Coroner says diver died of air embolism

A coroner's autopsy report identifies massive air embolism as the direct cause of death of a City College student following a diving accident in the channel May 2.

The report absolves his instructor and fellow students of any blame, according to deputy coroner Tom Nelson, in charge of the investigation.

Leonard Joseph Estrada, 25, was a member of an SBCC marine technology diving class and had made many hard-hat dives before. He was on the bottom in 132 feet of water when he realized he was in trouble and needed to be brought to the surface.

"The autopsy gave pathologists no clues as to what happened to the young man between the time he touched bottom and when he realized for help in an emergency situation," Nelson said. "He was apparently unconscious when his instructor reached him on the sea bottom. The only possible alternative was to bring the diver to the surface where resuscitation could be attempted inside a decompression chamber. Rescue operations were performed in a highly exemplary manner."

Estrada was pronounced dead by Dr. John Rutten, a submarine medicine specialist, after the body had been brought to the harbor.

Nelson is making his formal autopsy report to Dr. Glenn G. Goocker, superintendent-president of SBCC, augmenting a fact-finding panel report initiated by the college after the mishap. It was the first fatality in the seven-year history of the college marine technology diving program.
REPORT OF HEARING

SUBJECT: Death of LEONARD J. ESTRADA
Second year student, Marine Technology Program
Santa Barbara City College

Death occurred during diving exercise on May 2, 1975.

DATE: May 14, 1975, 6:00 to 7:20 p.m.

PLACE: County Coroner's Office
4434 Calle Real
Santa Barbara, California

PERSONS PRESENT: R. W. Christensen, Assistant Professor, Marine Technology
L. Gillespie, Chief Deputy Coroner
Jim Nermis, Second year Marine Technology student
Bev Morgan, Deepwater Development Corporation,
Chairman, Marine Technology Advisory Committee
Thomas Nelson, Deputy Coroner
J. G. Parker, Assistant Professor, Marine Technology
Ramsey Parks, Coordinator/Assistant Professor, Marine Technology
Ted Roche, Second year Marine Technology student
Dr. J. E. Rosander, Pathologist
Dr. R. John Rutten, Santa Barbara Medical Clinic,
Member, Marine Technology Advisory Committee
Del Thomason, Assistant Operations Manager, Ocean Systems, Inc.

Copies of the Coroner's Report, 1-75-04464, C-75, with three accompanying photographs, the report of Dr. R. John Rutten and the statement of Ramsey Parks were distributed. Those present were requested to add to the information presented and to ask any questions during the discussion.

Parks: One of my primary concerns is to determine what caused the accident, either by one occurrence or by a chain of events—to discover any clues that would help avert such an accident in the future. We have graduated between 40 and 50 students every year and suddenly we have an accident that turns out to be a disaster.

Gillespie: Diving is a part of our society. A school with qualified instructors is a better approach than on-the-job training. The record of the Santa Barbara City College Marine Technology Program speaks for itself.

The only thing we can do here today is to come up with comments, criticisms and suggestions. If it does happen again, whether in the school program or as in the case of Volarvich, we need any information that can help us and our pathologist to get the answers we need. For us to give you the answers, we needed to know what to look for. Rosander is not a qualified diver. Last year there were a number of SCUBA deaths which we saw, but we had never seen cont.
Gillespie cont: this type of thing before. When you see something for the first time, you don't know the correlation.

Rutten: I regret that I had other commitments that took me away from the autopsy. I will give such an incident first priority should it occur again. Also, with regard to my report, I want everyone to understand that at the time I went into the chamber I was trying to put things together, but I had no opportunity to talk with Mr. Parks.

Nelson: Until I had the opportunity to work on it, there was some variation in my report, too, but it was not far off.

Rutten: I thought I had heard that Leonard was inverted. This was not so. I was in a hurry and hearing only bits and pieces.

Parks: As I started into the water, something was said about Leonard blowing up. I had no idea of what I was going to find.

Rosander: We need to distinguish between which of the changes occurred during life and caused death or what happened immediately after death. We were under the impression the mask was close up to his face. He did, indeed, die of massive air embolism.

Roche: I had just come up and dove the blue hat before Leonard. I had just come out of the chamber and was standing next to the comm box. Leonard said, "Far out; at the bottom." Then a couple of minutes later Zadra and Christensen heard him cry out. I did not hear him scream as Zadra did. Then we could get no response at all. For an instant one of the communication things had been partially jarred; we turned it and we could hear air flow, then lag. Rick, Greg and I went to pull up on the hose, but there was no slack to speak of; it was catching.

Morgan: Was he on the bottom or off?

Roche: The visibility was black; it was like a "spoil pile". Where I was standing, the descent line was high above me, exactly as in Ramsey's drawing. I think he had to have been on the bottom and gone underneath the half-inch line.

Morgan: Then obviously there was no squeeze.

Mermis: It was three minutes to the bottom so he must have had air coming in to his hat.

Roche: I asked Zadra, but I don't remember. I don't know if he took a blow when he was at the bottom. You are sort of excited when you get down there. He might have blown up some CO₂ and did not wash out.

