Seismic Support

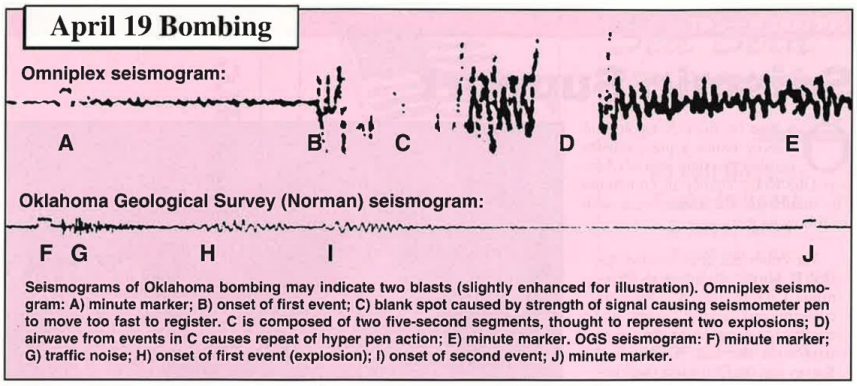
On June 1st, the U.S. Geological Survey issued a press release entitled "Seismic Records Support One-Blast Theory in Oklahoma City Bombing." The release began with the following text:

> The bomb that destroyed the Alfred P. Murrah Building in Oklahoma City produced a train of conventional seismic waves, according to interpretations by scientists with the U.S. Geological Survey and the Oklahoma Geological Survey (OGS).
>
> Scientists from those agencies said the seismic recordings of the May 23 demolition of the building reproduced the character of the original, April 19 seismic recording by producing two trains of seismic waves that were recorded on seismometers near Norman, Okla.
>
> "Seismic recordings from the building's implosion indicate that there was only one bomb explosion on April 19," said Dr. Thomas Holzer, a USGS geologist in Menlo Park, Calif. Holzer is one of several USGS and OGS scientists who analyzed the shock waves created by the April 19 explosion and the May 23rd implosion.

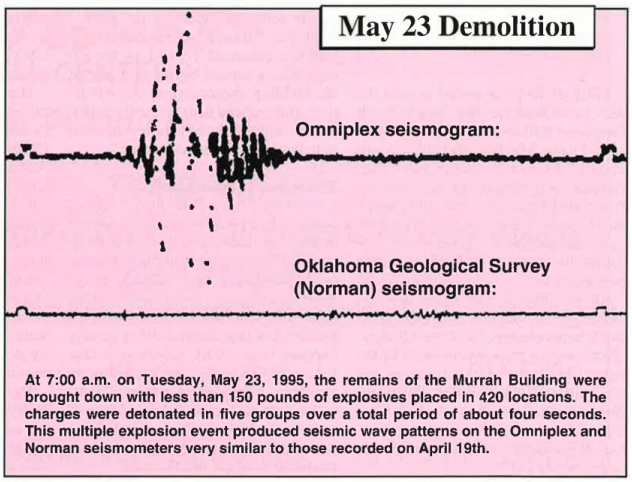
Much of the press rushed to print the story under headlines like "Single Bomb Destroyed Building" and "Seismic Records Shake Murrah Multiple Bomb Theory." Many newspapers and broadcast news programs relied on a June 2nd Associated Press article which reported that seismograms from the April 19th explosion had been "seized on by conspiracy theorists as proof that more than one bomb destroyed the building."

"The multiple bomb theory was discussed on talk radio, at militia meetings and Internet clusters," said the AP story. "Plots ranging from involvement by the federal government, the Japanese and the United Nations were advanced. Now, results of a study by the U.S. Geological Survey and the Oklahoma Geological Survey have produced a simpler, scientific answer."

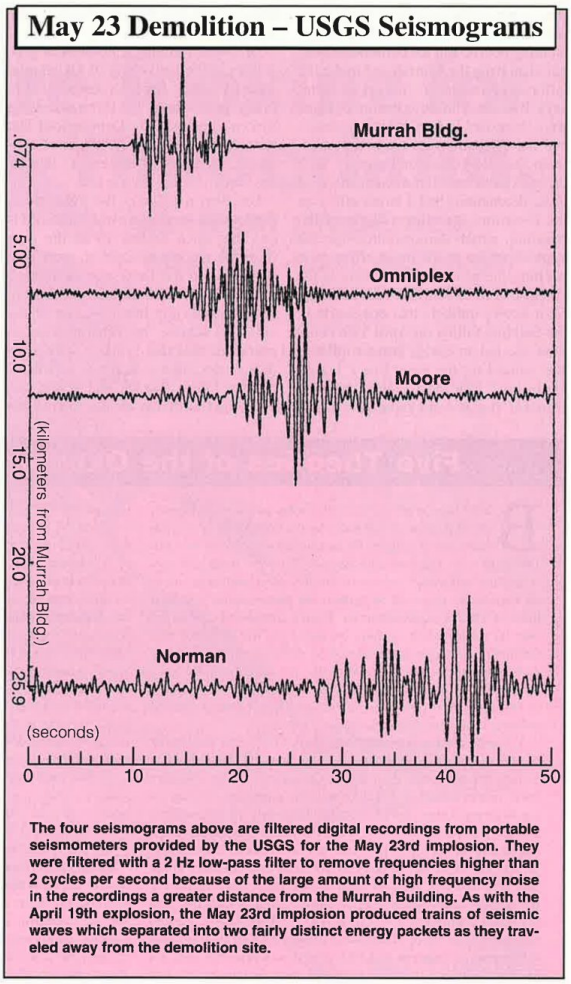
The AP account included portions of an interview with the USGS geologist Thomas Holzer, who explained that what had appeared to be two separate waves on seismograms from two separate explosions on April 19th were actually different waves from the same explosion traveling at different velocities in different layers of the earth's crust. The "illusion" of a double explosion was enhanced, he said, by the energy waves caused by the collapse of the building. According to the AP article, Holzer "said he is aware the explanation might not satisfy those who want to believe in a larger conspiracy."



