wescombe-Down or Mr Hartley in cross-examination shook my view that there is good reason to believe that Shark Shields do have a repellent effect on sharks. One matter that Mr Hartley did deal with was the suggestion that in one trial a device had actually been devoured by a shark. Mr Hartley explained, and he was not really challenged on this, that the reason for this isolated instance had been identified. It had

[29] Transcript, page 328

occurred due to the peculiar configuration of the electrode on the antenna of the test surf product. That product, according to Mr Hartley, has not been put on the market as yet.

4.26. Mr Hartley is plainly passionate about the use of shark repellent devices, but his attitude to the limitations of the product can be summed up in the following passage in his evidence:

> 'A. Yes, because at some stage in the early past when Shark Shield was first released of course the people to by the early ones were very experienced and going to use the term almost macho divers. And we found that people were in fact putting Shark Shields on and going swimming up to sharks with them which is absolutely ridiculous. It's a bit like somebody saying I've got my seatbelt on now I'll drive like a cowboy.
>
> Q. But you agree that your actual documentation was not guaranteeing anything to the buyer, was it.
>
> A. No, nothing can be guaranteed with wild creatures like that, no.' [30]

Mr Hartley was there referring to the distributor's literature about the Dive01 product which included as part of guarantee and indemnity documentation that while the suppliers had taken all due care to ensure that the Shark Shield was effective, it was not possible to guarantee its efficacy due to the variability of the conditions under which the device may be used. SCT also sought an indemnity from purchasers to the effect that the wearer would not expose him or herself to harm. In particular, the wearer or purchaser agreed not to participate in any activity involving any risk of exposure to harm from sharks which the purchaser would not voluntarily engage in without the Shark Shield.

4.27. Mr Hartley's company had never had its attention drawn to any claim of short or long term illness that was said to have been caused by the device. As well, he had never heard of any complaint or assertion made by anyone to whom his product had been sold that the Shark Shield actually attracted sharks. Mr Hartley referred to a number of rumours to the contrary, but asserted that one identified promulgator of the rumour had produced no evidence that what he was saying was correct.

4.28. I also heard evidence, as I have already indicated, from Sergeant McDonald of SAPOL. Sergeant McDonald struck me as a pragmatic, sensible and professional

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[30] Transcript, page 406

individual and I have absolutely no hesitation in accepting his evidence. As seen earlier, he made no bones about the reality that shark attack was a threat to divers. For that very reason, the use of Shark Shields is now not only common practice amongst his SAPOL Unit, but is in fact mandatory in diving operations in all conditions in sea water. He referred to initial scepticism and lack of enthusiasm on the part of his officers, but their resistance was in due course overcome by the receipt of convincing information about the efficacy of the devices. He said that there are no complaints from the members of his Unit about the wearing of the devices, and indeed Sergeant McDonald told me that he did not think he would now be able to get his officers to operate without these devices. As to the objections that were voiced during the course of this Inquest about the use of Shark Shields, Sergeant McDonald readily dismissed them. Contrary to the assertion that the devices were cumbersome and difficult to wear and operate, and that they caused electric shocks, he said that the devices are not cumbersome, were flexible and were simple to operate nowadays. Electric shocks could be guarded against. None of his officers had ever suggested to him that the devices attracted sharks or had voiced any objections on health grounds.

4.29. Sergeant McDonald expressed the belief, to which I accord significant weight given his occupation, that the device would have its best effect in circumstances where a shark was inquisitive. He said:

> 'I think - look, I think when a shark has made up its mind it is going to seize then I don't think you will find anything will probably stop one, depending on the size of it. But my belief in the unit and my understanding in the unit is that in that build-up phase where they - I have certainly had it explained to me by Dr Barry Bruce, where, for example, if I use an example of Clarries Wreck off Glenelg, their tagging program indicates that they will go to an area like that, and they will swim around that area because they are feeding on the snapper or whatever is there. So if they then feed and they have had enough to eat they then become exploratory in their movements and they will head off up the gulf, and it may be north, it might be south, it might be in towards the beach. From what I can gather from discussions with him they have eaten so they are not hungry, they are just looking around. As they travel they obviously - this might take a few days - they become hungry again, so they start looking for food. Often they will tune back to their food source which, for example, might be Clarries Wreck again. And if they do a bit of a circle, which we tend to think they often do, swim in circles or big loops, they come across the shoreline, they will then travel down along parallel with the coast in the shallow water heading back towards the Clarries site, for example, to feed. If they detect some movement in the water, from what I understand, they don't necessarily just straight out want to feed on that. They will then think 'Okay, I need a little bit more information', so they often get a bit closer so they will perhaps smell something, or they will often have a sighting. There have been cases of people who have been attacked who have

