## CD 1 05 LISTENING SECTION 4

*You will hear a geography student giving a presentation about sand to fellow students. First you have some time to look at questions 31 to 40.*

[Pause the recording for one minute.]

*Now listen carefully and answer questions 31 to 40.*

**Student:** First, I would like to tell you how the Argus computerised photography system has helped [1] researchers. Then I shall talk a bit about sand collecting.

Well, Argus is the system Doctor Rob Holman developed when he was working at a research pier on the coast of North Carolina, about 20 years ago.

This pier stretches out over the water, and it's the [2] research pier in the world, with an observation tower on the end of it. The researchers there make precise measurements of how the [3] moves about under the waves. **(31)** This research is critical to the study of beach erosion in places where the coastline is being worn away.

The Argus system helps to solve the difficulties encountered by these researchers. **(32)** The system [4] the data from [5] the water with what Dr Holman gets from his fixed camera, which is mounted [6] the water on the pier and uses time-lapse photography.

Some of Doctor Holman's results have changed the way people [7] how sand moves. To quote S. Jeffress Williams, a coastal geologist with the United States Geological Survey, the system is 'a critical piece of new technology' and 'The **(33)** Argus system allows us to [8] and document [9] the changes to the coast on a variety of different time frames. A lot of these take place when there is a storm or at other times when it is [10] to have people out on the beach making observations and taking measurements.'

Up to now Argus installations have been installed in places in Oregon, California, Hawaii, England, the Netherlands, Australia, New Zealand, Spain, Italy and Brazil, as well as in North Carolina.

Now I'd like to introduce Dr Holman's sand [11]. He started collecting sand in the 1980s, and he still collects it now, even though he has around a thousand samples. They come from his travels and from geologists and [12] all over the world – and **(34)** the collection includes sand from each continent, including Antarctica.

People send him sand in envelopes, plastic bags, paper towels and all sorts! Each is stored in a [13] which Dr Holman labels by latitude and longitude of its origin, as well as he can work them out – sometimes the information is a bit sketchy!

Anyway, **(35)** it's mainly geology students at the university who study his collection, and they can learn a lot from it.

For instance, one set of tubes displays sand from the East Coast of the US. So you can see that the sand gets [14] and finer from north to south. By the time a grain of sand eventually washes up on a beach in Florida **(36)** at the southern end of that journey, it has been battered by waves for a long time so the grains are [15] and rounded because most of the time sand is not stationary on the beach.

OK, so if you'd like to collect sand and maybe even send some to Dr Holman, how should you go about it? Well, the list of equipment is very short and easy to find, but you should keep a supply when you're travelling, as you never know when you'll come across an interesting sand sample.

**(37)** One really handy thing for digging sand, especially if it's hard or frozen, is a spoon. It's perfect for that. If you're travelling by air it'll have to be plastic, but [16] is preferable, as plastic tends to break. You need something to put the samples in that is [17]-proof and easy to carry. You can just use plastic bags, **(38)** but you need to record the location and date on the bag, so you must also have a permanent marker with you, because you can never assume you will remember where you gathered a sample from later on and you don't want it to rub off before you get home.

And that's about all you need in the field to collect sand. When you get home, your samples should be [18] a notebook or computer. You need to note the location and be really specific as to exactly whereabouts on the beach you gathered your sample – low tide mark, under cliff area, etc.

Then, you [19] your sample. You want to keep everything in good condition and avoid contamination. So first you make absolutely sure that each sample is perfectly dry. You don't need any complicated apparatus for this, **(39)** you can just [20] on layers of newspaper, which is suitably absorbent. Most people find that's the best way.

Then, lastly, but this is really important, before there can be any chance of [21] this latest sample with another, you put it in a clean small bag or a jar, and **(40)** you must stick an identification label on straight away. Some people put one inside as well in case the outer label falls off, but that's up to you.

Well, that's about all you need to know to get started as a sand collector.

Any questions?

*That is the end of section 4. You now have half a minute to check your answers.*

[Pause the recording for 30 seconds.]

*That is the end of the listening test. In the IELTS test you would now have 10 minutes to transfer your answers to the Listening Answer sheet.*

LIVEWORKSHEETS