



## Were There Two Explosions?

Shortly after the Oklahoma City bombing *The New American* received a fax of a seismogram purporting to be the seismic recording of the blast as recorded on an Oklahoma Geological Survey seismometer. The seismogram was of particular interest because it seemed to indicate that there were two explosions of similar magnitude just seconds apart on the morning of April 19th.

It did not take long before wild stories were streaking across the Internet and various fax networks, citing the seismogram as proof positive that the FBI, ATF, or some other government agency had actually perpetrated the crime. Linda Thompson, Mark Koernke, and other self-styled “patriot” leaders notorious for pumping out a steady stream of sensationalistic propaganda combined the seismogram with various hearsay “evidence” to advance their own pet theories about the bombing.

### “Official” Interpretation

As might be expected, the liberal media cartel responded with disbelief and ridicule — which is understandable with respect to Thompson, Koernke, et al, who have amply proven themselves unbelievable and ridiculous (or worse) with their past escapades and false alarms. All of the media accounts that we have seen concerning the seismic record for Oklahoma City on April 19th have linked it to these disreputable sources, thus discrediting by association both the evidence and any interpretation of the evidence that may run counter to the official explanation.

The “official” interpretation of the seismogram most frequently cited is that the two seismic events recorded on the morning of April 19th are best explained not as two explosions, but as one explosion followed by the collapse of the building. As we shall see, there are serious problems posed by this scenario which appears to have been accepted without question by the major media.

The expropriation of (and “tainting” of) the seismic evidence by the “right wing loonies” on the one hand, and the complete discounting of it by the official investigators and the Establishment media on the other, is doubly unfortunate, since it is one of the most troubling pieces of forensic evidence in the case and deserves to be thoroughly examined on its own merits regardless of who may be wrongfully exploiting it.

There are actually *two* seismograms of the explosion(s) recorded by two separate seismometers in the Oklahoma City area, and both recordings show essentially the same thing for the time of the blast. (See illustration below.) One of the seismometers is located at the Omnplex Museum 4.34 miles northeast of the site of the Alfred P. Murrah Federal Building, while the other is located 16.25 miles to the southeast of the blast site at the Oklahoma Geological Survey on the campus of the University of Oklahoma-Norman.

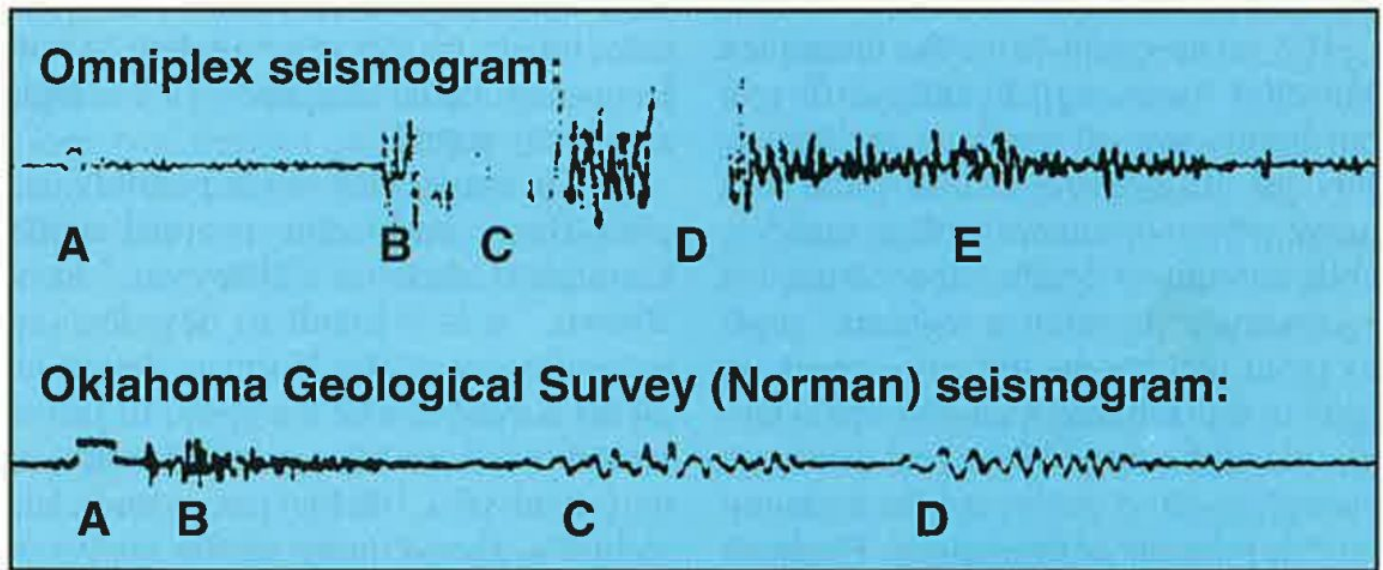
*The New American* contacted the Oklahoma Geological Survey by telephone and talked with OGS geophysicist Dr. Raymon L. Brown. Dr. Brown was very helpful and patiently explained, in both scientific and layman’s terms, the technical and interpretive aspects of the seismograms. However, as wonderful as the miracle of modern telecommunications may be, there were too many details which did not lend themselves to easy and clear understanding at a distance. So, on our recent week-long investigation in Oklahoma City, we journeyed to Norman, Oklahoma to visit Dr. Brown at the University of Oklahoma campus for a thorough “hands-on” explication.



