Witness: Brian Peterson

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Day 1 of 2 for this witness

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Direct Examination by David Harris

CLERK: Be seated. State and spell your name for the record.

PETERSON: My name is Brian Peterson. B-r-i-a-n P-e-t-e-r-s-o-n.

HARRIS: We are referring to you as doctor. Can you tell us what your profession is?

PETERSON: I'm a forensic pathologist employed by a company called Forensic Medical Group in Fairfield.

HARRIS: And what is a pathologist?

PETERSON: Well, pathology is a study disease. Pathology is a subspecialty of medicine. And we study disease of various types.

HARRIS: So to go back through this, we're calling you a doctor. Does that mean that you have a medical degree?

PETERSON: I do.

HARRIS: Can you tell the jury what your background and education is?

PETERSON: Following three years of undergraduate education, I entered medical school at Medical College of Wisconsin in Milwaukee. I attended there from 1976 until my graduation with an M.D. in 1980. I spent the next one year doing a flexible or rotating internship at the Medical College of Ohio in Toledo Ohio. That was different specialties, actually taking care of patients for a year. I spent the next two years after that serving as a General Medical Officer with the Marines. I was in the Navy. The Marines don't have their own doctors, so I did that for two years. I then entered a training program in anatomic and clinical pathology at the Naval Hospital in San Diego starting in 1983. That was a four-year program. Anatomic pathology is directed towards performance of autopsies. Also directed towards looking at tissue removed in the operating room, for example, deciding if it's cancer or not. Clinical pathology is directed towards running the clinical lab, analyzing lab specimens, blood, urines, et cetera. That was a four year program. After that I went to a place called the Armed Forces Institute of pathology in Washington D.C. That was for my fellowship in forensic pathology. And that's basically, and additional training in autopsy pathology, now directed towards the medical-legal setting, overlooking a cause of death, manner of death. During and after that training, I took two separate examinations, offered by the American Board of Pathology. That's a group that certifies us. The first was in combined Anatomic and Clinical Pathology. I passed that exam. The second was in forensic pathology. I passed that exam. And back in 2001 I went through a voluntary

recertification and passed that. So according to the board, I'm good for ten more years. After all that training, I returned to the Naval Hospital in San Diego and practiced there for about five more years doing all those things. And then left the service and joined my present practice about twelve years ago.

HARRIS: Now, you have used the term forensic pathology. Is that different than anatomic?

JUDGE: Can I interrupt? Are you done with his qualifications? Going to ask him some more before we get into the substance of his testimony? Doctor, how many autopsies have you performed in your career, approximately?

PETERSON: About 5,500, your Honor.

JUDGE: Have you qualified in a court of law as an expert in forensic pathology?

PETERSON: I have, between a hundred and two hundred.

JUDGE: Can you tell us some of the courts that you qualified in?

PETERSON: Most of the courts in the Bay Area. That includes Solano, Yolo, Marin, a number down in San Diego. Recently a court martial. Lot of different courts.

JUDGE: In those, in those cases where you qualified as a pathologist, were you called upon to give an opinion as to the cause of death?

PETERSON: Yes, your Honor.

JUDGE: Okay. And how many times have you done that in all those cases?

PETERSON: That's all those cases, your Honor.

JUDGE: And do you belong to any boards or any societies that are connected with the field of Forensic Pathology?

PETERSON: I'm a member of the National Association of Medical Examiners. I'm a fellow in the American Academy Forensic Sciences.

JUDGE: Mr. Geragos, do you have any questions about Doctor Peterson?

GERAGOS: Not of Doctor Peterson, no.

JUDGE: All right. Then the Court will accept Doctor Peterson as a forensic pathologist qualified to give an opinion as to the cause of death. Go ahead.

HARRIS: Thank you.

HARRIS: Doctor Peterson, I want to go back to, we hear this term, and some of us may know what it means. Some of us may not. What is an autopsy?

PETERSON: Well, basically at the simplest level an autopsy is an investigation into the cause of death. And it may be a little bit of work, it may be a lot of work. The simplest type of case that I get involved with might just be a medical records review where if, for one reason or another, the attending physician may be unable or unwilling to certify the cause of death, there may not be an attending physician, that sort of thing. And sometimes based on simply looking at the medical records, I can produce a cause of death. All the way to bringing the body in for examination. That can be just an external examination. It can be a full internal examination. There can be other steps involved, such as x-rays, collection of specimens for toxicology, drug testing, the collection of tissue specimens for microscopic examination. All depends on the case. But, in general, that's what an autopsy is geared towards is the determining cause of death.

HARRIS: Now, in your capacity with the professional group that you are associated with, do you, is your group hired by different counties to perform these services for them?

PETERSON: We are.

HARRIS: And is one of the counties that you are contracted with Contra Costa County?

PETERSON: Yes, it is.

HARRIS: And as part of your regular duties, do you serve as the forensic pathologist for that county?

PETERSON: As one of them. We cover the counties in a rotational type basis.

HARRIS: Directing your attention back to April 14th of 2003, were you working in that capacity as forensic pathologist for Contra Costa County?

PETERSON: Yes, I was.

