The Universe of Discourse

Fri, 25 Sep 2015

A message to the aliens, part 14/23 (terrain)

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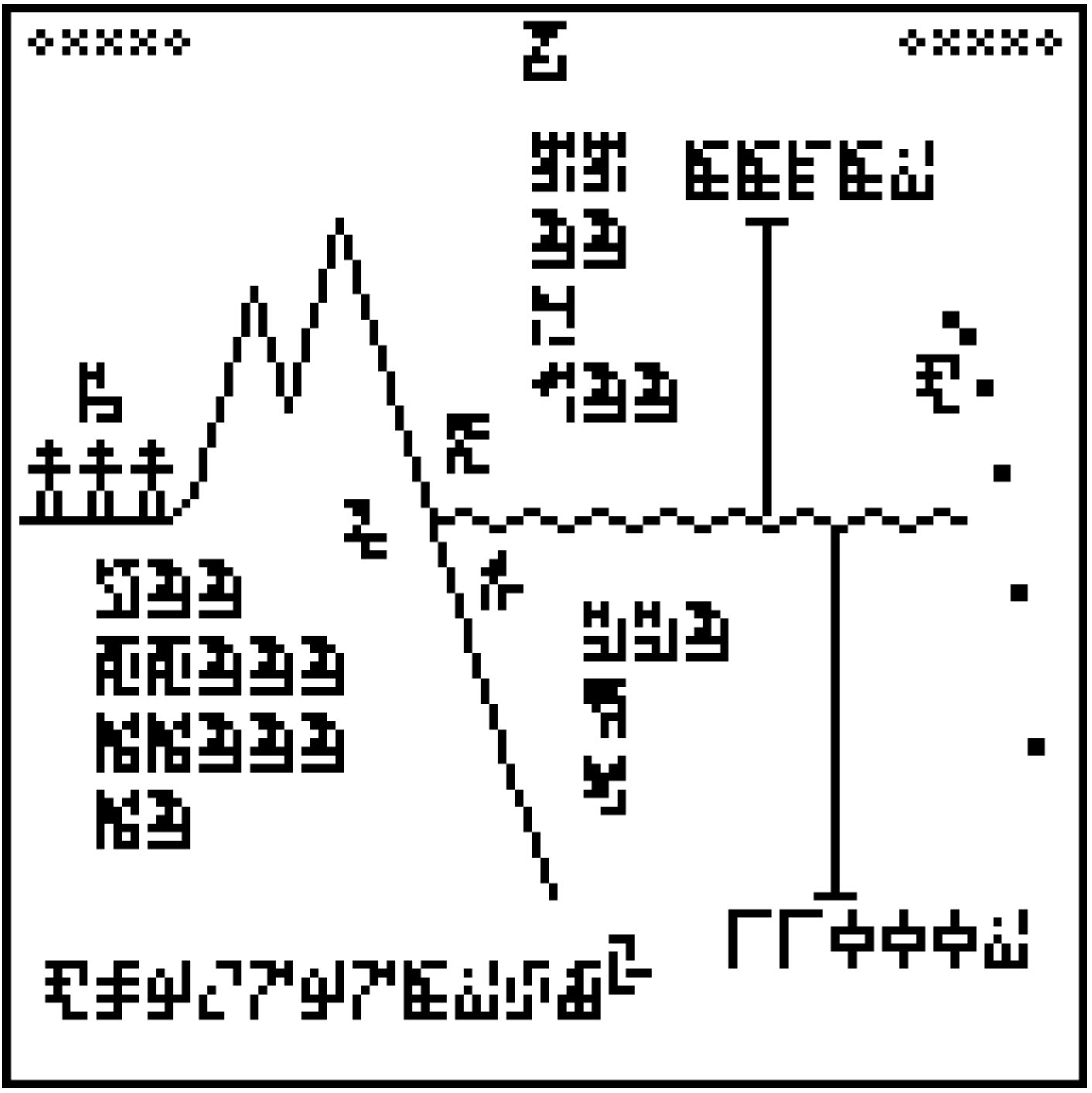
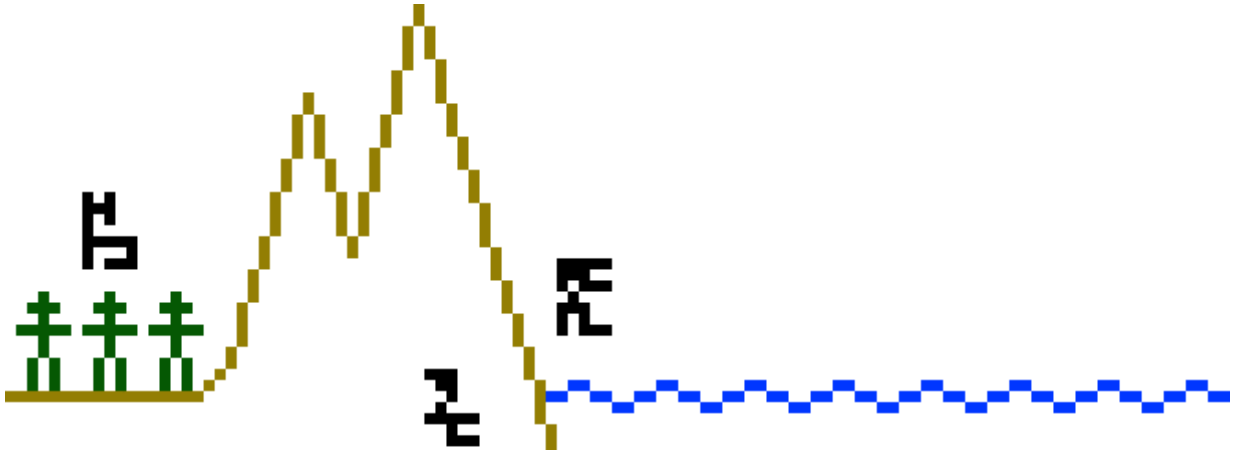
This is page 14 of the *Cosmic Call* message. An explanation follows.