Parks: In other words, the embolism took place when I brought him up off the bottom. When I got to him he was not moving and...
Parks cont: I don't believe he was breathing because the bubbles were coming in a very steady stream. When a diver is breathing, the bubbles pulsate. My concern is what happened up to the time I got to him. If he embolized at that time, what caused it to happen?

Rosander: He had not apparently vomitted; whereas, Volarvich was stuffed with vomitus.

Mermis: Could we have displace the vomitus during C.P.R.? Leonard bubbled all the way through his nose and mouth and there was no restriction of air flow. His stomach became distended. He had such emphysema and swelling we could not have gotten it out. There was just enough room to get air in and out. After awhile we pushed on his stomach and he did not throw up. As far as I saw, he did not throw up at all.

Where did the vomitus come up in the chamber?

Rutten: It was behind and low in the front end of the tank.

Mermis: It did not appear to me to be vomit. It was like water and blood coming from his mouth.

Rutten: It could have been just one or two splashes.

Parks: It was clear he was not breathing and I could not get a pulse. He was bleeding from his nose and a trickle out of his mouth.

Thomason: Were there any punctures in the lungs?

Rosander: No.

So it had to be subcutaneous emphysema.

If on the bottom it would have gone into anoxia. He would still have had the bubble in his throat which would expand. I don't know if he could get that block loose.

Were his ears ruptured?

Mermis: The right ear was definitely bleeding.

Rutten: I had the feeling he had broken his ear drum.

If when he hit the bottom, could he have started to vomit and tried to hold it back?

Thomason: If he was hung up; if he hit the panic button, he could have gone into hyperventilation. He might have become sick or nervous.

Were there any symptoms of high blood pressure?

Thomason: He had to be blocked from his throat up.

How would blood pressure react in a panic situation? cont.
Rutten: No reaction. Also many people have a labile pressure.

Parks: Leonard's blood pressure was 108/60 on September 19, 1974 and 122/68 on August 7, 1973.

Roche: In talking to Glasgow and Zadra, they said he had a normal descent.

Thomason: There was an incident in Japan where all of a sudden a diver went erratic. He did not remember anything other than he did not think he was getting enough air and he just went out—he did not panic.

Parks: Is there any way of ascertaining when this might have happened—when he may have vomitted and aspired?

Rosander: The autopsy showed no aspiration—no solid food whatever. The report is not correct. Nelson misinterpreted because he thought Leonard was wearing a tight mask over his face and it was filled with vomitus.

The swelling was blood and tissue gas that had broken out. A tremendous amount of gas came from the bloodstream, which means he had no circulation on his way from the bottom up. If a man has no circulation, the outgassing has no way to get out of his lungs.

How could the heart stop that rapidly?

Rosander: With a massive air embolism it could stop very rapidly.

Thomason: I understand embolism as rupturing of the lungs. If this is the case, it means the nitrogen and oxygen which were captive in the fast tissues were released and that is what caused the massive rupture of these tissues and the blood vessels.

Why did it not happen in the other areas?

Rosander: There are two ways. It is my impression that during the rapid decompression, the absorbed gases are also reabsorbed quickly.

Morgan: But if there is no circulation?

Rosander: It is very indicative to me that there was no heart action. If that is the case, that would explain the whole thing, especially in the light that his lungs were not damaged.

Nelson: We do not have the microtissue report back yet.

If what I am saying is correct, it should have happened over his entire body.

Thomason: I think there may have been a breakthrough in the head which would allow "traveling" in this area.

cont.
You can have the rupture and come out of the ears and the eyes and his lips bruised. His whole head expanded.

Morgan:

There is an incident of a man with an unexplained accident similar to this. His neck was so swollen they could not get his helmet off. They could not break the port and they did not have enough time to get the screws off. All the tissue swelling was in the head and the neck.

Rutten:

Leonard was so swollen, I could not feel the carotid artery.

Morgan:

You have a lot of adjacent tissue in the rest of your body that will absorb. It could be in this area you do not have the kind of tissue that is not nitrogen laden, as in your muscles, that would absorb some of this. I remember more than one case where the man had passed out on the bottom and his heart had stopped on the bottom.

Rutten:

You are presuming there was an incident before that which rendered him unconscious. When I first saw him, it looked to me like a squeeze, but I cannot explain how such a thing would have happened.

Parks:

We checked the equipment. There was a possible pressure differentiation as I mentioned. I was 40 to 50 feet above Leonard which would cause a pressure difference of 18-20 psi. If the nonreturn valve had not functioned that time, there would have been a possibility of a squeeze, but it seems rather far-fetched.

Rutten:

Because of the massive cyanosis and swelling you have to think about it.

Parks:

We checked the equipment to see about the non-return valve not functioning.

Rutten:

There was blood under the skull; this is a potential free space in the layers that cover the skull. This was full of blood—a thick layer. This again was that there would be some pressure to pull that out of the vessels; it was not in the brain.

