

## At Sea –Day 66 Dec. 01:

When we woke up this morning it was 7am and still dark. Our time adjustments on the Amsterdam are working to move us towards Pacific Standard Time, the same as Los Angeles. The ocean was a bit bouncy but not uncomfortable. It was too windy on Deck 3 to enjoy walking around the ship on the outdoor track.

At 9am Barbara went to the “Good Morning Amsterdam” TV show production where Gene and Adele interviewed the Horizon singing group, as shown in the picture on the right. The Horizons sing oldies but goodies from the 1960s and had put on their show in the Queen’s Lounge last night.



At 10am we went to the second lecture by Dr. Tom Jones the retired NASA Astronaut, as shown on the left. The subject of his talk today was asteroid impact with the earth and how we deal with this event which could possibly end human life on earth. Tom has written a book titled “Planetology” that contains an entire chapter on this subject.

Tom described the distribution of asteroids in the solar system. He made the point that the earth is constantly bombarded by small (up to piano size) asteroids every day and they add tons of mass to the earth each year. Most asteroids are small enough to completely vaporize during the descent through the atmosphere and if solid debris survives it usually falls in the oceans which cover most of the earth’s surface. However, there is plenty of evidence that occasionally a large solid asteroid can strike the land area of the earth and it is only a matter of time before one hits a populated area with devastating results.

Tom is a member of the Association of Space Explorers (ASE) which has published a report that provides the following summary of the asteroid impact issue and how we could deal with the threat.

1. We are driving around the Solar System without insurance.
2. The most likely impact scenario today is small Near Earth Orbit (NEO) asteroids which would strike with no warning.
3. We possess the first two elements needed for ending the asteroid impact hazard:
  - Asteroid detection tracking and warning technology
  - Spaceflight technology
4. The missing third element is --- readiness and determination to act ---
  - We need detection criteria and mission plans
  - Inaction leaves disaster response as our only option

Tom concludes that we are no longer passive victims of the asteroid impact process because, unlike the dinosaurs 65 million years ago, humanity now has the technology available to protect itself.

Some embryonic steps have been taken in the United Nations arena to prepare for a significant asteroid impact threat. As feeble as this effort has been, Tom thinks it is the best near term hope for progress in this area.

The first step in protecting earth from a significant asteroid impact is detection and tracking.

Secondly, when impact appears inevitable the spaceflight technology exists for rendezvous with the asteroid by a spacecraft and altering its course by one of several means. If the asteroid is small enough simply hovering near the asteroid or impacting the asteroid with the spacecraft might provide sufficient course altering energy. For large (house size) asteroids it would be necessary to use explosives to alter the course. A nuclear explosive is probably the most practical device that would be possible to launch into space with enough potential energy to change the path of a large asteroid. The strategy would be to detonate the explosive at some distance from the asteroid to avoid shattering it into a shotgun blast of smaller but still significant asteroids. The explosive blast should merely vaporize one side of the asteroid and that would propel it away from its previous course onto a new path that misses impact with the earth.

We found the content of Tom Jones' presentation to be most interesting and his delivery style is very effective.

At 11am there was a conflict between events so Barbara went to a cooking demonstration while Orlin went to the Cruise Specialists International (CSI) Chat Time.

In the cooking demonstration Adele and Chef Bernie were showing how to make a pea soup such as you might find in the Netherlands. Tonight in the main dining room the theme will be Dutch Heritage and pea soup will be on the menu. On the right is a picture of Adele and Chef Bernie making some pea soup.



An interesting and critical suggestion by the Chef was that the peas used in the soup should only be prepared by heating in hot water and not by grinding them up in a blender. The blender treatment releases some bitter components from the peas that detract from the flavor of the soup. The release of the bitter component is avoided by slowly cooking the peas to produce the soup consistency that is desired.

The CSI Chat Time this morning had a nice turnout and there was plenty of lively discussion as usual. The many challenges encountered in packing luggage and getting it from the ship to home was one of the topics of conversation. At one point Lucia (blue shirt in picture on the right) used the daily trivia quiz sheet put out by the Amsterdam Library to test our memory of moving picture industry history. Some of us (Orlin) were completely clueless in this arena.



At about noon we got the ship's position from the TV screen on Deck 5 as shown in the picture on the right.

The Amsterdam is on a northwesterly course and has traveled about 600 miles since leaving Honolulu.



Our afternoon was taken up by the effort to get our clothes and all the souvenirs we had bought stashed safely in our luggage. We had four suitcases that were qualified for the “free” Federal Express shipment from the Amsterdam to home but we weren’t sure if we could get all of our stuff in four suitcases. We wanted to keep our checked airline baggage at one suitcase. The question to be answered was how many bags would we send by Federal

Express? The process of pulling things out of the closets, nooks and crannies of the stateroom and stashing them in available suitcases presented its usual challenge to matrimonial pleasantness. The chaos of the situation is illustrated by the photo on the right taken partway through the process.



When the dust settled from that operation we needed to have Federal Express ship 5 of our bags rather than 4. We were glad to have this question settled and went through the process of arranging the shipment with the Federal Express representative who had set up shop on board the Amsterdam.

In the evening we met Steve and Bobbie in the Canaletto Restaurant and had dinner there. The Canaletto is a great place to go for Italian food and there is no extra charge for



having a meal there rather than in the main dining room. During the meal we had our picture taken as shown on the left. We met Steve and Bobbie at the beginning of the cruise during a Cruise Critic meeting where we discovered that Steve went to Oregon State University where Orlin also went. We have toured cities a bit with them during the cruise and enjoyed their friendship. This meal in the Canaletto will be our last with them for

this cruise but hopefully there will be future cruises and more evenings like this.