

DEPARTMENT OF DEFENSE BLOGGERS ROUNDTABLE WITH CAPTAIN JOHN RODGAARD,  
USN; PETER HSU, SCIENTIST, AEGIS DESTROYER PROGRAM; ROBERT NEYLAND, NAVAL  
HISTORY AND HERITAGE COMMAND SUBJECT: DISCOVERY OF REMAINS OF JAPANESE  
MINI-SUB FROM PEARL HARBOR ATTACK TIME: 4:00 P.M. EST DATE: WEDNESDAY,  
JANUARY 6, 2010

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LIEUTENANT JENNIFER CRAGG (Office of the Secretary of Defense  
for Public Affairs): Well, everybody's on the line, so with that, we're  
going to go ahead and get started. I'd like to welcome you all to the  
Department of Defense's Bloggers Roundtable for Wednesday, January 6th,  
2010. My name is Lieutenant Jennifer Cragg with the Office of the  
Secretary of Defense for Public Affairs, and I'll be moderating the call.

A note to everyone on the line: Please clearly state your name,  
blog or organization you're with prior to asking your questions.

Today we have three guests with us. If all of you watched the  
PBS "NOVA" special last night at 8 p.m. Eastern Standard Time, they  
held a -- they played a documentary, if you will, about the discovery of  
the remains of a Japanese mini-submarine. And three of the gentlemen --  
U.S. Navy Captain John Rodgaard, scientist Peter Hsu and Dr. Robert  
Neyland -- he's of the Naval History and Heritage Command -- participated  
in the mini-sub identification. They're on the line with us, and we're  
going to go ahead and talk about that.

So without further ado, I'd like to turn it over to Captain  
Rodgaard, if you'd like to start with the opening statement, and then  
we'll go right into questions. Sir, the floor is yours.

CAPT. RODGAARD: Thank you very much.

This journey of ours began in 1993. I was TAD out to Hawaii,  
and I was introduced to the historian Mr. Dan Martinez, the historian of  
the USS Arizona memorial. I was shown this photograph, and -- which I'd  
seen many times before, but as with all things in our world, myself and  
my colleagues, to include Dr. Biache, who's with us, are in the imagery  
world, and we always say that there's always more than what meets the  
eye.

And the question that was posed to me by Mr. Martinez was this - (audio break) -- the photograph, there's an object, and Mr. Burl Burlingame, who is a noted correspondent for, I think, the Honolulu Star-Register -- (audio break) -- in his book "Advance Force: Pearl Harbor" that the object that was taken -- that was seen in this Japanese attack photograph was a mini-submarine of the Imperial Japanese Navy.

And the question posed to me was, can we either confirm or refute Mr. Burlingame's assertion?

So that's how the journey began. It was 1993. In -- on December 7th, 1994, we presented our findings to Mr. Dan Martinez of the USS Arizona memorial, in which we, based on our expertise base of photogrammetric science and imagery intelligence analysis in naval operations, we concluded that the object was a Type A mini-submarine of the Imperial Japanese Navy.

Not only was it a Type A submarine, but we also determined that, at the instant the photograph was taken, there is a plume of water rising amidships of the USS West Virginia, one of the battleships.

And we traced the torpedo track from that explosion point back to the origin, which coincides with the presence of that submarine. We also saw another torpedo track that was heading towards -- what appeared to be heading towards the USS Oklahoma. We had seen in the photograph that there were more torpedo tracks in the water than the aerial splash point.

So what I'm getting back to all of you, ladies and gentlemen, is that we all know Pearl Harbor was an aerial attack; what most of us didn't realize -- well, I did because of knowing a little bit about history -- that it was a combined arms operation involving -- involving midget submarines together with 20 fleet submarines that were out around Pearl Harbor. But the history recorded, though, that there was only one of these five submarines that had been launched from their mothers that had made it into the harbor, and of that, it failed in its attack. What we demonstrated initially was that a second one had actually entered and also was successful in its attack.

So from that journey we continued on. In 1998 we were joined by Mr. Peter Hsu. Mr. Hsu -- I can say in embarrassing him, as I like to do -- is probably one of our Navy's treasures. He's an extremely accomplished naval architect, forensic analyst, as well as a beautiful artist. He does all our photographs -- I mean paintings for our commissionings, ships' commissionings.

Peter's expertise came to the fore. His expertise in forensic shock analysis of the effects of underwater explosions was -- he was able to demonstrate, looking at what we could see in the water, the effects of the torpedo, that demonstrated that the torpedo that struck the West Virginia was of a greater explosive power than the aerial torpedoes that we know were fired against and successfully hit the Battleship Row.

So if you would, our findings were illustrated briefly, although I think succinctly, in yesterday's documentary, and that kind of leads off -- that's where we are right now.

I'll defer at this point.

LT. CRAGG: Okay. Thank you, sir.