Thomason:

In the training tanks, they have free ascent and they can have the problem that a bubble will lock into the throat as one is exhaling and it seals the arteries and the blood keeps expanding like a balloon—a spontaneous pneumothorax. But Rosander said the brain did not look that bad. In one area you have it; in another area, you don't.

The blood stream absorbs the most rapidly. Dividing the body into five tissues, the most difficult tissue is bone structure and blood is the easiest. Muscle tissue is the next adjacent to the blood tissue. If the muscle tissue were the next-to-liquid tissue, then you could understand that perhaps during the ascent, you could get direct absorption from the blood into those tissues which would neutralize. cont.
Rutten: The idea of this being nitrogen bends is completely out. We do not have any idea of what the original episode was. If Leonard had said he was on the bottom and happy, there was no opportunity for a squeeze.

Parks: In talking to the person who was on the kluge box, Leonard was on the bottom and feeling good. I don't see that he could have fallen any distance.

Roche: I know he was in good spirits. We went out for breakfast before the dive. They were dressed in for a while and he was in really good spirits.

Would you be able to tell through the rest of the tests that it was cardiovascular?

Rosander: There were no abnormalities in the heart at all.

Rutten: The idea of leaving the body in the chamber was unthinkable. It was abominably hot.

Parks: I saw the photographs for the first time yesterday. He was quite swollen in the chamber, but I don't remember it being as bad as the photographs. Perhaps it was because of the time passage.

Mermis: It was bad. I could not open his eyes to look at his pupils. His tongue and his lips and his face were swollen. You could see there was enough room for air to come in. If he had vomitted, all I could have done was to turn his head. I could not get his mouth open at all; his neck was just like a rock.

Rutten: The only other bruise I documented was on his ankle, which could have been there before or happened getting him into the chamber. I looked him over; the rest of his body was all right.

Rosander: Routine samples of organs were taken; it will be several weeks before the reports are in. Blood samples, etc., were all negative.

Could you interpret for those present about the time down, the depth, the rapidity of ascent, etc?

Rutten: It would have been inconsistent with "bends". He was not down long enough. It was not a repetitive dive. It is a time/depth relationship. With three minutes at 130 feet there was no way he could have accumulated enough residual nitrogen.

Parks: He spent apparently three minutes and some seconds getting to the bottom. His bottom time starts at the time he leaves the surface. He was on the bottom three to four minutes, then called out. Then I went down and I feel I got there in less than three minutes. This amounts to about ten minutes bottom time. There is a discrepancy in the dive log report. Since it lists approximately 17 minutes.

cont.
Christensen: The time from the surface to the time of the problem was five to six minutes.

Parker: Bends would be extremely rare on the bottom. All of this air had to come from his lungs and since it was distributed, his heart had to be functioning.

Parks: I'm sure Leonard was never upside down. Once a diver is inverted, it is quite difficult to become upright.

Rutten: I wondered how all this could have happened if he were upside down.

Thomason: I would like to send this report to a physician who has had quite a lot of experience in this area and would also like to send him one of the photographs.

Rutten: I will be reporting it at the University of Rhode Island.

Nelson: The Coroner's Office would like all the input they can get. We can all probably agree that the immediate cause of death was air embolism, but what brought him to the point of emergency and difficulty is a question we will have for a long time.

There was no vomit in the helmet?

Roche: Rick Hansen cleaned it out and when specifically asked, he said it was blood.

Rosander: It looked just like blood and he had bitten his tongue. His teeth were clenched on his tongue. His stomach was full of food, with large articular material. It was not vomitus, so he did not aspirate. We looked in his mouth as much as we could; there was no way we could pry his jaws apart. It looked as if the teeth were imbedded in the tip of the tongue.

Roche: It does not take much blood to become splattered all over the helmet when air is coming in.

Rutten: I don't recall the tongue was bleeding then; perhaps it had swollen so much it went past his teeth.

Mermis: I don't recall if it was the top or the bottom teeth. When we were giving him mouth-to-mouth resuscitation, we could see in his mouth. His tongue was swollen, but his top row of teeth was not touching his tongue.

He probably had swollen up so much.

Rutten: Also, we came out fairly rapidly because I had not been there long, but the air that had been pumped into his lungs was coming back out again. There was no obstruction to the flow of air.

Whatever the emergency situation was, Leonard wanted up and whatever it was, only he knows.
Morgan: It was not an external problem; there was no massive external trauma to the body at all.

Parks: Is there a chance some of the tissue analysis would show something we do not know so far?

Rosander: No, I don't think so.

Parker: We need something from this group for the public and for the school.

Nelson: We have this summary of what we have been saying. I will be doing a follow up--a summary in addition to what Dr. Rosander comes up with and I would include most of what we have--that it is an unanswered question as to what brought the situation on.

Thomason: Is it a good idea to "publicize"?

Nelson: For one thing, I have already had one inquiry on the matter.

Parker: (My personal feeling will not be the same again, even though I have lived with this as long as I have been in this business.) We will be the better for this; it will make us even more conscious of safety. And there are a lot of people involved--including all the students in the program. I am not saying we have to come to any sort of conclusion, but we need a "vote of confidence".