HARRIS: And did you receive notification that a body had been found, and that you were needed to perform an autopsy?

PETERSON: Yes.

HARRIS: And did you go to some particular facility to do this work?

PETERSON: The Contra Costa County Central Morgue is in Martinez. That's where I went.

HARRIS: When you go to Martinez, do you start, I want to go through this process. Is the individual already there for you?

PETERSON: Usually that is the case. Occasionally, there are cases where I'll hear that somebody is coming in before they actually arrive. But, typical case, the body will be there. And oftentimes the Deputy Coroner that brought the body in will be there, or there will be a written report.

HARRIS: And in this particular case, this particular body that we're referring to, was there a female that was brought in that you needed to perform an autopsy on?

PETERSON: There was.

HARRIS: When --

JUDGE: Do you want to stipulate this was Laci Peterson? The body that was brought in was Laci --

GERAGOS: I believe he's about to testify to Conner, if I'm not mistaken.

JUDGE: He said a female.

GERAGOS: I'm sorry. I thought he was going to go in order. Yes, I will stipulate that both of the people that he examined on the autopsy were Laci and Conner Peterson.

JUDGE: Go ahead.

HARRIS: Did you, were you advised of this female body that was subsequently identified as Laci Peterson? And pursuant to the stipulation we'll just refer to that individual that way.

PETERSON: I was.

HARRIS: Can you, when you start this process, you are telling us before there is different things that you can do. Can you take us through what the process is that you do when you perform the autopsy of Laci Peterson?

PETERSON: Well, the first step is to review whatever information might be available. Of course, in this case, I did not know this was Laci Peterson. At the time of the autopsy this was merely Jane Doe, our generic term for an unidentified person, female. So, and I had a limited amount of information regarding the recovery of the body, and that was about it. Now, before I arrived at the office, there had been some x-rays taken. So when I arrived on the scene, so to speak, I was able to review those x-rays as a start for the procedure. And that was the only additional study

performed before the autopsy. The next step was the autopsy. And, as in any case, it involves an external examination of the body, first with an eye towards recovering anything that might on the body, such as clothing, possessions, and so forth. Those were removed in a sequential fashion. Perform an external examination --

JUDGE: Can I interrupt. Doctor, what was the condition of the body when you first observed it?

PETERSON: Actually, condition didn't change, your Honor. There was some clothing in place on the body.

JUDGE: Tell the jury.

PETERSON: Sure. Due to the state of decomposition, there were a lot of postmortem changes in this case. There were a lot of parts missing that I would normally examine. The head, the neck, the forearms, the left lower leg were all absent. Much of the soft tissue was absent. Much of the internal organs gangs were absent. So in terms of the standard autopsy sequence, it was abbreviated in many ways, because there was actually so little there.

HARRIS: Let me interrupt you there for a, you used a term postmortem changes. Go through this with you. If there is a change like that, going to try to jump and have you explain that what postmortem changes relate to.

PETERSON: Sure. There are a number. We talk about changes in the early postmortem period, such as cooling of the body, stiffening of the muscles. That's rigormortis. Settling of the blood. That's livormortis. Once you get past that, there are other changes that take place, processes such as decomposition, where the body is acted on by bacteria, by microorganisms. There can be feeding on the body by larger organisms. For a body deposited in the water, that could involve large animals like sharks all way down to bottomfeeders like crustaceans: Lobsters, crabs, what have you. So there are a number of different things going on. And in this case there was a full range of that type of postmortem change, making the examination more difficult. As I said, there was a large amount of this body that was actually missing. For example, in terms of the internal organs, the only internal organ present was the uterus. Everything else was gone. So that, to a certain degree, limited my evaluation, and ended up limiting my determination at the end in terms of cause of death. So we would talk about those types of things, postmortem change, postmortem artifact, absence of certain body parts. And that's how she was when we started. Basically that's how we finished.

HARRIS: Let's go through this. Suppose you walk in, the x-rays have already been taken, and you have indicated there wasn't very many changes from then until the time that you first see Miss Peterson. When you do your initial examination, do you document how the body is, the clothing, anything along those lines?

PETERSON: Yes, I do.

HARRIS: Can you tell us what you found, starting right from the beginning?

PETERSON: Let me refer to my report here.

JUDGE: Is that the protocol? Do you have --

GERAGOS: Your Honor?

JUDGE: Do you have the protocol. Do you have a copy of the protocol?

GERAGOS: His protocol?

PETERSON: The autopsy report.

GERAGOS: I have his autopsy report.

JUDGE: Go ahead.

PETERSON: Okay. The first portion of my examination, again, was to review the x-rays. And I looked to the x-rays specifically for additional material, such as bullets, fragments of knife, other foreign material. And with the exception of some mineral deposits that were largely in the clothing and the things missing, there were no abnormalities on those x-rays. Once I actually moved to the body, there were a certain number of clothing pieces that were still in place. What I recovered was an underwire brassiere. There was a label in the bra. The brand name was Bali, B-a-l-i. But on the label was the number 3630. The size on the label was C. And then after that a fraction, 40 over 90. The bra was in place. It was secured by two hook-and-loop type fasteners. On the lower portion of the body,

HARRIS: Before you go there. You are saying the bra was in place. So it was in the usual position of wearing?