The 10 digits are:

This is my favorite page: there is a lot of varied information and the illustration is ingenious. The page heading says  to match up with the corresponding labels on the previous three pages. The page depicts the overall terrain of the Earth.

The main feature is a large illustration of some mountains (yellow in my highlighted illustration below) plunging into the sea (blue).



The land part is labeled , the air part , and the water part . Over on the left of the land part are little stick figures, labeled people . This is to show that people live on the land part of the Earth, not under water or in the air. The stick figures may not be clear to the recipients, but they are explained in more detail on the next page.

Each of the three main divisions is annotated with its general chemical composition, with compounds listed in order of prevalence., All the chemical element symbols were introduced earlier, on pages 6 and 7:

The lithosphere: silicon dioxide (SiO_2); aluminium oxide (Al_2O_3); iron(III) oxide (Fe_2O_3); iron(II) oxide (FeO). Wikipedia and other sources dispute this listing, giving instead: SiO_2, MgO, FeO, Al_2O_3, CaO, Na_2O, Fe_2O_3 in that order.

The atmosphere: nitrogen gas (N_2); oxygen gas (O_2); argon (Ar); carbon dioxide (CO_2) .

The hydrosphere: water (H_2O); sodium (Na); chlorine (Cl).

There are rulers extending upward from the surface of the water to the height of top of the mountain and downward to the bottom of the ocean. The height ruler is labeled 8838 meters, which is the height the peak of Mount Everest, the point highest above sea level. The depth ruler is labeled 11000 meters, which is the depth of the Challenger Deep in the Mariana Trench, the deepest part of the ocean. The two rulers have the correct sizes relative to one another. The human figures at left are not to scale (they would be about 1.7 miles high), but the next page will explain how big they really are.

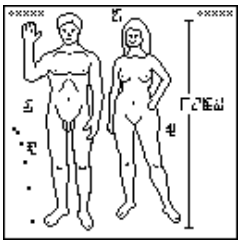
I don't think the message contains anything to tell the recipients the temperature of the Earth, so it may not be clear that the hydrosphere is liquid water. But perhaps the wavy line here will suggest that. The practice of measuring the height of the mountains and depth of the ocean from the surface may also be suggestive of a liquid ocean, since it would not otherwise have a flat surface to provide a global standard.

There is a potential problem with this picture: how will the recipients know which edge is the top? What if they hold it upside-down, and think the human figures are pointing down into the earth, heads downwards?

This problem is solved in a clever way: the dots at the right of the page depict an object accelerating under the influence of gravity, falling in a characteristic parabolic path. To make the point clear, the dots are labeled with the glyph for acceleration.

Finally, the lower left of the page states the acceleration due to gravity at the Earth's surface, 9.7978 m/s^2. The recipients can calculate this value from the mass and radius of the Earth given earlier. Linked with the other appearance of acceleration on the page, this should suggest that the dots depict an object falling under the influence of gravity toward the bottom of the page.

The next article will discuss page 15, shown at right. (Click to enlarge.) Try to figure it out before then.



[Other articles in category /aliens/dd] permanent link