Let's go first to Jim. Jim, you were the first one on the line, so please go ahead. Q Hi. Jim Dolbow, with the Naval Institute Blog. I have a question for Dr. Neyland. Can you just give us a little background on the Naval History and Heritage Command's Underwater Archaeology Branch?

MR. NEYLAND: Sure, be glad to. We're responsible for managing the Navy shipwrecks and sunken aircraft. And there are some 3,000 Navy shipwrecks out there, and some 12(,000) to 15,000 sunken aircraft. And we deal from a period of the -- of the Continental Navy up through -- well, I guess, you know, certainly through World War II. And, you know, there's -- with the question of the -- of Japanese mini-sub, I mean if this -- if the one that was shown last night in the documentary was salvaged during the war and then dumped offshore as, you know, what is hypothesized there, then it would -- probably would come under the management authority of the Navy.

You know, I might -- I've been kind -- looking at the question of how you could really determine where there -- whether or not that submarine was indeed in a shallow-water environment -- say, in West Loch, which is what is proposed in the documentary, and then was salvaged and then -- and brought offshore and dumped. But there's no record of that salvage.

And you know, Navy -- you know, one way to look at that is to try to look if you ever could, you know, look, you know, inside that submarine, where there maybe was a proposed scuttling charge; to see if there was any marine organisms from a shallow-water environment.

But I might throw back a question to either Captain Rodgaard or yourself, that I know that the submarine was -- the pieces of the submarine were found by the Hawaiian underwater research lab called HURL. And, you know, starting in -- I guess they found the first piece in 1992, and then they also found the Japanese mini-sub that was sunk by the USS Ward just, you know, before the attack on Pearl Harbor.

And I know there is an alternate theory by -- put forth by HURL that -- you know, their theory was that the submarine may have indeed, you know, made an attack, but they thought that it -- more likely it had attacked the USS St. Louis, because St. Louis, as I understand it, was leaving the harbor. And they thought that, in their theory, that the mini-sub would have a very difficult time operating under the surface of the water, and would have to be -- you know, would have to be on the surface. Q Thank you so much.

CAPT. RODGAARD: Okay. Yes, Bob, we're aware of that, and it's been documented in Mr. Burlingame's book, "Advance Force Pearl Harbor."

LT. CRAGG: Thank you, Jim.

CAPT. RODGAARD: Two torpedoes apparently -- and this comes from the -- was the USS -- wasn't the Helena -- was it the Helen that broke out? I forget which light cruiser that was, but -- it was the St. Louis; that's right.

MR. : St. Louis.

CAPT. RODGAARD: That's right. The St. Louis.

As she was sorting out of Pearl Harbor, she came under attack. I guess from this particular vantage point, I would also say at that point in time in the vicinity there were five fleet submarines that were in close proximity to the entrance of Pearl Harbor. They were directed to move over to Lanai to rendezvous with the midget submarines or mini-submarines. This is my understanding. One might have still been there; I don't know.

I can say that I think that's open for -- open -- open up at this point to argument, I guess. But yes, I am aware of -- I'm aware of that. We all are aware of that. And Mr. Burlingame did reference that in the book.

What's fascinating is that if -- go through his book -- he's documented eyewitness accounts that takes us from right after the attack, in which lookouts from the stricken battleships had seen what looked like a small submarine moving out towards the entrance of Pearl Harbor, last seen in the afternoon hours by a first class petty officer at the lower tip of Ford Island. And he said he apparently saw what looked like a tower, the sail of a small submarine, moving out, and it was prior to, if it in fact was found in the West Loch, okay -- was prior to that point, Bob, where the entrance and West Loch join.

So, you know, I don't know how much far I can say about it -- gentlemen, any -- Andy, Peter? -- about the St. Louis thing? MR. : Well, there were a lot of operational subs ringing around, you know --

CAPT. RODGAARD: Right.

MR. : -- (about ?) the entrance, whether it was a firing -- had a lot of sightings, you know, that -- by different (humans ?), who, you know -- (audio break) -- going to get probably into that with the Arizona -- maybe not, but they're contradictory, so --

CAPT. RODGAARD: Right. Right.

Peter, any thoughts?

MR. HSU: No, no.

CAPT. RODGAARD: Okay.

I know -- that's where we are at this point with the St. Louis.

LT. CRAGG: Thank you, sir. Thank you, Jim. Didn't mean to interrupt earlier.

But let's go over to Andrew. Andrew, you're next. Please go ahead.

Q Gentlemen, this is fascinating, Andrew Lubin here, from The Military Observer. Are there any plans to locate or at least try to locate the other three submarines that you are launched -- were launched?

CAPT. RODGAARD: Bob, if you would, I could handle that. We could handle it from our side.

MR. NEYLAND: Sure. If you guys want to handle that, go ahead and, you know --

CAPT. RODGAARD: But you could pick up from there?

MR. NEYLAND: Yeah, absolutely.

