

DR. SETI'S STARSHIP

Searching For The Ultimate DX

The Night That Elvis Died

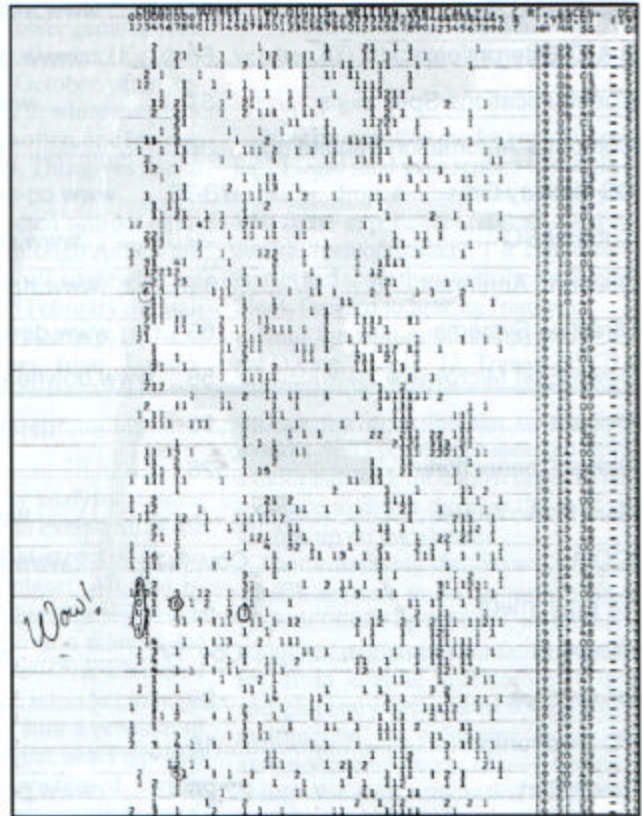
“Wow!” Dr. Jerry Ehman exclaimed, barely able to conceal his excitement. Then he wrote it down, the most important word he was ever to pen, right there in the margin of the computer printout: “Wow!”

Although Jerry Ehman was not a licensed radio amateur, he was doing what we hams do best—searching for the rare DX. On that August evening a quarter of a century ago, he might well have found it.

The object of Ehman's excitement was a page covered with letters and numbers, recently spewed out of a computer at Ohio State University's legendary Big Ear radio telescope. Where most observers would have seen only random data, the mathematics professor and volunteer radio astronomer instantly recognized the hallmarks of artificiality, which he had long sought. “Just maybe,” Ehman thought, “we finally have here proof of extra-terrestrial intelligence.”

Big Ear had already been scanning the skies for four years in what was to become the world's longest-running SETI (Search for Extra-Terrestrial Intelligence) experiment ever. An all-sky survey would ultimately sweep the sky around the clock for fully 25 years in search of that elusive fish in the cosmic pond . . . and there it was, in the data printout for the evening of 15 August 1977, compelling evidence that we are not alone.