PETERSON: It was.

HARRIS: You can continue.

PETERSON: On the lower portion of the body, there was a --

GERAGOS: I would ask, if I could, that he not read the report, but use it to refresh his recollection.

JUDGE: Was that the report prepared by you or under your direction?

PETERSON: Yes, your Honor.

JUDGE: Then he can refer to it. Go ahead.

PETERSON: There was a portion of khaki colored trousers in place. And inside the waistband of those there was a brand name of Motherhood. On the laundry label there was a size S. I took to mean small. There were panties beneath the trousers. The brand on those was Jockey, and the size was 7. The buttock portion of the panties was missing. Part of the elastic band around each leg was still in place. With respect to further examination of the trousers, there was a button closure in the front that was still fastened. There was a zipper that was still in place. And in the waistband of the trousers there were draw cords. And those were still in place too.

HARRIS: Again, let me go to each, you are talking about these items were in place. Were they in the usual place of wearing?

PETERSON: They were.

HARRIS: That would include the underwear as well?

PETERSON: That's correct.

HARRIS: You can continue.

PETERSON: The crotch portion of the trousers was shredded, and had been basically reduced to a number of tangled fibers. To my eye, within these fibers, were a number of round to oval stony deposits, mineral deposits. These were materials that I also saw on the x-rays. So that was actually within the fibers remaining of the pants. The front of the panties was also intact. As I said, the rear portion was missing. The front was still intact, along with the bands around the legs. And that was basically it in terms of clothing.

HARRIS: Now, when you start, and you are looking at this, you are doing this external examination, do you do one side or the other? Do you do just one side?

PETERSON: Normally we receive a body in place on its back. In this case, we received the body in the prone position face down. So my initial, one of my initial procedures was to turn the body over. Just easier to get to the body cavities that way. In addition to the clothing, I should mention there was also a portion of duct tape on the pants, on the front of the body. It actually was sticking to the front of the waistband of the trousers. From the back, I could see it around

one leg. So it was just a piece of duct tape. In terms of size, the body is examined from all different angles. I'm looking at it from the right, from the left, from the front, from the back. Again, in this case, I was limited by the fact there was so much of the body absent. In fact, once I took the clothing off, on the left side of the front of the thigh there was a little bit of skin left. And that was the only skin left in this case. Elsewhere there was, in some places, skeletal muscle exposed. Other places there was still some fat beneath the skin left. But the outer layers of the skin, the tissue right beneath the skin was all absent.

HARRIS: As you go through this process of doing this examination, do you document it as you go along?

PETERSON: I do.

HARRIS: And by the documentation, this is photographs that are taken?

PETERSON: My documentation at this particular office consists of using a hand-held tape recorder and dictating this protocol basically as I go. Oftentimes when there are police agencies present, as in this case, they will take photographs. I don't typically take my own photographs. And I did not in this case.

HARRIS: When you talk about police agencies, so if there is a detective or some investigator from a law enforcement agency, if they are there as part of the case, basically this body coming into that agency, they would do the documentation in terms of photographs for you?

PETERSON: That's correct.

HARRIS: Now, if something is found on the body, or some type of item is there, is it collected?

PETERSON: Normally it is. I guess it would depend on the object. For example, if a body were found in an, on a surface where there were a lot of small stones, and there were a lot of small stones stuck on the body, we wouldn't necessarily collect them all. Oftentimes that's a collaborative decision between me and the agency. Sometimes a criminalist will want things that I don't view as being important. Sometimes it's the other way around. But that's part of the normal process is working out exactly what's collected, and what's not.

HARRIS: So as you go through this process of doing the examination of Miss Peterson, it's being documented. You gather, you collect these items that you have been describing?

PETERSON: Yes. For example, the clothing was all removed, and that was taken and packaged up by the criminalist.

HARRIS: When you removed clothing from the body, is there a process for doing that? Are you just kind of undressing them?

PETERSON: If possible I like to remove clothing intact. So, for example, to remove a bra I'll just unfasten it as it would normally be unfastened and remove it. Sometimes that's not possible. And sometimes clothing has to be cut. But as much as possible, I'll try to take it off just as it is.

HARRIS: And these items, were they collected?

PETERSON: They were.

HARRIS: And so as part of this collection process, is it your process to keep these items? Or is that something that the criminalist or the detective or investigator would take those items and preserve them?

PETERSON: They would be kept by the agency. We don't retain these sorts of things at the office.

HARRIS: So you are going through and describing for us the items that are associated with the body. Can you describe for us the condition of the body as you are doing this external examination?

PETERSON: I think the appropriate term for the condition of the body would be that it had sustained a large number of postmortem changes. I tend to try to avoid terms like severe, because that means different things to different people. I think it's more than suitable simply to describe the condition. As I said, in this case, the head was missing. The neck was missing. The forearms were missing. The left lower leg was missing. So a lot of that material was simply gone. In terms of soft tissue, from the bellybutton on up, there was very little sort of tissue remaining, and the bones were exposed. So as the body was received, I could see the ribs. I could see the shoulder blades. I could see the vertebral column, the spinal column. From the waist on down, there was still soft tissue in place. Largely fat that had undergone a postmortem change, and had become a substance called adipocere.