CAPT. RODGAARD: Okay. Andrew, there were five submarines that were launched, ranging between time 00:51 in the morning of December 7th through almost 3:00 in the morning on the same morning, the 7th.

The first submarine is the submarine that we can -- we say is the submarine that was found in the photograph and the submarine that has been documented in the -- in the NOVA show last night.

The second submarine, which was released somewhere around -- let's see, where's it at -- at 01:16, that submarine history records had successfully entered Pearl Harbor.

And during the course of the attack, she fired her two torpedoes. Both missed their targets. She was subsequently sighted by the Destroyer USS Monaghan as the Monaghan was sorting out of Pearl Harbor. The Monaghan altered course and rammed the submarine, sank her and depth-charged her.

The submarine was later recovered, salvaged. She -- the two crewmen were removed and given full military honors. And the submarine, after it was exploited by ONI, was then dumped into a landfill.

The third submarine that was launched -- and that was launched at 02:15 -- was the submarine that was caught by the USS Ward, the one that was recovered by -- was sighted a couple of years ago.

And Bob, I'm not sure how long ago that was. I forget now.

MR. NEYLAND: That -- yeah, that's the famous one. That's the one that everybody knows about.

CAPT. RODGAARD: The one with the shell hole, the Ward, on the first round. That's -- (inaudible) --

MR. NEYLAND: Right.

CAPT. RODGAARD: -- then pickled her, and she went straight to the bottom.

MR. HSU (?): (And they took the gunner down to look at it ?).

CAPT. RODGAARD: You're right, and --

MR. NEYLAND: John, that was 2002 when the other submarine was found, the one that was sunk by the Ward.

CAPT. RODGAARD: Roger that. Thanks, Bob. And the fourth submarine, she was recovered -- well, what happened was, she was launched next at time 02:57. During the course of the attack, she never made it into the entrance. She was -- she beached on the reef, and was sunk.

And then what was interesting is, in 1960, when the -- if you're familiar with Honolulu International, it had a huge offshore runway. That runway was in the process of being built. And lo and behold, the -- here was the submarine.

The submarine was recovered by Navy salvage. And the -- after two-thirds of her -- oh, by the way, her torpedoes were (still ?) in her -- the after submarine was -- I mean, the -- after two-thirds of the submarine was removed from the forward part that had the torpedoes, that part was exploded by Navy EOD. And the remaining part of the submarine was sent to the Japanese and now sits with a false front at -- in a place of honor at the Japanese Naval Academy.

The fifth submarine, which most people would know who are into this, was launched last at time 03:33 approximately. They had gyro problems and stability problems from the very outset, as well as battery problems, that was creating a lot of toxic air.

The commander of that submarine, lo and behold -- why he went the way he did -- wound up going around Diamond Head, heading east, and eventually beached itself at Bellows Point on the North Shore.

That submarine was subsequently recovered, was used as a propaganda/war-bond-raising mechanism and now rests at the Arlington museum of the war of the Pacific in Arlington, Texas.

So that's what we know of those five submarines.

Q Thanks very much.

MR. NEYLAND: John, I might just add, that's Fredericksburg, Texas.

CAPT. RODGAARD: Oh, I'm sorry. I -- yes, thank you, Bob. I'm sorry.

MR. NEYLAND: I'm a native Texan, so I'm familiar with it.

CAPT. RODGAARD: You're right. I definitely stand corrected.

LT. CRAGG: Great rundown. Thank you.

Thank you, Andrew.

Let's go to Joe.

Joe, please go ahead.

Q Yeah, I have two or three questions if we have time.

But the first one is, I just watched the show on my DVR before we started.

CAPT. RODGAARD: You're with whom?

Q Oh, sorry. I'm with Defense Tech, part of military.com. As I understand you, there were originally two separate research projects. One was yours looking at the famous Japanese aerial photograph. And the other separately was the Hawaiian Underwater Research Lab effort.

Could you explain a little bit more? How did the two projects converge? And how did their data help you and lead to the analysis that you're offering now?

CAPT. RODGAARD: There's no congruence at all.

Q Oh, okay.

Could you explain that then?

CAPT. RODGAARD: All right.

Well, I would think if anything, they knew that there was obviously a fifth submarine. And their expedition was independent of ours. I think, and this is just speaking for myself -- and please, my colleagues and friends could jump in -- maybe I guess our findings maybe did something to spur their continued research.

But of course, they didn't really need that, because I think originally -- Bob, do help me out on this -- they were probably looking for the Ward submarine.

MR. NEYLAND: That's correct, John.

This is Bob Neyland again. They were looking for the Ward submarine, I believe starting in -- maybe 1992 or '94, in the '90s. The

Park Service, National Geo had asked the Hawaii Underwater Research, HURL, to use their submarines to locate the Ward. And later on -- in one those initial surveys, they found a piece of this submarine that was in the documentary, but it was in pieces and had cable attached to it, and it obviously had been salvaged.