Nelson: I will be including this in my final follow-up. I can find no failure to act or any act that was done irresponsibly or anything that could have been done or was done or not done that would have changed the outcome.

Morgan: It was an unavoidable, unexplained accident. There were no mistakes; everyone acted in a responsible manner.

Rutten: There is no basic fault in the program whatsoever. There is nothing that could be done to alter the program to make it more safe. Nothing could have been done that would have been safer. Nothing can be criticized in any of the actions taken.

Nelson: I am a sport diver myself. (In fact, my brother is currently in the Marine Technology program.) When I came on board everyone was acting and performing, doing what needed to be done. You could not have asked for anything more proficient or more professional. It was a credit to the school and to their training. We would all like to come up with an answer to say this is what happened and this is what we can do to prevent it happening again. This is why Parks called us together--in the hope that there could be a reasonable, logical explanation. We could only do that if Leonard had said something as to what the problem was. It would have had to be a communication to the surface as to the problem, but he was in an emergency situation and all he wanted was "up". That was all he had time to say or do. This will be reflected in my follow-up. Upon completion of the entire thing.
Nelson cont: I will make up a complete report of all statements and will send it to the school in care of Mr. Parks.

Morgan: If you wish, I will direct a letter to the college giving my opinion.

Nelson: Any input will be of benefit—to everyone who is involved with diving. We receive inquiries from everyone. We can send them copies of the report.

Thomason: The Navy has a record of accidents and they run into this type of thing—it is an unexplained accident. They don't know why it happens. There was no malfunctioning here. Everyone did everything they could.

Parks: We appreciate the vote of confidence. You can understand that the administration of Santa Barbara City College is deeply concerned about this accident and is looking to this group and the Marine Technology Program to be able to run the program safely and efficiently as we have in the past and as we want to continue to do in the future.

Morgan: We are involved in diving. We must have programs such as this. If this accident in any way slows this program up, the work will go to less qualified. This should tell the administration of the college where it is at.

Nelson: In no way should this accident serve as a deterrent to the program.

Gillespie: This is analogous to the Police Department. We don't quit. There is a job to be done and we do it; it has to be done. If you should falter in your training, then the Coroner's Office is going to be very busy. Our reports are public information and if your association wishes to make the release, that is fine. It would probably be more beneficial to the public than if the sheriff's or coroner's office presented the decision.

Parker: In the United Kingdom they are running four-week SCUBA training courses for diving in the North Sea and they go right out to the semi-submersibles. Our people go into it after a year of apprenticeship after our two-year program. The training is desperately needed.

Nelson: If any additional information comes up, let our office know; we should get all the information into one source.

* * *
I was dressed in as standby diver on this student training exercise. The diving equipment being used was commercial heavy (or hard hat) gear. I was ten to twelve feet from the communications set and could not hear clearly what was said. However, Robert W. Christensen, the other diving instructor, immediately related to me that Leonard had urgently called out to be brought up, followed only by the sound of incoming air. His tender, assisted by another student, attempted to take up Leonard's hose, but only took up three or four feet before coming up tight.

I had my weights, gloves and helmet put on. As my weight belt was being put on, I looked over to see where Leonard's bubbles were. They were coming up next to the easterly risers. The current was nil as it had been the day before. I went down the ladder on the stern of the "Coral Sea", jumped off the port landing and began descending down the other diver's hose.

At what I estimate to be about 90 feet, or about 40 to 45 feet above Leonard, my air supply began to drop off. I told topside I had no air and to hold my slack. Within about ten seconds my air supply came back and I continued my descent. Later I was told this momentary loss of air was caused as the inner lock of the chamber was being pressurized.

I reached Leonard in probably less than three minutes from when he had called to be brought up. I found him near the bottom, behind a $\frac{1}{2}$ inch manila line that ran from where the descending line was tied to the diagonal crossmember adjunct to risers to the pipeline sled. (See drawing.) The line kept him from being pulled, or coming, to the surface. Leonard was in an upright position. He was slightly positively buoyant. Leonard was not moving, indicating he was unconscious. A steady stream of bubbles was coming from his exhaust valve. Due to the lack of pulsation of the exhaust bubbles, I believe he was not breathing or at least any respiration was minimal. The stream appeared to be sufficient to provide adequate ventilation of the helmet. I opened his exhaust valve the rest of the way and opened the air control inlet valve some more to give additional air to the helmet.

I cut the line holding Leonard with my knife and told the surface to bring us up as I held on to Leonard at the place where his hose was secured to the breastplate. I controlled our buoyancy with my own. I told the surface to leave me in the water until they got Leonard on board. They did this quickly as I was only in the water one or two minutes before they had me come up and on board.

cont.
When I came on board, I could see they were giving mouth-to-mouth resuscitation to Leonard and he was immediately placed in the chamber with two students, James Mermis and Calvin Parsons, who continued artificial respiration and external heart massage.