HARRIS: Can you explain that for me?

PETERSON: Sure. That's a process that involves exposure of fat to a cold, moist environment. And the fat undergoes a chemical change, becomes a soapy, rancid kind of material. That's adipocere. And, for the most part, the fat in this case had begun that process.

HARRIS: You are saying the fat is exposed to this cold environment. Is this something that happens instantaneously?

PETERSON: No. I would say that adipocere information takes a period of weeks to months.

HARRIS: And cold environment, could a, such as a marine environment, or being in the ocean, have that type of effect?

PETERSON: Sure.

HARRIS: In this particular case, when you are looking at the clothing, I'm not sure if you noted this or not, or you didn't say it or not. Was there a label on the pants as well?

PETERSON: The label on the pants was a brand label that said Motherhood. And there was a size indication of S.

HARRIS: And that particular label was, or in your examination, was there any indication that this particular individual might have been pregnant?

PETERSON: Maybe not specifically from the clothing. Certainly by time I got to the uterus, I determined she had been pregnant. I'm not sure if I could have discerned that from the label of the pants alone.

HARRIS: Okay. As you so you continue through this external examination, and you are describing for us what you found, did you notice anything else that was on the body, or anything that was attracting your interest at that time?

PETERSON: Well, again, the, one of the challenges of this case is that part of the examination that was really external was also internal, because there were internal elements exposed that wouldn't normally be exposed. So as I was looking at the extremities, the arms and the legs, as I mentioned, the forearms were missing. The left lower leg was missing, but the joints were there. So I was able to look at those joints and determine that I could not find any specific marks on the joints that I would call tool marks. So, for example, if a joint were taken apart with a knife or a saw, or some other implement, that will oftentimes leave marks on the bone. There were no such marks.

HARRIS: And what would that indicate?

PETERSON: Well, it could be one of two things. One possibility would be that tools were not used to remove the extremities from this body. And certainly being in a marine environment, and subject to animal feeding and tidal effect, as the body moves around based on the tides and so forth, by itself can remove extremities. The other possibility would be that tools were, in fact, used to remove the extremities, but was simply done in a careful enough way so as not to leave

tool marks.

HARRIS: And has it been your experience finding that if somebody was using tools on a body to remove extremities?

PETERSON: Well, I guess when I find tool marks, and I determine based on that that the tools had been used, it's kind of a self-fulfilling prophecy, isn't it? But, certainly, it's not exactly easy to remove extremities and not leave marks. So when I see a case like this where there are no tool marks, my assumption would be that tools were not, in fact, used.

HARRIS: You said it was the one, first possibility you were saying was the marine environment having an effect of doing this. This disarticulation where these limbs or these bones are removed, how does that process work?

PETERSON: A lot of it has to do with understanding how a body acts in water. And once somebody is in the water and dead, however they get there, because of center of gravity, the arms and legs are heavy, and the body floats face down, with the arms and legs hanging down. Initially, typically the body also sinks. So at this point we have a body with arms and legs hanging down low in the water. Meaning down as far as it can go. In other words, close to the bottom. At that point, due to tidal action, current, et cetera, that body is going to move along the bottom with the arms and legs hanging down, and those parts that are low are subject to being injured by stuff on the bottom: Rocks, debris, ship parts, whatever happens to be down there. So by a combination of decomposition and tidal action alone, even in the absence of animal activity, the parts that are hanging down can be lost, and the parts that do hang down would be just that, the forearms, the lower legs, the head, the neck, and so forth. Now, of course, the other possibility in a marine environment is that animal activity is in involved as well. As I said earlier, that can be large animal activity, larger fish, sharks, et cetera, down to smaller animal activity. And just depends on what's there.

HARRIS: Now, you are talking about this body, Miss Peterson being in a marine environment. So when you are looking at this initial general observation, was there something on the body that was giving you a strong indication she had been in a marine environment?

PETERSON: Well, I think the adipocere was helpful. There were barnacles on bone that was also helpful. To me, the mineralization, the stony deposits on clothing, was also an indicator.

HARRIS: Now, to go back to that. One of the things that you said, barnacles on bones. Could you describe that for us?

PETERSON: Well, I did not see barnacles on soft tissue. But to my eye, one, I believe it was the femur, there were barnacles. I couldn't get any more specific than that. I don't really know a whole lot about barnacles. I know one when I see them, I guess.

JUDGE: Tell the jury what a femur is.

PETERSON: I'm sorry. Thigh bone. I was stuck on barnacles there. So seeing barnacles, to me, was suggestive that the body had been in a place with access to the organisms that forms those things, namely marine.

HARRIS: So you are going through the process, again, of doing this. And you have said a couple times now that the external examination was somewhat also the internal examination. Normally, in a regular autopsy, do you kind of open up the body, look inside?