Q Yeah, right.

MR. NEYLAND: So they continued on. Bob Ballard had an expedition, I think around 2000, to look for -- again for the Ward submarine, funded by National Geo, again without success. But I think they found another piece of this submarine during that expedition.

Later, in -- later a few years after that, they continued -- you know, they did find the Ward submarine, and they noticed this -- the feature on the Ward submarine, the figure eight net -- submarine net cutter, which is very distinctive and only occurred on the five Japanese mini-subs used in the Pearl Harbor attack. And because of that feature and they had seen the feature on one of these pieces of the submarine that had been salvaged, they went back and looked at it again and talked to experts and concluded this must be the last missing Japanese mini-sub.

Of course, the big mystery is, what is it doing where it is, outside in a thousand feet of water outside Pearl Harbor and in what is obviously an area -- a dumping area used by the Navy, with other World War II debris around it.

And I'll let perhaps somebody else talk to that issue. (Pause.) If anybody wants to volunteer for that. (Pause.)

Q Well, if not, let me then just make sure I follow you. The footage that we see on the NOVA show from the two Pisces mini-subs, that was filmed while you yourselves were going down, you're saying, to take a look at mini-sub five, which was discovered sort of by serendipity by other researchers. Is that correct?

MR. NEYLAND: It was found -- the pieces of that mini-sub were found before the sub sunk by the Ward. And it had been known about since the '90s, at least one piece of it.

But it's in sections. It has a cable attached to it, a salvage cable. It had been obviously dumped offshore there.

And, you know, the conclusion is that this is indeed one of the -- you know, one of the mini -- original five mini-subs, but the mystery is why it is where it is, why it's disassembled. And there's no record of it having been found and salvaged out of Pearl Harbor.

MR. NEYLAND: But if I may, I noticed, Joe, you said number five. There was one thing about the show last night that I think gave the viewers maybe a slight -- a timeline that's not correct. We consider that the number-one submarine, based on the Japanese records of the release times. And --

Q Yeah, I just picked that up. I guess I was confusing you, because I'm using the nomenclature from the NOVA show, number five.

MR. NEYLAND: Which I'm -- we never had a chance to look at the show, and we would have said, "You're giving an impression of a timeline that is not correct." Because our work -- and I'll be very emphatic about this -- we did a lot of timeline research on all of this, and especially when we get into Peter Hsu's analyses of the effects of the exploding torpedo.

And there's -- see, that snapshot, as we mentioned, is more than what meets the eye, but it's also a time capsule. For example, if you look at the background, you can see that Hickam's on fire. Hickam was struck about 0750 or so. And then you see the results of the first torpedo strikes in the -- (audio break) -- of the ships and whatever. And then you can also see the timeline, if you would, from the exploding torpedo on the West Virginia tracing back to the submarine. The routes are tailed and everything. So we're -- (audio break) --

Q Right.

MR. NEYLAND: -- there's a time capsule.

So not to get off too much more on that, but I think it's very important to recognize, is that we've put together a very intricate timeline, if you would, and we still haven't finished it yet, which we hope to be able to do. Oh, by the way, it's -- let's see, who was Naval Institute again?

MR. : Jim Dolbow. LT. CRAGG: Jim Dolbow.

MR. NEYLAND: Yeah, Jim. That's one thing we've been asked by Rich LaTour (ph), to write about a 500-word essay on the continued research. And that's what we're going to be working on.

MR. : Timeline.

Q Outstanding.

CAPT. RODGAARD: Oh, by the way, for your information, if you didn't know, we were authors of the year for naval history on our work back in 2000.

Q Excellent. Let me just ask for clarification quickly, there was a major article in Naval History Magazine not very long ago, talking about the photogrammetric analysis, timeline, et cetera, of that photograph. Were you guys the ones who were involved in the work in writing that article? I forget the authors' names.

CAPT. RODGAARD: Yes, the authors' names are, at that time, myself; Peter Hsu; our dear friend and colleague, who just died about a year ago, Mr. Carroll Lucas; Captain and Dr. Andrew Biach.

Q So what's offered on "Nova" is, in a way, an update on your work, with some other things that the producers may have put in. And just for my own information, you're saying that you were really not directly involved in, quote, "editorial control" of what they show on TV.

CAPT. RODGAARD: That's correct.

Q Okay. That helps me a lot. Thanks.

CAPT. RODGAARD: It's not an update. It's basically a synopsis of the work that we performed up through 2000.

Q Oh, okay. Okay, thanks very much. That's very helpful here.

LT. CRAGG: Thank you, Joe.

Chuck, please go ahead.

Q Yes.

CAPT. RODGAARD: Sorry, who is this?

Q Chuck Simmins, from America's North Shore Journal.