I had them dress me out and entered the outer lock of the chamber and began pressurizing the lock to 165 feet (the depth of the inner lock). I entered the inner lock approximately thirty minutes after Leonard had been placed in the chamber with Mermis and Parsons. The outer lock was then depressurized back to the surface. I looked for vital signs in Leonard, such as pulse and respiration, but could find none. Mermis and Parsons related to me they thought there was some shallow, rapid respiration on the way down to 165 feet. However, it ceased somewhere around 140 feet. They said they were never able to detect a pulse.

We continued external heart massage and mouth-to-mouth resuscitation until Dr. John R. Rutten came into the inner lock upon our arrival at the Navy Pier in Santa Barbara Harbor, approximately one hour after I came into the inner lock. Shortly before Dr. Rutten came in, I had the inner lock pressure dropped to 140 feet in accordance with U. S. Navy Treatment Table #4. Dr. Rutten examined Leonard and pronounced him dead. We placed Leonard in the outer lock with Dr. Rutten for return to the surface. Mermis, Parsons and I remained in the inner lock for decompression to the surface on U. S. Navy Exceptional Exposure Table for 120 minutes at 170 feet (six hours). We reached the surface at about 1920. Dr. Rutten was there as we came out. No bends symptoms were encountered.

On Saturday morning, May 3, 1975, Robert W. Christensen, myself and a second year Marine Technology student, Pamela Hathaway, checked out the diving helmet worn by Leonard (Blue Air Hat) and could find nothing wrong with it. On Wednesday, May 7, 1975, Robert W. Christensen dived the helmet and hose used by Leonard in the diving training tanks at our Nopal Street facility. The equipment worked properly, including the air control, exhaust, and non-return valves. During the dive the air pressure at the surface was bled off the hose twice and the non-return valve sealed.
5-2-75: Dr. Rutten saw this patient in a decompression chamber on the vessel Coral Sea and he was dead.

History reveals that he had made a hardhat dive at approximately 11:30 A.M. this date to about 135 feet off platform Holly. His tender states that he had been a little bit under the weather, perhaps, from seasickness prior to his descent. The tender states that he heard him touch bottom, but that he did not hear him vent his suit as hardhat divers normally do. Within just a few minutes he heard the patient exclaim in a rather high excited voice to bring him up. He wasn't sure of the voice and so had the diver repeat and again the same message was that he wanted to come up. The tender tried to bring him to the surface, but states that he was only able to take out a foot of slack and could raise him no more. The patient's stand-by diver then descended and found the patient indeed tangled near the bottom. Apparently he was in an inverted position and there was some vomitus in the helmet. The stand-by diver freed the diver and both made a rapid ascent. It is estimated that there was about a five minute surface interval until the patient was placed into the chamber and repressured to 165 feet. The total bottom time for the diver was estimated at 17 minutes and was stated that it took about 15 minutes to take him from the surface to 165 feet. Individuals in the chamber stated that the patient did have some gasping respirations when he was first put into the chamber, but they could not detect a heart beat. The patient had a rather massive cyanosis from the shoulders up and considerable edema of the face and neck structures. There was vomitus on the inside of the chamber when I arrived. His companions in the chamber stated that they immediately began closed chest resuscitation and mouth to mouth breathing for the patient and continued this as the Coral Sea sped for Santa Barbara Harbor. A total effort of something less than an hour which is rather incredible exercise considering the chamber heat was perhaps 120-130° and there wasn't much room to move around with one dead man and three attempting CPR. My call came at approximately noon when the Coral Sea radioed to me that they were coming in and requested my presence. I was at the Navy pier at about 12:30 and at 12:45 was aboard the vessel and into the chamber. On arriving at 140 feet, it was obvious that the patient had expired. It was difficult to palpate any carotid pulse because of the marked edema. There was vomitus on the wall of the tank. After declaring the patient dead at approximately 12:50 P.M. this date, I moved the victim with me to the outer chamber. The companions are committed to approximately six hours of their decompression in the chamber. They were advised to take salt tablets, water and some food was brought to them. On decompression from 140 ft. to the surface, the victim seemed to have a clear airway and that he bubbled. Subcutaneous crepitus, however, was present over the anterior chest and the arms clear to the wrists. The marked cyanosis of the head and neck did not abate. There was also a bruise noted over the medial malleolar area of the right foot. There was frothy blood from the nose and mouth of the patient and a rather marked myringitis on the right.

(continued over)
1. Massive air embolism.

2. Because of the massive cyanosis and swelling of the head and neck, one must give consideration to possible squeeze.

Individuals in the chamber were apparently Mr. Cal Parsons, Mr. Jim Mermis, and Ramsay Parks, Director of the Marine Technology Program of Santa Barbara City College.

R. John Rutten, M.D.
SHERIFF-CORONER
SANTA BARBARA COUNTY
CORONER'S REPORT

DATE AND TIME: 1-75-04-64
LOCATION OF OCCURRENCE: Decompression chamber on-boat "Coral Sea" docked at Navy Pier, S. Bar., 5-2-75 / 1320 hrs. / Friday.