> been circled by the shark for some time, or have even been bumped by them prior to actually being attacked. My personal belief in the unit is that in that early stage of the shark being inquisitive that is where it will have its best effect. I think once it gets to a point, and it is probably halfway through that cycle, when it decides it is going to feed, I don't think you are going to stop it.' [31]

Sergeant McDonald told me that although in his view the device would not necessarily afford 100% protection, it would be foolish not to wear one. To his mind the risk of a shark attack was simply too great. If he was asked for his advice by an entity that was contemplating using the device, he said that he would be forced to say that they should be worn[32]. I note here that Sergeant McDonald also gave similar evidence in the Buckland Inquest which occurred 5 years ago.

4.30. It is now mandatory for all divers employed by the South Australian Research and Development Institute (SARDI) to wear shark repellent devices. The SARDI Diving Procedures Manual, Version 2.2 (August 2007)[33] states the following:

> '**5.6.1 Sharks**
>
> The presence of sharks in South Australian waters is a recognised 'high risk' problem for diving operations. It is for this reason that Electronic Shark Shields are a compulsory part of all divers' equipment while carrying out Aquatic Sciences diving operations. Further, Vessel Shields are compulsory for all SARDI diving vessels and are to be deployed for all Aquatic Sciences diving operations.'

5. The possible effectiveness of a Shark Shield if worn by Mr Stehbens

5.1. Views differ as to the effectiveness of Shark Shields in situations of a determined, violent attack by a rapidly moving shark. In this regard, it will be remembered that the SCT Shark Shield Dive 01 manufacturer's product information referred to the undesirability of individuals taking risks that they would not otherwise take simply because they are wearing a shark repellent device. One of the warnings contained within the SCT documentation[34], under the heading 'S*harks are dangerous*', stated that sharks can be dangerous and often unpredictable and that while extensive testing has been done and great care has been taken to develop and manufacture the SCT Shark Shield, it was simply '*impossible to guarantee that all species of sharks will be repelled under all circumstances*'. Notwithstanding this disclaimer, Mr Hartley was

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[31] Transcript, page 365
[32] Transcript, page 367
[33] Exhibit C16b
[34] Exhibit C2e

still very optimistic about his product's ability to repel a shark attack even in circumstances where a shark was in full attack mode. Mr Hartley referred to a large number of testimonials from users of his company's shark repellent devices. A similar number of testimonials were attached to the statement of Mr Slee. A number of those testimonials, in respect of which nobody challenged their authenticity, refer to incidents involving charging sharks that broke their attack apparently as a result of the repellent characteristics of the SCT device.

5.2. On the other hand, Sergeant McDonald told me that he was not under any illusion that the devices were 100% foolproof. He acts on the basis that if a shark was determined to attack, depending on its size, there was not much that would stop it. It seems to me that this is a sensible basis upon which to act.

5.3. Mr Bruce dealt with the issue in this way. He was of the view that a Shark Shield would not offer unequivocal protection, especially in circumstances which involved a high speed attack.

5.4. To my mind, the evidence is not clear about the capabilities of the Shark Shield device in circumstances where a shark attacks at high speed having not already been deterred by the device during the course of, say, a circling manoeuvre. This is not to say, however, that the device has no utility. As I have said before, there is good reason to believe that these devices do, in many circumstances, act as a deterrent against the approach of a shark to the wearer's location. As Sergeant McDonald puts it, even if it was effective in 10% of cases, this would afford good reason in itself for the device to be worn in all circumstances, especially now that they are relatively user-friendly[35]. On the other hand, divers would be ill advised to dive in overtly dangerous circumstances that they would otherwise not dive in if they were not wearing a Shark Shield. SCT's own literature says as much.

5.5. Mr Bruce was specifically asked whether, given the description of the shark attack on Mr Stehbens, a functioning Shark Shield of the kind that was present on the dive boat would have prevented the fatal attack on Mr Stehbens. In Mr Bruce's report he succinctly states as follows:

> 'There is no way of answering this question with any degree of certainty.'

