



3. RADIO TELESCOPE

SOLUTION

The graphs represent chemical elements. Each encodes an atomic number in base 10: the tall spike is the 10's place and short spike is the 1's place. E.g. γ is 26: $2 \times 10 + 6 \times 1$.

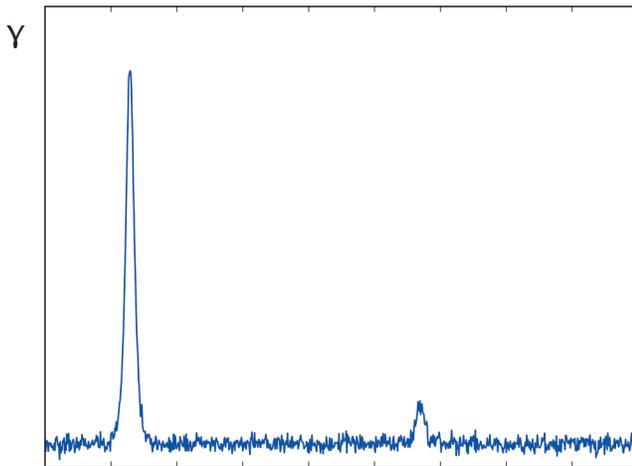
The sequences represent chemical compounds. The common names fit into the grid, which is formed into a cube shape with the names wrapping around edges.

When the letters in squares with polygons are read in the correct order (shown in a line on Standard puzzle, circle on Expert), they spell WE ARE COMING.

“Hi there, team. I’m Dr. Arroway, and I run the radio telescope group here. We followed up on your discovery and pointed the array at Iota. Sure enough, we found a signal! It’s showing highly anomalous changes over time, so we’re pretty sure this is a signal from intelligent life. That’s tremendously exciting!

“We’re astronomers, not signal analysts or linguists, so we have no idea what to do with the data. Perhaps you could bring the human *element* to this problem?”

The signal consists of these distinctive patterns, pulsed in various sequences:



α	11	Na
β	6	C
γ	26	Fe
δ	8	O
ϵ	17	Cl
ζ	1	H
η	16	S

These are the sequences received:

- WATER $\zeta\zeta\delta$
- SALT $\alpha\epsilon$
- METHANE $\beta\zeta\zeta\zeta$
- SUGAR $\beta\beta\beta\beta\beta\zeta\zeta\zeta\zeta\zeta\zeta\zeta\zeta\zeta\zeta\delta\delta\delta\delta\delta$
- ACETYLENE $\beta\beta\zeta\zeta$
- OXYGEN $\delta\delta$
- HYDROGEN $\zeta\zeta$
- PYRITE $\gamma\eta\eta$
- SULFUR DIOXIDE $\eta\delta\delta$
- OZONE $\delta\delta\delta$



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“We also received this NTSC image,” Dr. Arroway explains, “but that just *compounded* our confusion.”

The crossword puzzle grid contains the following words and symbols:

- Row 1: S, E
- Row 2: U, N
- Row 3: L, O
- Row 4: F, Z
- Row 5: H, U, O, N, E
- Row 6: S, U, G, A, R, A
- Row 7: P, D, H
- Row 8: T, Y, L, E, N, E, I, S, A, L, T
- Row 9: R, E, O, E
- Row 10: G, Y, X, O
- Row 11: I
- Row 12: D
- Row 13: I, T, E, M
- Row 14: W
- Row 15: E, C, A
- Row 16: T
- Row 17: E
- Row 18: Y, D, R, O, G

Symbols are placed in the grid as follows:

- Row 5, Column 10: Pentagon
- Row 6, Column 5: Hexagon
- Row 9, Column 4: Diamond
- Row 13, Column 1: Square
- Row 14, Column 3: Triangle
- Row 15, Column 2: Circle
- Row 18, Column 4: Triangle

A legend on the right side of the grid lists the symbols: a solid hexagon, a solid pentagon, a solid square, a solid triangle, a vertical line, a solid circle, an open circle, an open triangle, an open square, an open pentagon, and an open hexagon.