ESTRADA
LEONARD
JOSEPH

SEX: Male
WEIGHT: 160 lbs.
HAIR: Brn

PLACE OF DEATH: City-County-State:

4980 Sandyland Rd. #225 Carpinteria / Santa Barbara / California

OFFICER: Lewis / Santa Barbara Harbor Patrol 6-93-1737.

Dr. R. John Rutten / 215 Pesetas Ln. Santa Barbara / Santa Barbara / Calif. 964-6211

FATHER: Joseph M. Estrada
POLICE: J. A. Johnson #4880
POLICE: Sgt. Polan #7360
INF: Rick Hansen
POLICE/CSI: A. Brackney #1055
INST./INF: Robert W. Christensen
INST./WIT: H. Ramsey Parks
INF./TENDER: Greg Glaucow
INF./COMMUNICATIONS: Mike Zadra

ADDRESS: 656 E. Ash St. Brea, Calif. 714-529-1500

TELEPHONE: SBPD 963-3361
SBPD 963-3361
SBPD 963-3361
SBPD 963-3361

PRELIMINARY DIAGNOSIS OF CAUSE OF DEATH = Asphyxia

TREATMENT & MEDICATIONS: INCLUDE ANY HOSPITALIZATION

DATE OF LAST
VISIT: DNA

PRIVATE PHYSICIAN:
Dr. R. John Rutten
ADDRESS: 215 Pesetas Ln. S. Bar. 964-6211

TELEPHONE:

NATURAL DEATH: INCLUDE ANY DIAGNOSIS

PLACE OF INJURY: Diver on training dive (68' boat "Coral Sea") at a depth of 130' at Platform Hope, Santa Barbara Channel, Carpinteria

PACIFIC OCEAN

DIVER ON TRAINING DIVE

DATE & TIME OF INJURY: 5-2-75 / APPROX 1300 hrs. No victim training as deep sea diver in "Heavy Gear" at 130' depth. Apparently vomited inside suit and aspirated vomit.

JOSEPH M. ESTRADA / FATHER /

COPYS OF THIS REPORT SHALL NOT BE DUPLICATED, CIRCULATED OR DISCLOSED TO ANY PERSON OR AGENCY WITHOUT THE EXPRESS PERMISSION OF THE SHERIFF OR THE SHERIFF'S DEPARTMENT RECORDS BUREAU.

RECORDED 5-2-75 AT 1430 hrs.

BY John Curry (Friend of Decedent) RECORDED BY Nelson/AIC0517 / TIME 5-2-75 / 1700 hrs.

ARTICULAR SURROUNDING DEATH: (1) LIST AND DESCRIBE ALL PROPERTY SEIZED, WHERE FOUND, LOCATION AND PROPERTY TAG NUMBER. (2) LIST ANY DEVICE, DRIVER, PASSENGER OR PEDESTRIAN AND AGENCY AND OFFICER INVESTIGATING.

#20 CONTINUED:
1. Jim Parker 1343 Chanev Av. Carpinteria, Ca. 684-3860
3. Pam Hathaway 1330 Punta Gorda St. S. Bar. 965-4162
4. Robert Mac Phail 103 Dearborn #21 Goleta, Ca. 964-3246

See continuation.
A. See SH 451. All property listed released to Welch-Ryce Associates at direction of father of decedent for transfer with remains to Brea, California.

Decedent vehicle described as 1964 Ford econoline van, white, and contents released to John Curry (roommate of decedent) at request of father of decedent. The vehicle (Cal.,#001794) was parked in the parking lot at Marina #3 at the Santa Barbara Harbor, and was released to John Curry for safekeeping until the next-of-kin could respond and take charge of the effects of the decedent.

B. None.

C. U/S investigators were advised that the SBPD and the Santa Barbara Harbor Patrol had reported the death of a diver of unknown causes and circumstances on board the "Coral Sea", which was docked at the Navy Pier in the Santa Barbara Harbor. U/S investigators responded to the scene to investigate the death and the surrounding circumstances.

Upon arrival at the "Coral Sea" U/S contacted Mr. Christensen who related that the decedent had been diving in "heavy gear" at a depth of approximately 130 ft. at "Platform Hope" in the Santa Barbara Channel (approx. 5 miles off Carpenteria). The decedent was a student in the Marine Technology classes of the Santa Barbara Community College and was making a routine "heavy gear familiarization" dive. Reportedly the decedent had made a normal routine descent and upon arriving at the bottom, at a depth of approximately 130 feet, alerted the deck personnel of an unknown problem and directed that he be brought back to the surface immediately.

The deck personnel were unable to bring the decedent up as directed because for some unknown reason the air and communication lines had become entangled on something and the deck personnel were unable to free them from the surface. Mr. Parks immediately donned full "heavy gear" and descended to free the decedent and return him to the surface. Upon returning the victim to the surface he was immediately placed into a decompression chamber on board the "Coral Sea" and they proceeded to Santa Barbara Harbor. Dr. Rutten was notified and he responded to the scene and upon arrival at the "Coral Sea" Dr. Rutten proceeded into the decompression chamber to examine the victim. At approximately 1250 hrs. Dr. Rutten found no pulse, no respiration and no other vital signs present in the victim and pronounced him dead.