## Examining the Data

In a conference room on the first floor of the impressive Sarkeys Energy Center, Dr. Brown carefully went over the two seismograms, explaining the various wave signals, and then illustrated on a white board the problems inherent in the five explanations that he and others have considered for the events. The seismogram from the Norman station shows three signals between 9:02 and 9:03 a.m. on April 19th. The first signal has a high-frequency character very much like traffic noise (possibly a passing train). The second two events have a low-frequency character much like the signals associated with quarry blasts around the state. They begin with low-frequency signals (the larger wavy lines) and then degrade into high-frequency signals (the smaller waves). The first of these two signals, called Rayleigh waves (or Lg surface waves), was recorded shortly after 9:02 and lasts for about ten seconds. The second event begins about 12 seconds after the onset of the first event and after a quiescent interlude of about two seconds.

The seismogram from the Omniplex Museum looks significantly different but points toward similar conclusions. First of all, because it is located in a noisy city environment with a considerable amount of traffic, the Omniplex seismometer is set at a reduced "gain" to avoid picking up ambient signals. In spite of this reduced gain, the signal amplitude of the April 19th event was large enough to cause the loss of the high amplitude portions of the signals. The heat-sensitive pens on the seismometer were moving so fast that the details of the signal were lost during the highest levels of ground movement. "The two large events on the Omniplex recording," says Dr. Brown, "are represented by the white portions of the record where the signal trace disappears because of the pen movement." Because it was closer to the blast and in the directional path that the main force of the explosion traveled, the Omniplex seismometer also picked up much surface- and airwave energy that did not reach to the Norman station.



Seismograms of Oklahoma bombing may indicate two blasts (slightly enhanced for illustration). Omniplex seismogram: A) minute marker; B) onset of first event; C) blank spot caused by strength of signal causing seismometer pen to move too fast to register; D) second event causes repeat of C; E) minute marker. OGS seismogram: A) minute marker; B) traffic noise; C) onset of first event (explosion); D) onset of second event.

## Five Theories

The first three of the five explanations Dr. Brown has considered view the two Rayleigh signals captured on both seismograms as caused by different types of energy wave phenomena associated with the one blast. The fourth and fifth scenarios consider the possibility of two separate events causing the signals:

1) **Surface wave velocity dispersion.** This phenomenon that occurs with surface waves is due to the fact that low-frequency energy travels faster than higher frequency energy. Surface wave propagation can therefore give the appearance of signaling two events even though there has been only a single seismic source. This phenomenon, says Dr. Brown, “is very much like a car race in which a group of cars has one velocity and another group has a different velocity. If you look at them early in the race they look like one collection of cars, but if you look later in the race the faster cars develop a separate group or package. And that same phenomenon — called velocity dispersion — can result in the appearance of two wave forms for a single event. That difference in frequency I don’t see here, so I don’t feel that is a likely explanation.” The seismogram, says Brown, shows two separate signals, each beginning with “a low frequency signal degrading into a high frequency signal.”

2) **Air wave.** This might possibly explain the second event recorded at the Omniplex Museum. “However,” says Brown, “it is difficult to describe the second event at the Norman station as an air wave because the speed of travel would far exceed the speed of sound in air [which is] 1,100 feet per second. Admittedly, the velocity of the air wave must be supersonic for a certain distance away from the explosion,” but it would be impossible for the air wave to reach the Norman seismometer in the ten seconds recorded between the two signals.

3) **Air-coupled Rayleigh wave.** This phenomenon, says Brown, occurs when “the motion of the air



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induces a type of motion identical to the Rayleigh wave that we observe in the subsurface and causes the appearance of a second event. So you could have the first Rayleigh wave from the seismic explosion and then an air wave pushing and inducing a Rayleigh wave which would come trailing in behind.” That did not seem a plausible explanation in Brown’s opinion, “because most of the felt accounts of the air wave [from the explosion] are out to the north, so most of the air wave was going from south [from the federal building downtown] to the north, not to the south” toward the Norman seismic station.

4) **The building collapse.** This explanation holds that the seismic signals portray two separate events, the first being the bomb explosion and the second being caused by the collapse of a portion of the federal building following the blast. “If you’re trying to explain the second event as a collapse,” says Brown, “you’re saying the collapse of the building actually has a shorter duration than the explosion itself,” since the Omniplex seismogram shows a shorter duration pulse for the second signal. This scenario also suggests that the falling of the tons of building debris would send the same kind of mix of high frequency and low frequency waves as the explosion, which Dr. Brown also finds highly unlikely. Still another problem with that version is the time involved between the blast and the collapse under this scenario: ten seconds would seem far too long a delay.