I wanted to ask about the submarine defenses for Pearl Harbor. What did they consist of at the time? And did the mini-sub's circumvent them, or were they just fortunate in -- in finding a way in that passed the defenses? CAPT. RODGAARD: Bob, you want to take a shot at it, and then we can jump on?

MR. NEYLAND: Well, I may not be the best person to answer that question; you know, I'm -- there were submarine nets, but I believe there was a clearance on the -- whether they knew it, whether the mini-sub's knew it or not, there was a clearance on those submarine nets. You know, I would -- I have no idea whether or not they were deployed at the time of the attack.

Q Well, you know, it was mentioned that all of the mini-sub's had a cutting mechanism on them. And obviously, if the nets had been cut, that would have been discovered, correct?

CAPT. RODGAARD: Right, well -- if I may, Bob -- you're right, they were actually anti-torpedo nets, that only went down so far. Whether the Japanese -- I'm not aware of whether the Japanese had the intelligence to know that there was a difference between the fact they were torpedo nets or full anti-submarine nets.

Obviously, as you just said, they had the anti -- well, they had the cutting devices, the figure eight plus the wire, leading up to (the sail ?), to anticipate that. I think to their surprise, when they went down close to the bottom of the -- of the channel, that they were able to clear it with no difficulty.

There was also another line of defense. I'm -- we're still not certain exactly what it was, but it could have been something analogous to what the British invented during the Great War period, which was basically under -- a bottom type of MAD gear. Now, they called it a light -- do you remember, guys? What was it called? A light sensor something?

MR. : Yeah.

CAPT. RODGAARD: And --

MR. : Then they opened the nets, of course, for the --

CAPT. RODGAARD: And -- okay, and during that time the nets were opened because we were -- and had anticipated and we had two ships arriving. So there was the Antares coming in, and then also we had minesweepers that were sortieing out to do a sweep, as well as the USS Ward had sortied out.

So the nets actually had been -- that's right, I stand corrected. The nets were open during the time that the first two submarines were able to get in. And they were opened, and I think if I -- my memory serves correctly, they were closed somewhere just after the attack. But that was -- but then they remained open because we had ships sortieing out.

MR. : Right. Right.

MR. NEYLAND: I believe that's correct, John. This is Bob Neyland again. Could -- John, could you perhaps address the issue about the stability of the mini subs at periscope depth? I know I've heard that they were not that stable at periscope depth, and that's why they were -- they were running on the surface, and the Ward itself, you know, spotted the conning tower of the submarine that it attacked and sank, and then the same with the one rammed by the Monaghan.

CAPT. RODGAARD: : Well, I'm going to ask Peter to step in on that. MR. HSU: Hi, this is Peter Hsu. When you say -- when you talk about stability, are you talking about the pitching motions or when they fire a torpedo, or just the --

MR. : Cruise.

MR. HSU: -- the cruising?

Q Well, I believe it would be cruising. It was -- my understanding is the dive planes were not sufficient to maintain a stability at periscope depth or at lower depths.

MR. HSU: Well, based --

Q I've seen that stated.

MR. HSU: Based on the design feature, the diameter versus the length ratios, and -- the midget submarine is designed for high-speed maneuvering.

At high speeds, the rudder and the planes are supposed to have the ability to steer at the target. But at low speed, where you use the rudder to maneuver, you may consider it a little bit (under-designed?). But it is sufficient to turn and steer the submarine.

However, at a later stage, they did increase the plane area to have a larger turning capability. That's correct.

Q This is Chuck Simmins again. Wasn't it most common for submarines during the war to launch their torpedoes while on the surface? I know that there was a lot of active gunnery from submarines. And I thought maybe they were also torpedoing from the surface as well.

MR. HSU: Well, the midget submarine was (practiced?) to launch a torpedo at periscope depth. (And?) that depth, which correlates to the torpedo, was set to run at 16 feet. So the correction on the torpedo would really have not much to (correct with it?), and so they were (practiced?) to launch them at periscope depth.

CAPT. RODGAARD: To jump in, if I may, when you're looking at the history of submarines operations on both the Axis -- as in the German side -- the Royal Navy and the U.S. Navy, for example, it depended on the tactical situation. Nighttime operations, I know we conducted surface firings, because it gave our submarines much quicker dash speed, maneuverability.

Germans did that. In fact, you know, just after Pearl Harbor, Admiral Donitz had sent six submarines westward. And if you've read the book "Operation Drumbeat," the boats were mostly firing their guns to conserve their torpedoes. Our defenses, even after almost three years of war, were, I could say, embarrassing, to say the least. And it was a -- it was a happy hunting time.

So depending on the tactical situation, and as well as daylight/nighttime, you would have both submerge, as well surface, torpedo attacks. And also, the gunnery would be involved. So it was tactically dependent.

MR. NEYLAND: John and Peter, this is Bob Neyland again.