U/S contacted the deck personnel who were present at the time of the incident and interviewed them regarding the incident. The communications man was Mike Zadra and he maintained surface to diver communications. The "tender" was Greg Glasgow and he tended the divers air and communications lines from the boat to the diver.

Mike Zadra related that as soon as the victim arrived on the bottom he "yelled" something and Zadra could not understand what was said and told the victim to repeat what he had said. The victim then "screamed", "PULL ME UP", "PULL ME UP". Zadra stated that then he heard nothing no breathing sounds or anything, so he adjusted the communications connection and then again heard the victim breathing.

Greg Glasgow related that he was standing next to Zadra tending the lines when he heard the victim "scream". Glasgow then looked at Zadra, heard the victim "scream", "PULL ME UP", and began to pull the lines in to bring the victim up from the bottom. Glasgow stated that as he began to pull the lines they went taut and he was unable to pull the victim up.

Both Zadra and Glasgow alerted the other deck personnel of the emergency situation and Mr. Parks proceeded to suit up and go to the aid of the victim.

The divers "diving log" was being maintained by Pam Hathaway and Dep. Nelson received the
original copy of that "Diving Log" which is attached to this report.

U/S contacted Robert MacPhail who related that approximately 1/2 hour prior to his dive the victim vomited possibly as a result of being sea sick. MacPhail related that both he and the victim were somewhat sea sick and that they went forward to the bow of the boat and that the victim vomited over the side of the boat. MacPhail further related that they did not advise anyone of the fact that they were sea sick or that the victim had vomited as they did not think that it was important.

Mr. Jim Parker and Mr. John Curry related that they were close friends of the decedent and requested that they be allowed to notify the parents of the decedent of the death. Notification was completed by John Curry at approximately 1430 hrs. 5-2-75.

The equipment being used by the decedent was described by Mr. Christensen as follows:
"Yokohama" deep dive suit, rubberized.
"K-M" communications "Heavy Gear" helmet.
70 lbs. of lead weight on a deep sea belt.
2- 5 lb. weights (ankle weights, one on each ankle).

Mr. Christensen further related that the decedent was in his 4th. semester of training in the Marine Technology course and had been receiving deep sea, "hard hat" diver training for approximately 1 yr. with no previous problems encountered. Photocopies of the decedent's SBCC ID card, SBCC Certified Diver Cards and L.A. County SCUBA card are attached to this report.

An autopsy was performed by Dr. Rosander at 1515 hrs. 5-2-75 with Dep. Nelson, Det. Gillespie and mortuary personnel in attendane. The preliminary cause of death is believed to be asphyxia due to the finding of vomit which had been aspirated into the decedent's lungs. For the results of the pathologists findings refer to the autopsy report.

Extensive swelling and purple coloration was noted in the neck and head of the decedent upon examination at the mortuary.

D. DNA

PENDING CAUSE OF DEATH, AND FURTHER INVESTIGATION.
EMERGENCY NUMBERS
Santa Barbara City College ... 965-0581
U.S. Coast Guard (Sta. Barbara) ... 966-3093
(Long Beach) ... 213-590-2225
County Sheriff ... 963-1611

RECOMPRESSION CHAMBERS
SPCC ... 962-7519 or 965-0581
Ocean Systems ... 965-3321
U.S. Navy - Pt. Magu Days ... 982-7988
Nights ... 982-8718

SANTA BARBARA CITY COLLEGE
CERTIFIED DIVER
Name: LEONARD J. ESTRADA No. 239
Depth Qualified 33 feet Expired 2-1-75
Last Physical Examination 8-7-73
Restrictions: SCUBA and HOOKAH
Date 2-1-74

SANTA BARBARA CITY COLLEGE
DIVING TRAINING CERTIFICATE
Name: LEONARD J. ESTRADA
has satisfactorily completed a 100 hour
BASIC DIVING course
including 12 supervised ocean dives
Date 2-1-74
COLLEGE DIVING OFFICER
SANTA BARBARA CITY COLLEGE
DIVING CONTROL BOARD

DIVING LOG

Name: LEWIS E. TEADA

Diving Permit No.: N/A

Date: 6/19/75

Depth Certified

Time of Day: 10:11

Depth of Dive: 15' 3"

Location: PLATFORM

Bottom Time: 13'13" EW ASW 18.0 MM

Decompression Required: Yes  No

Type of Equip.: AIREY GEAR

Gas Used: AIRE

Table: AIR DECE (HAUD)

Diving Partner, Tender, or Standby: GLASGOW, TRUDER, ZADRA, (O&M)

Instructor: ROB CHRISTIANSEN & ROUSEY PEAR

Purpose of Dive: AIREY GEAR DEMONSTRATION

Observations:

Visibility:

Surface: 500

Temperature:

Surface:

Bottom: 0

Thermocline depth:

Current:

Weather and Sea Conditions: CLEAR & CALM

Other Comments:

17 min Bottom Time

5 min Surface to chamber interval

15 min Surface to 16'1 camber time

Did any equipment failure, accident or unusual incident occur? No  Yes

If yes, a detailed report must immediately be filed with the Diving Control Board. This form is to be filed with the Diving Control Board within ten (10) days of its origin. Form is to be prepared in duplicate, the diver to retain the duplicate copy.