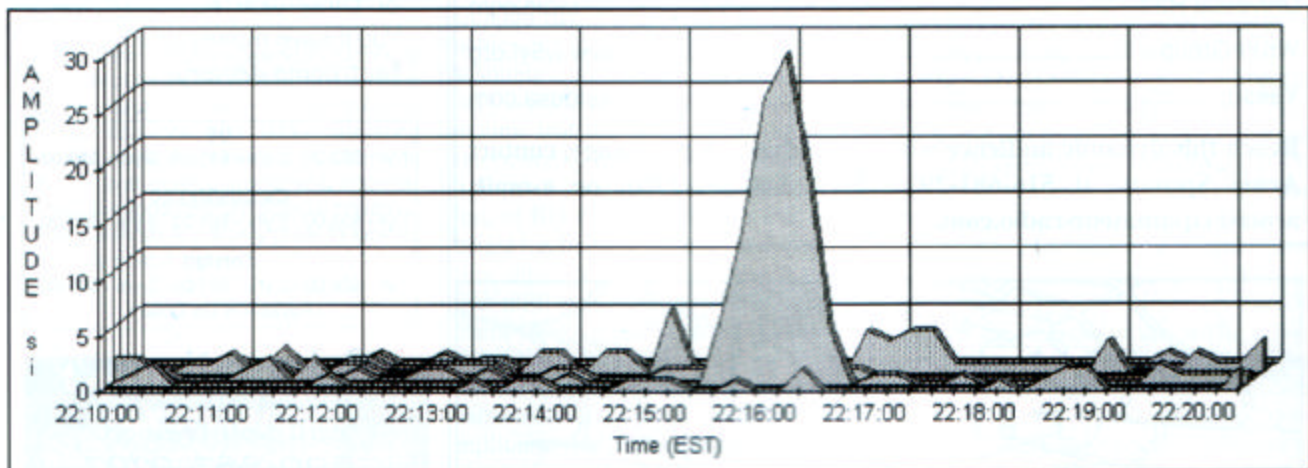
The “Wow!” signal (named for that most important word Ehman ever penned) is the stuff of legend, the most promising and best known of dozens of SETI candidate signals analyzed over the four decades since SETI was born. This signal was even featured in an episode of the television series “The X-Files,” only this detection was not science fiction, but cold, hard scientific fact.



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The enigmatic Ohio State University “Wow!” signal printout, complete with Dr. Jerry Ehman's famous annotation. (Big Ear image)



Plotting the raw “Wow!” amplitudes over time and frequency, we see a pattern that nature could not have produced using any mechanism that we know and understand. (SETI League image)

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Or was it? Rigorous analysis showed Ehman's prized catch to exhibit all of the characteristics we would expect of a radio signal from a distant planet. All, that is, except one—repeatability. The signal was there, briefly, for just over a minute, and then it was gone forever. Over a hundred follow-up studies later, it has yet to reappear, which leaves us with a problem of sample size. A single event, never repeated and not independently confirmed, may be tantalizing, but it does not constitute proof. The statistician says that when $n = 1$, all bets are off, and the "Wow!" has been observed only that one time.

If it was indeed what we think it was, why didn't it repeat? By rights, it shouldn't have—not yet. You see, Big Ear achieved its incredible sensitivity by scanning a minute area at a given time—only a millionth of the sky. Now let us assume that the "Wow!" was broadcast into space by a distant civilization, using a transmit antenna, which is the equivalent of Big Ear. You can see that like a bright torch shone in some random direction, this signal would illuminate a scant one millionth of its sky. What are the chances that these two great antennas, one transmitting and the other receiving, would be pointed at one another at the same time? The statistician says that's a million-to-one long shot, squared—one chance in a million million.

We've looked again a hundred times. So what? We have neither scratched the

surface nor even felt the itch. All the world's SETI projects to date, multiplied a thousand-fold, might just begin to have a chance to detect the next "Wow!" that washes up on our shores.

That's assuming the "Wow!" is indeed what it appears to be. In more than 25 years of follow-on analysis, we have contemplated numerous alternative hypotheses, from satellite interference to lunar and planetary reflections to equipment malfunction to deliberate hoax, and assigned each—except two—a low probability. We are confident that the "Wow!" was either some previously undiscovered natural astrophysical phenomenon or a valid SETI hit.

Either possibility is an exciting discovery; if only we knew which it is. Maybe some day we will. For now, we amateur SETIzens can only wonder and keep searching for the next "Wow!"

There is one other possibility, a hypothesis that scientists hesitate even to discuss, and it is the historian in me that led me to it. The "Wow!" signal was detected on the evening of 15 August 1977. The following day, Elvis was found dead. Could this have been the Mother Ship calling him home? Ah, but we'll never know, will we?

As a sad footnote to this whole affair, just 20 years after Elvis died, so did Big Ear. The land underneath that beautiful 3¹/₂-acre telescope was sold to a developer, and Big Ear was bulldozed under to make room for a commercial golf course.

You see, we have more than Elvis to mourn!