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. C is composed of two five-second segments, thought to represent two explosions; D) airwave from events in C causes repeat of hyper pen action; E) minute marker. OGS seismogram: F) minute marker; G) traffic noise; H) onset of first event (explosion); I) onset of second event; J) minute marker.



At 7:00 a.m. on Tuesday, May 23, 1995, the remains of the Murrah Building were brought down with less than 150 pounds of explosives placed in 420 locations. The charges were detonated in five groups over a total period of about four seconds. This multiple explosion event produced seismic wave patterns on the Omniplex and Norman seismometers very similar to those recorded on April 19th.



The four seismograms above are filtered digital recordings from portable seismometers provided by the USGS for the May 23rd implosion. They were filtered with a 2 Hz low-pass filter to remove frequencies higher than 2 cycles per second because of the large amount of high frequency noise in the recordings a greater distance from the Murrah Building. As with the April 19th explosion, the May 23rd implosion produced trains of seismic waves which separated into two fairly distinct energy packets as they traveled away from the demolition site.

Taking a Closer Look

Well, that settles the matter, right? Science has spoken, and only militia misfits, talk-radio retrogrades and Internet nuts will continue to cling to their crazy conspiracy conjectures. Correct? So it would seem, if one were to take these reports at face value. However, a modicum of investigative effort quickly exposes how utterly valueless is face value in this case. No superhuman sleuthing, mind you, just a jot of journalistic elbow grease and a smidgen of curiosity — both of which seem to be in deplorably short supply today amongst the paladins of the fourth estate.

Take the USGS press release, for instance, which implies that the scientists at the Oklahoma Geological Survey and the USGS are all in complete accord on this matter. It quotes the OGS director, Dr. Charles Mankin, in such a way as to make it appear that he fully supports the position espoused in the press release and reports that "he is pleased with the work performed by Dr. Holzer and his USGS colleagues in the analysis of the seismic records."

Hmmm. Easy enough to verify. We called Dr. Mankin at the University of Oklahoma's Energy Center in Norman, Oklahoma. Interesting, very interesting. And quite a different story. "Well, in talking with Dr. Holzer about that issue, I had urged him to delay that press release," said Dr. Mankin. "What they have proposed is a plausible interpretation, but there is a difference between a plausible interpretation and being able to support that interpretation with data, and you'll notice that at the end of that press release I note that development of a velocity model for this region is critical to the resolution of their hypothesis."

Dr. Mankin explained what that means in layman's terms: "What they're saying essentially is that you've got energy from one source and it travels through two different media, two different layers of rock, at different speeds. Imagine you've got an interstate highway and a county road next to each other and two identical cars leaving at the same time from the same location headed for the same destination. But the car on the interstate can go 70 miles per hour while the one on the county road can only do 50. Obviously they are going to arrive at different times. That's their theory and it's supported by fact; we know that different layers of rock conduct energy at different rates of speed. Shale will conduct differently than limestone, for instance. The problem, though, is identifying those different velocity layers, which is what we are in the process of doing."

Dr. Mankin explained that this is done primarily by examining the "sonic logs" recorded by industry in drilling for wells. His OGS scientists have been carefully examining "a ton" of such logs to identify the various rock layers in the region and to see if they can match the rate at which energy travels in different pairs of rock layers and find a very fast one and a very slow one that might account for the ten-second delay recorded on the seismometer at the OGS receiving station on April 19th.

"While the work is not finished," said the OGS director, "I will say candidly that we are having trouble finding that velocity difference. We have not identified a pair of layers that could account for the ten-second difference. We have not ruled out their hypothesis, but it is just, as I said previously, a 'plausible hypothesis,' and that is how I had wanted the press release to come out."

Deceptive Interpretation

So, were the substance of the USGS press release and its title, "Seismic Records Support One-Blast Theory in Oklahoma City Bombing," inaccurate? It would certainly seem so. Deceptive might be an even better description. Not that we are saying deception was the intent of the release, but that was the

effect nonetheless. “Of course there is evidence to support [the USGS] position,” says Dr. Mankin, but it does not come close to “proving” it. in fact, the weight of the evidence so far, he says, “still more easily fits a two-blast or multiple-blast model.”

