Eavesdropping on Doomed Sub

A bit of "forensic seismology" has revealed details of a Russian tragedy that otherwise might have remained state secrets. Seismologists taking the pulse of the planet last summer picked up not only the shattering main explosion aboard the nuclear-powered submarine *Kursk* but also a smaller precursor event, suggesting that the fate of its 109 crew members may have already been sealed before the sub hit bottom.

On 12 August, the fatal day, an odd seismic signal was picked up at monitoring stations all around the southern Barents Sea, where the sub sank. Seismologist Terry C. Wallace of the University of Arizona in Tucson and his colleagues soon determined, using techniques for monitoring nuclear testing, that the signal came from the very spot where the *Kursk* went down. The hefty explosion was equivalent to between 3 and 7 tons of TNT—two or three times the size of the Oklahoma City truck bombing.

***Kursk* and seismic record of explosions.**

But 136 seconds earlier, Wallace says, there had been a much smaller explosion—of 50 to 100 kilograms, about the size of a torpedo detonation. (The Russians are believed to have been experimenting with an exotic new torpedo propellant.) That first explosion—which occurred when the sub was near the surface—may have been enough to sink it even before the more destructive blast, says Wallace.

An analysis of the seismic signal from the resulting gas bubble indicates near-bottom pressures at the time of the main explosion. Wallace's analysis offers further evidence against the idea that the *Kursk* suffered an underwater collision.

More noises are still being picked up from the vicinity—apparently from depth charges the Russian Navy has reportedly been dropping to discourage rubberneckers.

Mummy Has a Wooden Toe

German researchers have reported what appears to have been an operational toe prosthesis on a 3000-year-old mummy from Thebes. The wooden big toe, artistically shaped and carved with a toenail, was attached by leather thongs to a socket composed of two short, curved pieces of wood that fitted around the side of the foot. The prosthesis was lashed onto the foot with string.

The toe was found on a woman who died around the age of 55. The researchers say calcifications in small arteries point to circulatory problems that may have led to the toe amputation. Egyptians often fitted their dead with prostheses of missing body parts to equip them for the afterlife. But researchers, led by pathologist Andreas G. Nerlich of Ludwig Maximilians University in Munich, say that wear on the bottom surface suggests that this is "possibly the oldest known intravital limb prosthesis." Another candidate for that honor is on a Thebes mummy residing in the British Museum, which has a fake toe of plaster-treated linen called cartonnage.

The scientists, who report their find in the 23/30 December issue of *The Lancet*, say ancient Egyptian medical papyri indicate that Egyptians relied heavily on potions and herbs but make little mention of surgery. This mummy suggests that they were not afraid to wield the knife when necessary.

Finely crafted toe with socket was firmly tied to forefoot.

Backing the Future of Parkinson's Research

The Michael J. Fox Foundation for Parkinson's Research is in a hurry. The philanthropy hopes to give away its first $1 million in grants by 1 March—less than a year after its founding. Emmy-winning actor Fox, who has lived with the neurodegenerative disease for 10 years, launched the foundation last summer when he left the hit TV series *Spin City*.

So far, money has come from Fox himself, from a gala event during last summer's Republican National Convention, and from a celebrity auction including sets from *Spin City*. The deadline for the first round of awards is 1 February. The foundation will make 10 or so grants of up to $100,000 each for research that "could reasonably be expected to shed light on" the causes, treatment, or cure of Parkinson's disease. Although $100,000 is not a huge sum, "it would fund some pilot studies," says neuroscientist Evan Snyder of Harvard Medical School in Boston. Snyder says that it's impossible to put a price tag on Fox's involvement, which has been "enormous for morale."

Kennewick Case On Fast Track

This spring a federal judge will hear a novel complaint brought by scientists hoping to study Kennewick Man, whose 9300-year-old remains were uncovered in Washington state in 1996. In an addendum filed last week to their 1996 suit, which was on hold for more than 3 years, the scientists accuse the U.S. Army Corps of Engineers of violating the National Historic Preservation Act in 1998 when they covered up the site with 500 tons of soil and rocks. "I'm not sure anyone has ever sued the federal government before on burying an archaeological site for the purpose of preventing archaeological investigation," says Alan Schneider, the group's Portland, Oregon–based lawyer.

The latest move results from an October decision by Judge John Jelderks of the U.S. District Court in Oregon to proceed with the suit, which was brought when the government seized the bones—in response to concerns of Native Americans—shortly after their discovery. A hearing is scheduled for 19 June. "This is a lightning-fast process," says Schneider. "Normally, a lawsuit as complex as this would take up to several years to prepare for a trial."

CREDITS: (TOP) AP; (SEISMIC TRACK) T. C. WALLACE; (BOTTOM) A. G. NERLICH