Signature of Diver
### GASTRIC ANALYSIS

<table>
<thead>
<tr>
<th>Date</th>
<th>Host. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/30/70</td>
<td>283463</td>
</tr>
</tbody>
</table>

#### CHARACTER

- **CELL, RBC:**
  - Tube 1: 1,350,000
  - Tube 2: 1,350,000

- **WBC:**
  - Tube 1: 500
  - Tube 2: 500

- **SEGS:**
  - Tube 1: 1,350,000
  - Tube 2: 1,350,000

- **LYMPH:**
  - Tube 1: 2,000,000
  - Tube 2: 2,000,000

#### OTHER FLUIDS

- **SUGAR:** 110 mg/dL
- **CHLORIDE:** 110 mEq/L
- **PROTEIN:** 25 mg/dL

### FEES:

#### CEREBROSPINAL FLUID

- **Lab. No.:** 283463
- **Amount:** 1.0 ml

#### GASTRIC - MISC.

- **Blood:** No. Negative
- **Age:** 39
- **ER Corr. No.:** 283463
- **Right Heart:** 100,000
- **Left Heart:** 90,000
- **Blood Urea Nitrogen:**
  - **Tube 1:** 18.2 mg/dL
  - **Tube 2:** 18.2 mg/dL

### OP. 50

#### GASTRIC ANALYSIS

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
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<td>283463</td>
</tr>
</tbody>
</table>

#### CHARACTER

- **CELL, RBC:**
  - Tube 1: 2,000,000
  - Tube 2: 2,000,000

- **WBC:**
  - Tube 1: 900
  - Tube 2: 900

- **SEGS:**
  - Tube 1: 2,000,000
  - Tube 2: 2,000,000

- **LYMPH:**
  - Tube 1: 1,000,000
  - Tube 2: 1,000,000

#### OTHER FLUIDS

- **SUGAR:** 100 mg/dL
- **CHLORIDE:** 120 mEq/L
- **PROTEIN:** 20 mg/dL

### FEES:

#### CEREBROSPINAL FLUID

- **Lab. No.:** 283463
- **Amount:** 1.0 ml

#### GASTRIC - MISC.

- **Blood Urea Nitrogen:**
  - **Tube 1:** 18.2 mg/dL
  - **Tube 2:** 18.2 mg/dL

- **Blood Plasma:**
  - **Tube 1:** 18.2 mg/dL
  - **Tube 2:** 18.2 mg/dL

- **Blood Hct:**
  - **Tube 1:** 50%
  - **Tube 2:** 50%

- **Blood Glucose:**
  - **Tube 1:** 100 mg/dL
  - **Tube 2:** 100 mg/dL

- **Blood Lipid:**
  - **Tube 1:** 150 mg/dL
  - **Tube 2:** 150 mg/dL

- **Blood Protein:**
  - **Tube 1:** 8.0 g/dL
  - **Tube 2:** 8.0 g/dL
Mrs. Ann Gutshall  
Chairman  
Board of Trustees  
Santa Barbara City College  
721 Cliff Drive  
Santa Barbara, California 93101  

Dear Mrs. Gutshall:

Ocean Systems has been in operation as an underwater contractor, locally as well as world-wide, prior to the inception of Santa Barbara City College's Marine Technology course. Your instructors (Ramsey Parks, James Parker and Robert Christensen) who formerly were employees of Ocean Systems were well qualified in all aspects of the commercial field including safety related requirements in our industry, prior to becoming instructors.

Ocean Systems and many other world-wide underwater contractors observed their curriculum develop training techniques to a degree unequaled in any similar establishment conducting the same type of training. We realize, of course, that a fatality has occurred, highlighting the dangers involved in hydrospace activities. We have in this case, as we do in any fatality throughout our industry, review the circumstances, acquaint our own personnel as well as other interested parts of the results of our investigation and point out any faulty equipment or procedures to cause such an occurrence. In this particular case, after a thorough review of all available evidence, we can find no negligence in the operating procedures of the on-scene personnel. Ocean Systems participated in the Coroner's hearing and heard no further evidence to change our above opinion. It is our feeling companywide that although Marine Technology has been responsible for the death of one of its students, that its previous students, as well as the students who will be coming out of this course in the years to come have been instrumental in the past and we see no reason for this to change, will be in the future, of saving many lives in this field which of course is never publicized.

The training these students are receiving and their proficiency level is well known and established and needed throughout the industry.
We feel a deep regret for the loss of the student and a strong need to inform you of the industries feeling regarding the value we place on your student training.

Sincerely,

OCEAN SYSTEMS, INC.

W. L. Steffens, Manager

D. E. Thomason, Asst. Manager
Pacific Southwest Operations

WLS:bb