PETERSON: Sure. There is, like you can pretty much see on cable TV these days, we do use a Y-shaped incision in a normal case. We approach the front of the chest by cutting the ribs, and through that process expose the organs in the chest: The heart, the lungs, and so forth; the organs in the abdomen: The intestines, liver, kidneys, spleen, pancreas, et cetera. They are removed in a sequential fashion, examined individually. Samples are taken. The next step is to make an incision between the ears and across the top of the head, remove the skin back to

expose the top of the skull. Use a saw to remove the top of the skull and extract the brain. So in an ideal case, where all those things are there, that is a normal process. Again, in this case, there is no brain to examine, because the head was missing. There were no heart and lungs to examine, because the chest was empty. Inside the abdomen there was no liver, spleen, kidneys pancreas, or intestines. That was all missing. And, in fact, the only organ remaining in the abdomen was the uterus.

HARRIS: And I'll ask that, I guess kind of a dumb question. What is the uterus in the anatomy?

PETERSON: Well, the uterus is where a baby would develop. The womb would be the lay term. Originates low in the pelvis. And I think for estimation purposes, in a woman that hasn't had children, might be the size of a golf ball or so. This uterus was substantially larger.

HARRIS: Let's go back through this. You said before that the clothing was not necessarily an indication that this person, Miss Peterson was pregnant. But you indicated when you got to the uterus, it was a strong indication. I want to go through that. And again just so the record is clear about anatomy, the uterus is only found in a female?

PETERSON: Correct.

HARRIS: And so you look at this uterus. Can you describe for us what your findings were?

PETERSON: Sure. The uterus, in the first place, from the lowest portion of the uterus where it connects to the vagina, to the uppermost portion, the fundus, measured 23 centimeters. That would be roughly ten inches. As I said, normally, a uterus in the non-pregnant state may be the size of a golf ball. So an inch and a half or so. In greatest dimension, this is substantially larger. In the non-pregnant state, the uterus is almost solid muscle. There is obviously a cavity on the inside of it. But just to feel it, to make a section across, it is a relatively solid muscle. This uterus was markedly thin. The thickest, and I measured the wall of the uterus in several locations. The thickest was two millimeters, very small, all the way to nothing. Up near the top of the uterus it actually been, to my eye, abraded, and was open. So up there there was no wall. So the thickness of the wall ranged from nothing to two millimeters. So, in summary, what we have is a uterus that's much larger than a normal, non-pregnant uterus. The wall is much thinner. And as I put those two things together, I determined that that had been a pregnant uterus.

HARRIS: So, again, just kind of ever translating it into lay people's terms, that would mean that this individual had been pregnant?

PETERSON: Correct.

HARRIS: And you talked about the location, kind of where the uterus is at. When you look at this, you make this determination this individual had been pregnant, did you look to see if she had delivered this baby?

PETERSON: I did. The portion that, the term would be birth canal. So the lower portion of the uterus would involve the cervix, and then is the passages within the vagina. Those structures were closed. So a baby had not passed out in that direction.

HARRIS: You say not had not gone through?

PETERSON: Correct.

HARRIS: Did you look to see if there was some type of incision, like a C-section?

PETERSON: I did. And normally when Caesarean sections are performed, the incision is down low. It's near the pubic bone. And there was no incision in that area.

HARRIS: And in terms of how that baby would get out of that uterus, what was it that you found?

PETERSON: I was left with only the one other choice, and that was at the top of the uterus, the fundus was open. So I determined that the baby had exited through the top of the uterus.

HARRIS: And, again, just so that we're clear about that, the top of the uterus you are describing as the fundus, where is the fundus at?

PETERSON: Probably the simplest way to think about that is it would have been near the bellybutton. A little bit higher.

HARRIS: And in terms of orientation, is that straight out, away from the person, or more straight up?

PETERSON: Up within.

HARRIS: If I can have marked a series of photographs at this time.

JUDGE: Okay. This will be 257. And how many do you have there, Mr. Harris?

HARRIS: 11.

JUDGE: That will be A through K.

JUDGE: These are autopsy photos?

HARRIS: Yes.

HARRIS: Doctor, I'm going to present to you 257A through K, ask you to look at these and see if you recognize what's depicted in these photographs.

PETERSON: I do.

HARRIS: And are these photographs the remains of Laci Peterson as you observed them when you performed your autopsy?

PETERSON: Yes, they are.

HARRIS: And do they accurately depict those items?

PETERSON: Yes, they do.

HARRIS: Doctor, just to describe it some way, are these fairly graphic photographs?

PETERSON: Yes.

HARRIS: Starting with 257A. Can you describe for us what we see this photograph?

PETERSON: All right. This is a photograph of Laci. It's a little bit hard to get oriented. But essentially, if she had had a head, it would have been to the right. Her feet would be to the left. And she's lying on her back.

HARRIS: Doctor, if I were to give you a laser pointer, would that help?

PETERSON: That might help.

JUDGE: Maybe stepping up to the, it would be easier for you, doctor, to step up with the pointer, rather than using that laser.

PETERSON: As long as I don't block their view.

JUDGE: That's okay. If you can stand to the side, I think that works good. The pointer right behind you. You have a nice loud voice. I appreciate it. We'll be able to hear you.