[35] Transcript, page 363

Mr Bruce went on to discuss the relevant matters in assessing that issue. He pointed to the fact that the attack was violent and that there was no evidence as to the prior behaviour of the shark. In particular it was not known whether the shark had made repeated passes at the divers and would have been exposed to the deterrent effects of an operational Shark Shield prior to entering its attack phase. The description of the attack as told by the person who witnessed it at close quarters suggested to Mr Bruce that it was a full predatory strike aimed at consumption.

5.6. In my view the question as to whether or not Mr Stehbens' life would have been saved if he had worn an operating Shark Shield will have to remain unanswered.

5.7. If, as seems likely, the attack was a violent, opportunistic and determined one on the part of the shark, it would be very difficult to determine definitively that the attack would inevitably have been repelled if Mr Stehbens had been wearing a Shark Shield.

5.8. That said, one still has to ponder why it was that the two perfectly good devices on board the dive vessel were not used. Their presence on the vessel was not even known to the members of the diving party. The pragmatic approach adopted by the SAPOL Diving Unit, based as it is upon considerations of the reduction of risk, would seem to be the much preferred policy. The fundamental objections that were voiced as to the use of Shark Shields for the most part were unconvincing. They are objections which, as far as police divers are concerned, lack real substance.

6. Recommendations

6.1. Pursuant to section 25(2) of the Coroner's Act 2003 I am empowered to make recommendations that in the opinion of the Court might prevent, or reduce the likelihood of, a recurrence of an event similar to the event that was the subject of the Inquest.

6.2. I have already referred to the recommendation of the former State Coroner in the Buckland Inquest. In my view, nothing revealed in this current Inquest brought into question the validity of that recommendation. The recommendation, reproduced earlier in this finding, is repeated.

6.3. Mr Buttfield of the University gave evidence about the current University policy as to the wearing of shark repellent devices. For high risk dives, shark cages are

mandatory. Diving around aquaculture farms, near seal colonies and within 10 kilometres of the location of a shark attack in the previous month are inter alia classified as high risk dives. For 'low risk dives' the policy now is that the members of a diving party, while in the water, have the option of using a shark shield 'as a matter of personal choice'. However, if one diver chooses to wear a device, then all must wear the device. The corollary of that is that if all agree not to wear the device, the device need not and inevitably will not be worn. I do not need to discuss the basis of this policy. Mr Griffin QC, on behalf of the University, vigorously resisted the notion that I should recommend that the University adopt a policy that would make the wearing of a shark repellent device mandatory in all circumstances in the sea. In the light of the SAPOL policy and practice, it is difficult to understand what the objection could be to the mandatory wearing of the device. Nothing that I heard in the Inquest convinced me that there was any substantial and valid objection to their mandatory use, particularly when it is remembered that like SAPOL, the University owes a duty of care to its employees.

6.4. I note, however, that the CSIRO, another organisation involved in scientific research, does not insist that their divers use shark repellent devices.

6.5. Mr Griffin QC also suggested that an Australian Standard be set, against which the utility and reliability of shark repellent devices in general could be measured. While that may be an interesting idea in theory, I have no evidence before me to suggest that the idea has feasibility in practice. I say no more about it.

6.6. It is difficult for this Court to impose its own views on a private organisation such as the Adelaide University in respect of its operational requirements. Their views in relation to the mandatory wearing of shark repellent devices obviously differ from mine and those of SAPOL and SARDI. That to my mind is a matter for them. So be it. The University needs to be reminded, however, that divers within their employ, as a matter of law, have to be protected. The University is now on notice. While in all of the circumstances I have decided not to make a recommendation that the University should make the wearing of shark repellent devices mandatory, I do recommend that no person in authority at the University discourage their use. Indeed, I would recommend that provided effective shark repellent devices remain available, the use of such devices among the University diving community should be actively encouraged. I direct this recommendation to the Manager of Health Safety and Well

Being of the University and to the Head of the School of Earth and Environmental Sciences.

Key Words: Diving - Underwater; Shark Attack; Shark Repellent Technology

In witness whereof the said Coroner has hereunto set and subscribed his hand and Seal the 14th day of March, 2008.

Deputy State Coroner

Inquest Number 8/2008 (2450/2005)