LT. CRAGG: Bob, can I just add one more thing? We still have one more blogger we didn't get a chance to ask questions. And it's Taylor, and she called in fifth. At some point, I want to bring her in as well. MR. NEYLAND: Okay, by all means. I'll make this question very quick. Is -- but the -- just the question on the -- your analysis of the aerial photograph, the midget sub in that one is on the surface?

MR. : Peter?

CAPT. RODGAARD: Yes, it was on the surface, but the reason why it was on the surface -- I'll defer to Peter very quickly -- it was -- it was because the effect of the exploding torpedo brought this -- if you would, aggravated the boat's stability and raised her to the surface, to be exposed.

Peter?

MR. HSU: Well, again, let me explain that the (tracing ?) -- just imagine you're looking at a picture. All right. From the point of the West Virginia, the port beam, you will see a second stage of an explosion, exploding plume. For the lack of a better word, we call it the first plume in the -- in terms of an underwater explosion. And that explosive phenomenon is actually a bubble expansion in terms of milliseconds, and that shock wave would pass in about a hundred milliseconds, radiate out towards the target, which is the alleged midget submarine.

And the phenomenon caused the waters around this region to cavitate, and because of that cavitation, in layman's terms, it generates a lifting force that will launch subjects in vertical motions. And that torpedo exploding against the West Virginia caused the submarine to launch upwards, exposing the propellers and the stern, and generate the largest plume, which we call the rooster tail, and you can tell distinctly that there's a (total difference on ?) that rooster tail. And if you compare that rooster tail against the one -- the (two ?) behind, there's a time lapse. And those rooster tail was not generated by the exploding torpedo. That was because of the concussion wave that was generated on previous explosion when the airdropped torpedo exploded against Battleship Row and expanded out because the bubble expanding and contracting caused that shock wave to move out and the submarine (pitches ?) up and down, exposing partially the propellers and generates those rooster tails.

So that's definitely between the three rooster tails, and that whole entire action, you were -- for lack of better words, was because of the underwater exploding phenomenon, creating the vertical motion that launched the submarine up.

Q So you're saying -- sorry to interject -- the ride for the two men on the first mini-sub must have been very rough and uncomfortable and also very noisy during the attack.

MR. HSU: Yeah, you're correct.

MR. : I wouldn't have been wanting to be in one.

Q No, seriously not.

LT. CRAGG: With that, I'd like to interject and just add Taylor. Taylor, please go ahead.

Q Sure. This is Taylor Kiland. I write for The-Navy-Log-Blog, which is run by the Navy Memorial here in Washington.

And you said the one remaining question is the location of this midget sub. And I was just reading an article, which I think was originally posted in the Los Angeles Times, that said something about -- it alleged that the Navy scooped up the remains of some of the LSTs and dumped them outside the harbor, and that it might have also scooped up the mini-subs -- the remains of this mini-sub at the same time. Is that something that you-all can address?

MR. NEYLAND: Yes. This is Bob -- (audio break). (In 1944 ?) there was a disaster in West Loch where they preparing for invasion of Saipan and loading ammunition onto a -- one of the LSTs; the ammunition exploded; and because the ships were so close together, there were multiple explosions; and it was a huge disaster. And it was kept somewhat secret because of the invasion of -- the invasion plans.

In cleaning up West Loch, removing debris from these explosions, there were, you know, landing craft vehicles that were, you know, removed and taken offshore and dumped outside the harbor in the deeper water, which was called a defense zone. I don't remember exactly specifically what it was called, but there's a large dump site there of World War II debris. And the mini-sub is right in that area with the other debris, the pieces of this -- the mini-sub, which, again, were obviously salvaged. They're in three to four pieces, only there's one piece that still has not been found, about a 15-foot section, after the conning tower.

But these pieces have cable on them, steel -- you know, steel rope from being salvaged. They were obviously separated by someone cutting the bolts from the outside around the flanges to, you know, make this -- put it into manageable sections for the salvage operation.

However, there is no record of -- of a mini-sub being found in 1944 during this cleanup. So none of the records as yet have spoke to this whole issue about a mini-sub being found in the West Loch area, salvaged and carried offshore. You know, to me, that's still a bit of a -- a bit of a mystery, how it got out there and how it, you know, was salvaged.

CAPT. RODGAARD: Yes, Bob, if I could just jump in, I mean, that's one thing that -- you mentioned about the 15-foot section that's still missing. If in fact -- if it's in the harbor, in the West Loch, then we've got it. But I don't know.

Would you think there would be any opportunity or any chance to try to look for it again -- look for it?

MR. NEYLAND: Okay, Bob Neyland again. Well, there -- there was a cultural resource survey in the West Loch area, and they did not find any for -- this is -- this survey was for a dredging operation. And they didn't -- they didn't find anything other than, you know, some submerged piers and docks.