PETERSON: I'll project, your Honor.

JUDGE: Why don't you stand over there. It's a lot easier to do it that way. Thank you very much.

PETERSON: Is that going to work okay?

JUDGE: Yes.

PETERSON: All right. So if there had been a head, it would have been right here. The arms are in upright position like so, with the forearms missing. That's why they appear short. This is the

bra in place on the body. Portion of the pants and the panties are down here. This sort of hollow area is where normally it would be filled out by the organs in the abdomen. They are all absent. Left leg. Right leg. That would be the right fibula. The tibia is the other lower leg bone, has already been removed.

HARRIS: And looking at that, do we see at least portions of the duct tape that you found on the body?

PETERSON: The duct tape was right here, going over the front of the leg on the right. I guess the other change I could point out is all this crumbly white material, that's adipocere that I was talking about. So that's the fat that's undergone a chemical change in a cold, moist environment.

HARRIS: Showing you 257B. You can describe for us what we see here?

PETERSON: All we have done for purposes of this photo is turn Laci Peterson up on to her right side. Now we're looking at her from behind. As I said, a lot of the soft tissue is missing. So the bra would have been up in this area on the front of the body, which is now facing away from the camera. We're seeing here ribs from the back. Also the backbone, the vertebral column right here. Still some fat left on the back that's undergone that adipocere change. Same thing on the buttocks. Portion of the waistband here. At the far lefthand side of the picture you can see the left thigh bone up at the top.

HARRIS: You are describing the area of the waistband. Is that all of that, that dark band there, all of that from the waistband?

PETERSON: Yes.

HARRIS: 257C.

PETERSON: Again, the top of the body is to the right. Feet, if there were any, would be to the left. Here is the thigh bone on the left, the femur. And what we're showing here is the joint surface, very smooth and normal looking. So it's more or less a picture of what's not there. When I talk about there being no tool marks, there are no tool marks on that bone. A little bit harder to see down here at the bottom of the fibula on the right. But same thing. No tool marks there either.

HARRIS: 257D.

PETERSON: All right. Portion of the leg bone here. And those are the barnacles.

HARRIS: So from the external examination where you are looking at Miss Peterson's remains, these barnacles were visible?

PETERSON: Correct.

HARRIS: Now, the picture changes orientation here. 257E.

PETERSON: It did. All right. Now, the top of the body as far as the, towards the bottom of the photograph. So this would be right arm. This would be a left arm. This is the very top of the vertebral column, the backbone. Just to show that that's missing, the neck is missing, and head is missing. This is the bra still in place. More of that same adipocere change in the breast fat.

HARRIS: Now, talking about the spinal column. Just using the lay person's term here. Did you examine that to see if there were tool marks or any type of damage there as well?

PETERSON: I did. And that's the point of this picture. And the same answer, there were no tool marks there either.

HARRIS: 257F.

PETERSON: I talked little earlier about peculiar shredding of the trousers. And this is the effect that I was talking about. So there is still some intact material there, but a lot of it being reduced

to essentially these balls of thread, pieces of thread.

HARRIS: To the left side of this photograph, do we see where the duct tape goes up towards the zipper area?

PETERSON: Right. That silvery material is the duct tape.

HARRIS: And at the top middle of the photograph, is that the bottom of the zipper, there?

PETERSON: A little bit hard for me to see from this angle. I think, I'm not sure. That might be the zipper there.

HARRIS: If you need to any time come over and look at the actual photograph instead of trying to look backwards at the screen, that's okay. 257G. You can describe for us what we see here?

PETERSON: All right. There were some rib injuries in this case. And if I had my report in front of me –

HARRIS: Tell you what. If we, I'll have you resume the stand. We'll talk about the ribs for a few minutes. Have you found your place in the report?

PETERSON: I have.

HARRIS: You indicated that there --

GERAGOS: Could I ask where on the report you are looking?

PETERSON: Certainly. On page two of the autopsy report. This would be the fourth paragraph.

GERAGOS: Thank you very much.

JUDGE: Go ahead.

HARRIS: You indicated there was some rib injuries. Could you describe for the jury what it was you found during your examination?

PETERSON: As I stated in my report, one portion of rib number nine on the right appeared frayed. The ribs, in terms of their ends on the left, were intact. There were fractures of left ribs five and six.

HARRIS: Let's go back all the way through that. The end of rib nine, I believe it was you said was frayed?

PETERSON: Correct.

HARRIS: What is that describing?

PETERSON: The way ribs work, most of the rib is bone. So beginning with the attachment at the backbone, extending around the side, that's all bone. Now, when you get towards the front, and it varies from person-to-person, and with age. But beginning, say, at the nipple line or so, in a younger person, some of the rib is not bone. It's cartilage. Which is a softer, more rubbery material. As people age, that cartilage tends to ossify, that is, turn to bone. But that's a variable finding. So what we're seeing in this case is that that part of right rib number nine, which would have been over here, was frayed. Presumably that would have been where there had been cartilage.

HARRIS: Going to go back through that. You were making a gesture when you said right rib number nine.