Dr. Holzer may disagree on that last point — and he does — but he was decidedly less emphatic when *The New American* interviewed him by telephone than expected based upon the press release and quotes attributed to him in other publications. We asked if the seismic records could also support a multiple-blast theory. “Yes,” he said. “I want to be clear,” he continued, “that we are not saying that the evidence absolutely rules it [a double or multiple explosion] out. That’s not what we’re saying. But we think the data strongly favors the one bomb.” Dr. Holzer is entitled to his opinion, naturally, but there is a major problem with releasing statements before the raw data has been released to other scientists and before there has been adequate peer review.

One of those scientists who has been deeply involved in analyzing the seismic data is Professor Raymon Brown, the senior geophysicist assigned by Dr. Mankin to lead the OGS investigation. In our May trip to Oklahoma City, we spent considerable time interviewing Dr. Brown and having him explain the various alternative explanations of the seismic records for the April 19th bombing. (See “Were There Two Explosions?” in the June 12th issue of *The New American*, and sidebar on page 16.)

Additional Data

When it was announced that the building would be imploded, Dr. Brown asked Dr. Holzer for help from the USGS in providing additional seismometers so that more data could be collected. The USGS provided four portable seismometers which Dr. Brown and a USGS seismologist placed to record the May 23rd demolition. One of the instruments was located about 300 feet from the bombed-out front of the building, and another located near the town of Moore, about 7.5 miles from the Federal Building. The other two were set beside the permanent instruments which recorded the original April 19th explosion at Norman and the Omniplex Science Museum locations. Thus, there were six seismometers recording data from the demolition.

Since the demolition, Dr. Brown has been engaged full-time in analyzing these data and comparing them with the April 19th records. “Thanks to the USGS instruments, especially at the Federal Building and the Omniplex, we have a very good record of the activity that helps to clear up many of the [April 19th] uncertainties,” says Brown. One of those uncertainties involves the explanation advanced by some that the second event or wave train recorded on April 19th at the Omniplex could be explained as solely the result of the air wave from the truck bomb following up on the ground wave from the same event. The energy continues far too long to be an air wave.

“Now I think that there is no longer a question that there was energy activity at the Murrah Building in addition to the original explosion, and we simply need to determine the source of that activity,” Brown told *The New American*. The leading contenders for the source of that energy are either another explosion inside the building or the falling of the building debris. But the demolition seismic data from the Murrah site make the latter explanation no longer tenable, says Brown. The demolition charges were detonated in five groups, he notes, and the oscillations on the seismogram from the site correspond closely with those explosions. “Even the smallest of those detonations had a larger effect on the recording than the collapse of the building, which demonstrates that the explosives are much more efficient at exciting the ground motion than is the collapse of three-fourths of the building. So it is very unlikely that one-fourth of the building falling on April 19th could have created an energy wave similar

to that caused by the large [truck bomb] explosion." The most logical explanation for the second event, says Dr. Brown, is "a bomb on the inside of the building."

Dr. David Deming, a professor of geophysics at the University of Oklahoma, agrees that Dr. Brown's assessment is "very persuasive." After reviewing Brown's analysis, Dr. Deming told *The New American* that it is "the most convincing analysis of the event" that he has seen.

Dr. Brown believes the evidence is sufficiently straightforward and obvious that once he has all of the data from his models assembled, most professionals in the field who evaluate it will be drawn to the same conclusion. "This is only my interpretation of the data," he admits, "but it is important to point out that this is the USGS' own data — not mine — and it is very compelling. I think that Dr. Holzer and others at the USGS may change their minds once they've had an opportunity to evaluate it."

Unfortunately, very few other professional geophysicists or seismologists had a chance to examine any of the data before the USGS prematurely rendered its "verdict." The U.S. Geological Survey still has not released or published its data and is not likely to do so in the near future. The USGS, however, did provide *The New American* with a set of seismograms recorded by its instruments during the May 23rd demolition of the Murrah Building. With this issue, *The New American* is the first and only publication to have published this data. We are doing so to make this information available to the public and to facilitate independent investigation by professionals in the fields of geophysics and seismology.

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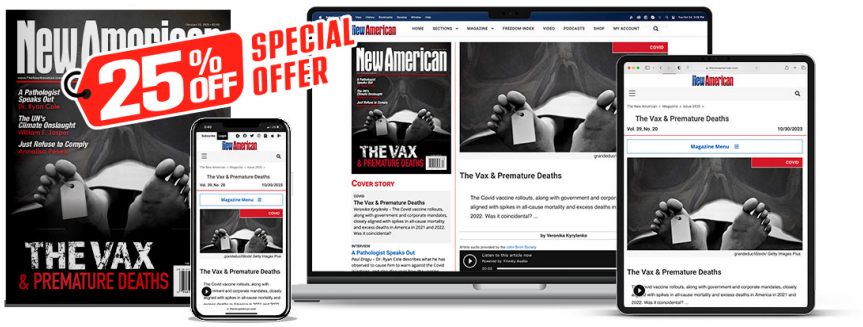

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