Now, I don't know if that survey occurred in the right area. It certainly is possible to resurvey and look at that area but, you know, it has been -- over the years there's been dredging activity within West Loch, too. So anything that might have been there, a section, 15-foot, could have been lost during that dredging operation.

And I kind of interjected earlier on in my comments -- because this is still, you know, kind of a big mystery to me -- is how it got where it was, or where it is today, rather, and -- you know, and how you could apply science to try to figure that out.

HURL has done, you know, quite a lot of research just from the photographs of the pieces of the mini-sub, and that's how they determined that the bolts had been cut from there. They determined again that the torpedoes were missing; and having someone who specializes in biocorrosion, you know, lay out the theory that they probably, you know, were lost at the time that either the sub sank or before the sub sank. Otherwise, it would be too corroded for those torpedoes to be removed.

But, you know, one possibility that came to mind is if there -- if the marine organisms in West Loch in the shallow-water environment are deeper -- or are different than those that would be found in a deeper environment 1,000-foot offshore outside of the harbor, if -- you know, if there was -- you know, someone could, you know, sample the section of that mini-sub that was believed to have been scuttled at the time of the sinking, then maybe -- you know, maybe that is one -- or it could be one bit of evidence or proof that it was resting in a shallow-water environment originally.

LT. CRAGG: Well, with that, we're -- we went past -- excuse me. We went a little bit past Roundtable time for about 30 minutes. And I hope everybody had ample time to ask their questions.

Any other lingering questions out there from any of the bloggers on the line?

Q I have one lingering question. This is Taylor Kiland again.

There seems -- this discovery was not made that recently. And yet doing a Google search, there seems to have been a lot of announcements made on or around December 7th of 2009.

Was that in conjunction with the "NOVA" documentary? Was that just to generate publicity for the documentary? There wasn't any major announcement that you all were making then, was there?

CAPT. RODGAARD: Not from here.

I think you're correct on that assessment, Taylor.

Q Okay, thank you.

CAPT. RODGAARD: If you do go -- for example, if you -- if you Google Peter Hsu -- Peter K. Hsu, H-S-U, my name, Captain Biache's name, you'll probably see references to the articles that we submitted to Naval History, as well as news articles from Los Angeles Times -- you name it.

Q Okay, yeah.

CAPT. RODGAARD: And I was also interviewed by BBC America the second week of December 1994.

Q Jen, one real quick question?

LT. CRAGG: Go ahead.

Q So to summarize what I think I'm hearing, two mini subs actually did penetrate the harbor. One successfully attacked an American ship. And one torpedo as far as we know was successful in striking an American ship. CAPT. RODGAARD: Yes.

MR. HSU: The West Virginia.

CAPT. RODGAARD: The USS West Virginia.

Q And the other three never made it in near enough to stage the attack.

CAPT. RODGAARD: Correct.

Q All right. Thank you.

Q Well, that's interesting. It triggers a question, quickly, that I had from the NOVA episode, fresh in my mind here, which is they seem to be saying that only one mini had penetrated the harbor, not two; and that based on the eyewitness survivor from Arizona, who said he saw a sub-launched torpedo trail coming straight at him and that a dud Long Lance was also salvaged during the war in Pearl Harbor, that it could not be possible, therefore, that another mini-sub or the same one mini-sub also fired two torpedoes towards the West Virginia and the Oklahoma. And they made this sound like this was a persistent mystery of history.

But what I hear you gentlemen saying is that there were two minis that did penetrate, which accounts for the four or so torpedoes that were in total, supposedly, fired, and that that, at least, is one mystery resolved.

CAPT. RODGAARD: If I could correct you -- and then correct the show --

Q Oh, please do.

CAPT. RODGAARD: There were no Long Lance torpedoes.

Q Interesting.

CAPT. RODGAARD: Okay? That's number one.

Number two, the second submarine that entered the harbor, that history records as being the only submarine that penetrated -- okay? -- was sunk by the Monaghan on the western side of Ford Island in the channel -- I forget the name of the town there --

MR. : Pearl City.

CAPT. RODGAARD: Pearl City. That was the one that was recovered.

So what we're really talking about, I guess, is the eyewitness accounts stating the torpedo striking -- or approaching Arizona; also the fact that a torpedo was recovered somewhere -- we have our ideas about that -- and relating it to a submarine-launched torpedo based on weight.

And I'm going to defer to Peter on this because it's an interesting assessment with regard to where we think -- or how we thought they weighed that torpedo.

Peter.

MR. HSU: Well, first of all, the air-dropped torpedo was designated Type 91, which contains a warhead -- (short audio break). It's about 450 pounds. And the total weight of that torpedo weighs about -- (short audio break) -- pounds. And compare that to the Type 97, which is carried by the midget submarine.

The warhead is 770 pounds, plus the containing module, and -- altogether roughly about 800 pounds.

MR. : No, no, not 800.

MR. HSU: (Off mike.) And --

MR. : (Off mike) -- sorry.