PETERSON: I had to switch sides. I started on the wrong right. So right side over here. And rib number nine is a little bit lower. So where that joined the cartilage, I don't think I have cartilage any more. But if I were younger I would have. And that was where the end of the rib was frayed.

HARRIS: Let me go back, just ask something that's kind of a basic, when you were describing anatomical injury to a person whoever it is that you are performing the autopsy on, you referred

to the right. Would that be your right, or is that that individual's right?

PETERSON: That's the person's right. So if you looked at it on yourself, you would be thinking your right side. When I'm talking about right, that means the right side.

HARRIS: And you were saying rib number nine, can you give us a basic anatomy lesson on our ribs?

JUDGE: Other than he's already testified to?

HARRIS: Is there a rib number one?

PETERSON: Rib number one is right at the top of your chest. All right. And you can feel just below your collar bone. And you can actually feel your own ribs, count down. For numerical. If you are right around the nipple line, number four going to five. And then just keep counting down. Ribs obviously get shorter as you go lower. That cartilage area gets bigger. So where nine joins the cartilage, that's frayed. When I use the term fray, by the way, I'm trying to be clear about what I saw. But I'm not trying to make a judgment as to what caused it. Because, to my eye, I couldn't say if this represented injury that happened before death or after death. So I just called it frayed.

HARRIS: Now, is there, in terms of the terminology, since you are talking about that, that's used by pathologist, is there terminology for things that happen before or after death?

PETERSON: Sure. If we can say for sure that a injury happened before death, that's called antemortem, a-n-t-e. If we know for sure that it occurred after death, that's postmortem. If we don't know, and we are, despite what you see on television, there are a lot of times we just don't know. A good term would be perimortem, p-e-r-i. The implication being there is a window on either side of death, and it could have occurred anywhere in that window.

HARRIS: So we have gone through rib number nine. And then you next indicated there were something with other ribs that occurred. There were fractures of left ribs, five and six?

PETERSON: Those are higher. These were lateral fractures. In fact, they were up near the shoulder blade on the left.

HARRIS: What is a lateral fracture?

PETERSON: When we talk about anatomy, the most basic way of approaching a body is, the front is anterior. The back is posterior. The side is lateral. It's a relatively large territory. But lateral would imply be the side.

HARRIS: So this would be a fracture to the side of a rib?

PETERSON: Correct.

HARRIS: And which particular rib you indicated was the left side?

PETERSON: Left ribs, five and six.

JUDGE: Are they portrayed up there, doctor?

PETERSON: Yes, your Honor.

JUDGE: Can you show us up there on the photograph?

PETERSON: Sure. One of the things that I did do at autopsy was to cut out one of those left side rib fractures. So I'm going to show you something that's not here. But it was there. So right here would have been the fractured portion of the left rib that I excised.

HARRIS: Going to the next photograph, 257H.

PETERSON: This is the end of the right rib that I was talking about. And it's kind of neat, because you can see a normal rib end here, and a frayed end here. I think we have a closer-up

picture. Kind of hard to see with the glare there. But the idea is that the end of the rib here has a nice squared-off geometric look to it. Over here is not quite so regular. And I think, again, frayed is a reasonable term for that.

HARRIS: What, let me put up the next photograph, which is257I?

PETERSON: Perfect. So here would be a more normal end, a square, geometric type. Look at the frayed end. Simply much more irregular.

HARRIS: Next, 257J.

PETERSON: More area where there had been fracture. More adipocere. Again, showing a couple of things. Number one, this injury that I took to be a postmortem, and also the postmortem change, namely, the absence of so much tissue, and that same change in the fat.

HARRIS: Then the last photograph, 257K. Can you describe for us what this is, what we see here?

PETERSON: All right. The top of the body, I'm pointing in the direction of the back of the courtroom. That's where the top of the body would be. This blue towel was placed across thighs and the pelvis basically for photographic purposes. And I simply swung the uterus down on to the towel to take a picture of it. So what we're seeing here is the uterus. This is the inside, normally. So that's the muscular wall inside. Because it is swung down, the orientation is reversed now. So up here would actually be the top of the uterus when it's swung back in anatomic position. And that's where it was, where it had come apart. I described the edge of that as being friable, crumbly, fragile. I did not see, speaking of tool marks, I did not see evidence of tool marks on the uterus, such as cuts, for example. Simply this friable, crumbly edge.

HARRIS: And you can go ahead resume your seat.

JUDGE: You can switch that off now.

GERAGOS: I have got to have him explain another --

JUDGE: Go ahead.

HARRIS: With regard to what we're looking at in this particular photograph here, you said that the only organ that was remaining in Miss Peterson was her uterus. Is there anything that, forensically or anatomically, is significant about the uterus?

PETERSON: Well, in terms of why it was the uterus there, perhaps, and other organs weren't, smooth muscle organs like the uterus in a woman, and the prostate gland in a man, tend to be relatively protected down in the pelvis, relatively resistant to degradation. So oftentimes there could be a lot of other parts missing, we'll still have that to help us determine the sex of the person. I guess that would be the main forensic significance. As I said, my other conclusion, based on the uterus, because it was enlarged and was thin, it had been pregnant. Now, at the point that I got this body, there was nothing left in the uterus. So there was no baby in there. There was no placenta in there. But the uterus remained enlarged from having been pregnant.