5) **Two explosions.** His analysis of both seismograms, says Dr. Brown, leads him to the logical conclusion that there were “two separate seismic events” and that the simplest explanation is “two separate explosions.”

As befits a scientist, Dr. Brown is cautious and admits that his conclusions are far from “conclusive” and require “more thorough investigation.” He states, for example, that it is not possible at this time to say with “absolute” certainty that the seismograms in question are related to the Oklahoma City explosion. However, because of the timing at both locations and the absence of any other known phenomenon to explain the seismic signals, it is reasonable to identify the seismograms with the blast.

## A Troubling Question

In order to evaluate Raymon Brown’s analysis, we submitted the seismograms and Dr. Brown’s explanations to other experts in the field. One of the most highly regarded authorities in the field of observational seismology is Professor Keiiti Aki, a seismologist and geophysicist at the University of Southern California-Los Angeles. Dr. Aki agreed with Dr. Brown’s analysis and conclusions. However, he asked a question that also troubled us. “It certainly looks like there were two explosions,” he said, “but I have this question: If there were two explosions that far apart, wouldn’t there have been many thousands of people in the area who would have heard two explosions? But I have not heard of any.”

We had heard of a number of witnesses who reported hearing more than one explosion, but, as Dr. Aki noted, if there were two explosions of similar magnitude one would expect many thousands to report a double event. As we interviewed people in the Oklahoma City area we found a variety of “ear witness” accounts. This was not entirely surprising, considering the uniqueness and traumatic magnitude of the event. Even with more “ordinary” traumatic occurrences — car accidents, homicides, robberies, etc. — eye-witness accounts of the same incident are notorious for widely divergent and sometimes opposite descriptions.

Many of the people we interviewed preferred not to be identified. Some were within a block of the blast, while others were several miles away. Those we talked with who were closest to the blast provided some of the most confusing and contradictory testimony. This is understandable when one takes into consideration that the sensory stimuli overload caused by the explosion was very disorienting. Many



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people who worked within a few blocks of the federal building were knocked from their chairs or from their feet, or had ceilings, walls, furniture, and broken windows crashing into them. Some could not even recall hearing a specific sound, but were simply overwhelmed by the “impression” of a massive explosive event.

One young man who works as a parking garage attendant one block north of the federal building told *The New American* that he was test driving a new pickup truck in the street in front of the parking structure when the bomb went off. “It seemed like one, big, long explosion,” he said, “but I can’t say for sure. My ears were ringing and glass and rocks and concrete were falling all over and around me.”

A manager of a loan company on Hudson Avenue two blocks west of the Murrah building told us he was fairly sure he heard only one blast. It blew out his office’s plate glass windows just a few feet from his desk and knocked down the false ceiling, but no one was injured. Two secretaries who were at the office at the time of the explosion also recalled hearing only one blast. At the corporate offices of a department store two blocks northeast of the federal building, the receptionist on the ground floor was thrown out of her chair and against the wall by the force of the blast. She could not recall actually *hearing* the explosion, but had more the impression of feeling it.

Three construction workers who were on a job just south of the federal building and who were among the first rescuers to arrive on the scene recounted that they remembered hearing only one explosion. However, they said, everything was in pandemonium, with numerous car and building alarms set off by the blast, people screaming and “an incredible amount of noise” from numerous sources.

One reliable witness we interviewed who heard more than one explosion is Lieutenant Colonel George Wallace, a retired Air Force fighter pilot with 26 years experience in the service (1952-78). On the morning of the explosion, Colonel Wallace was at his home nine miles northwest of the federal building. It sounded to him like “a sustained, loud, long rumble, like several explosions.” “I was pouring a cup of coffee and saw it jiggle and shake and immediately ran outside” to see what might have caused it, he recounted to *The New American*. To this combat pilot who has had much experience with explosives it sounded very much like the familiar sound of a succession of bombs being dropped in the distance by B-52s. It was a sound he had heard often in Vietnam and one he didn’t think he would be likely to misread.

Another ear witness who is “positive” that he heard two explosions was in his car five blocks north of the federal building. It sounded to him, he said, like two distinct blasts several seconds apart.

Another highly qualified military expert who questions the single-explosion premise offers a possible explanation for the conflicting testimony. Brigadier General Benton K. Partin (USAF, retired), one of the world’s foremost explosive experts and the guiding genius behind the development of many of today’s precision guided weapons systems, suggests that if a second bomb or series of bombs were detonated in the parking structure below the Murrah building, and if smaller charges were used, the sound waves from the later event(s) may have been much smaller than the original truck blast and greatly muffled by the floor and the debris above it. In the confusion and trauma of the moment they might not have been discerned by many people as a separate event.

As stated earlier, no conclusive answers can be drawn from Dr. Brown’s research, the conjectures of other experts, or the recollections of those who heard the blast(s). There is much still to investigate, and *The New American* will continue to provide updates on this and other aspects of the bombing.



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