

## Argo Floats Video Answers

Tuesday 24 June

### 1. What's it like 2,000m below sea level?

You've been on this voyage for 7 days and during that time the CTD and two prototype Deep Argo Floats have made many trips down to 2,000m below sea level and some to over 5,000m! The CTD is made of steel and hard plastic and comes back to the ship looking just the same. Would all materials survive unchanged by a dive to 2,000m? Here's an experiment to see.

1. What material was used in this experiment?
  - Answer: Polystyrene
2. What did the blocks **look like** after their 2,000m dive?
  - Answer: the same shape (they are still cube-shaped, just smaller)
3. How could we calculate the amount of shrinkage?
  - Answer: compare the size of the cube after its dive to its pre-dive size or compare the size of the cube to the ruler marks on the side
4. The large cube was 4cm across before the dive and 2.5cm after the dive. What was its volume before the dive and after the dive? How much smaller was its volume after the dive?
  - Answer: volume before dive =  $4 \times 4 \times 4 = 64\text{cm}^3$ , volume after dive =  $2.5 \times 2.5 \times 2.5 = 15.63\text{cm}^3$ . The after-dive volume is **4 times** ( $64/15.63$ ) smaller (or a quarter of its original size).

Next step learning: Find out about vehicles that can travel to great depths in the oceans and the pressures they can withstand.

### 2. Deploying Regular Argo Floats

The main purpose of this voyage was to test prototype Deep Argo floats. But regular Argo Floats were also deployed on the way to, and back from the test site. Phil Sutton describes the two different ways that regular Argo Floats are put into the sea.

1. What are the two different ways to deploy the floats?
  - Answer: 1. 'Naked' without a cardboard box over the side of the ship and 2. In a cardboard box over the stern (back) of the ship.
2. Why are Argo Floats deployed in boxes?
  - Answer: to protect the Argo Float (especially the antenna) and to enable the float to be deployed off a container ship while it is travelling at 20 knots.
3. Why do the straps come off the box when it enters the water?
  - Answer: because the tape dissolves in water and releases the straps.
4. What are the white straps around the box made from and why?
  - Answer: cellulose tape that dissolves in water and makes the box open.



Next step learning: Record the number of the first Argo Float deployed on this video. Search on google earth for Argo Floats in this area (about 177°W 36°S) and look out for this Argo Float number to appear (it may take many weeks).