HARRIS: Now, you had mentioned earlier a little bit about the decomposition process. I want to go through that. In this particular case, it's, from the lay person's point of view, it's fairly obvious that there has been some type of decomposition of this body. And I want to go through, now that we have seen these photographs, explain to us what is the changes that's occurring, how the body ends up getting this way.

PETERSON: Okay. Once you are past the early postmortem period, there is a number of chemical changes that can happen. The first is called Autolysis, A-u-t-o-l-y-s-i-s. The implication there is that the body normally contains chemicals that can be quite destructive, but they are controlled in life. These would include the acid in the stomach, the enzymes in the pancreas. And, after death, those organs could actually start digesting themselves. That's autolysis. The

next step is decomposition. That typically involves microorganisms, like bacteria. You have a lot of bacteria in your body normally, especially in the gastrointestinal tract. Once you are dead, there is nothing more to control those organisms, so they just start eating and producing their own byproducts, such as gas. So we can observe a body, and talk about early postmortem decomposition, or the body looks relatively like a normal, fresh, dead body. Next stage will be described by various ways like terms like bloated where, because of that internal gas pressure, the body starts inflating. Next stage after that, again, there are many terms for it. But I think active is a good stage. And active decomposition, that gas vents by the orifices that are naturally there, the mouth, the rectum, and so forth. Body starts collapsing. Decomposition starts happening faster. Ultimately, depending on the environment, you end up at a dry stage where perhaps there are few leathery portions of skin and muscle left, then just bones. Now, obviously this process can be variably fast or, in some cases it can be, well, retarded. Think about mummies, for example. And other cases it happens really, really quickly. Most especially in a very warm, moist environment. Above ground burial in New Orleans, for example. In this case, in a moist, cool environment, there are a couple other changes. And I have already mentioned the main one. That's adipocere formation. So that affects the fat beneath the skin. So these are the processes that involve the body's own enzyme systems and also microorganisms. Now, what we have to layer on on top of that is the effect of a couple other factors. One would be animals. And on land, that can be any type of scavenger animal: Insects, birds, coyotes, and so forth. Those can all effect the body, carrying off pieces. And in a marine environment, same idea. Anything from larger fish, like sharks, all the way down to smaller things likes crustaceans. Finally there are physical effects to consider. And it's not so much of a factor in burial, and it's not so much a factor on dry land. But in a marine environment, the body is subject to movement by tides and current, and so forth. And that movement, with the impact of things against the body that are on the bottom of the body of water, body bumps against things. Either way can work just fine. That can cause damage to the body too.

HARRIS: When you are taking about damage to the body, we're talking about a decomposing individual. That damage, what type of results does it produce?

PETERSON: Typically things go missing. So one of the things that happens in decomposition is that tissue becomes softer. In fact, in the meat industry, decomposition produces tenderization. So a certain amount of decomposition is thought to be favorable. Well, in a body under these kind of conditions, decomposition obviously goes a whole lot farther than that. So as the tissue becomes more fragile, more fragile more vulnerable to trauma, and that trauma is inflicted by the body moving, or things moving against the body, things simply come off. So, as I said, in the absence of any other factors, if this body were simply loose in the water, it would be very easy to lose pieces in this order: Arms, legs, head, just due to those factors. Decomposition, plus the body moving physically with the tides and current.

HARRIS: Now, you were indicating some of the ribs that you were describing for us and showing us in the photographs, that these were postmortem injuries. How is it you can actually look at a body like this, how can you tell something is postmortem or not?

PETERSON: That can be difficult. In a fleshed body, sometimes we can determine ante versus postmortem based on there being, say, bleeding in the soft tissue. So if you were to, say, hit somebody in the chest hard enough to break a rib in life, you probably would have bleeding in the soft tissue too. Well, once the soft tissue is gone, that can be very difficult. And, in fact, looking at the fractures in this case, I think it's difficult to say. I commented in my report that there were multiple rib fractures. I think probably the best to try to determine when those happened would be to talk to somebody who is an expert in bone, that would be an anthropologist, to make that determination.

HARRIS: Now, in this particular case, did you, in Contra Costa County, consult with a forensic anthropologist?

PETERSON: Yes, we did.

HARRIS: What is the name of the forensic anthropologist that you consulted with?

PETERSON: Doctor Sally Galloway.

HARRIS: Now, as part of the consultation, you talked to the individual on, I'm assuming, but did you have Doctor Galloway come and look at these remains?

PETERSON: Well, again, it wasn't so much my decision. It was others who brought her up. Yes, she did come up and examine the remains independently.

HARRIS: And are you aware Doctor Galloway also prepared a report based on her examination of the remains?

PETERSON: She did, yes.

HARRIS: Now, in this particular case --

JUDGE: Are you going to go on to some new area now? We can take the evening recess, rather than –

HARRIS: I would request that we do.

JUDGE: All right. Ladies and gentlemen of the jury, we'll take the evening recess now. We are going to go into a new area here.