MR. HSU: The torpedo's different. Let's look at it this way. So it's not a long-range torpedo, and torpedo are detonated by explosives charges, right? For a thousand-pound explosive charge, this does not really correlate to any of the physical weight of any torpedo was there. And certainly it's not -- it's not what you normally do -- like, you know, you cut the torpedo up and weigh the warhead. And I would think probably that the torpedo was weighted (sic) at the hull, and for whatever is left of that remaining torpedo.

So anybody want to add something to that?

CAPT. RODGAARD: Well, I was going to say -- and it's something we've thought about, for those who watched the documentary, that apparently a torpedo struck the Arizona -- that's the impression we were left with -- and didn't detonate. Well, I don't know about you, but I

don't think a -- an object such as a torpedo that winds up being a dud, striking an object at 30-some knots, is going to remain intact.

MR. HSU: Forty-two knots.

CAPT. RODGAARD: Forty-two knots. Thank you, Peter.

I don't know about you, but I think it would basically shatter.

LT. CRAGG (?): Yeah.

Q Oh yeah, that's a good point.

CAPT. RODGAARD: So I would leave it at that. I can't say that, based on memory -- and I would have to refer to Dan Martinez, the historian of the USS memorial -- Arizona memorial, I remember early on when we were looking at the photographs, he said, see that flash point which is near the Oklahoma, out away from the Oklahoma but near her? That -- he said it actually was a torpedo that had been dropped late and too steep by one of the aircraft, and it jammed itself nose-first into the mud at the bottom of Pearl Harbor. And what you're seeing was the propeller generating a -- what looks like a flash point -- (audio break). And I remember -- my memory -- memory serves me correctly, that's what Dan told me. That may be the torpedo they're talking about. That could correlate to what Peter was saying about the total weight of the airborne launched torpedo.

I don't know if that helps.

LT. CRAGG: Well, with that, I'd like to interject. I'd like to turn it over to Captain Rodgaard, or anyone else who'd like to end with any closing statements, and then we'll wrap up today's roundtable.

Sir, the floor is yours again.

CAPT. RODGAARD: Bob, you want to go first?

MR. NEYLAND: No, no. I'm going to -- I'm having to -- I'm going to have to get off the phone, so I will -- I will let you -- I will -- I'll let you handle it.

CAPT. RODGAARD: I know you're (down at ?) the conference. Is it happy hour time? (Chuckles.)

MR. NEYLAND: Sorry?

CAPT. RODGAARD: Well, I -- speaking for my colleagues and dear friends, I would say our journey continues. There are quite a few things that we could still do.

MR. NEYLAND: Well, again, this is Bob Neyland.

I -- you seem to have the last word, but I would certainly like to find out how that -- those three pieces got out there.

MR. HSU: Well, and they can check one thing, too, that witness account. It's very hard to really get grips on. For one thing, it is not absolute. It's never 100-percent sure. And also, is not a final word.

And for example, like the -- it all depends at the time how the witness saw it. I'm not saying he didn't see it. But for instance, like people who are skiing on a ski slope, when you look down, you say, wow, this is really steep. Well, actually, it may be just 10 degrees. So there are those factor, that witness account has to be really weighted very carefully before we can -- we can really decide whether it was credible or not.

MR. NEYLAND: So do you think it is possible, if someone during an attack who's a lookout on a battleship sees a torpedo track in the water, he's going to kind of very subjectively think, "Oh, my God, it's coming straight for us," when in fact it's not? Is that one possible --

MR. HSU: Possible, because when you were doing the first show on the death of the Arizona, me and my colleague was out actually at the site at about the same time, looking down. With all the reflection on the water -- I don't think that easy to see anything.

MR. NEYLAND: No.

CAPT. RODGAARD: Yeah, Bob, you've been out there a lot, and you know what the conditions at the harbor would be on various dates. And I might add, in conclusion, we're not disparaging the witnesses by any means. As with anything, there is in that photograph more than what meets the eye.

MR. HSU: The photo is the only piece of real evidence that we're looking at. The others, I think they are, you know, pretty much circumstantial.

LT. CRAGG: Well, with that, I'll go ahead and interject again. I thank you, everyone, for the fantastic discussion. I appreciate it.

You've been listening to U.S. Navy Captain John Rogard -- Rodgaard, excuse me -- scientist Peter Hsu, and Dr. Robert Neyland of the Naval History and Heritage Command. Thank you, gentlemen, for participating today. Thank you, for the bloggers that called in.

Of note, you can get access to the transcript, to the audio file, if you visit [www.dodlive.mil](http://www.dodlive.mil). They will all be posted there.

Again, thank everyone for participation, and this concludes today's roundtable.

CAPT. RODGAARD: Thank you.

MR. NEYLAND: Thank you.

MR. : Hey, this has been great. Thanks very much.

MR. NEYLAND: You're welcome.

END.