**Identify the non-mechanical ship system and components in these pictures. What is their purpose? How do you examine them? When?**

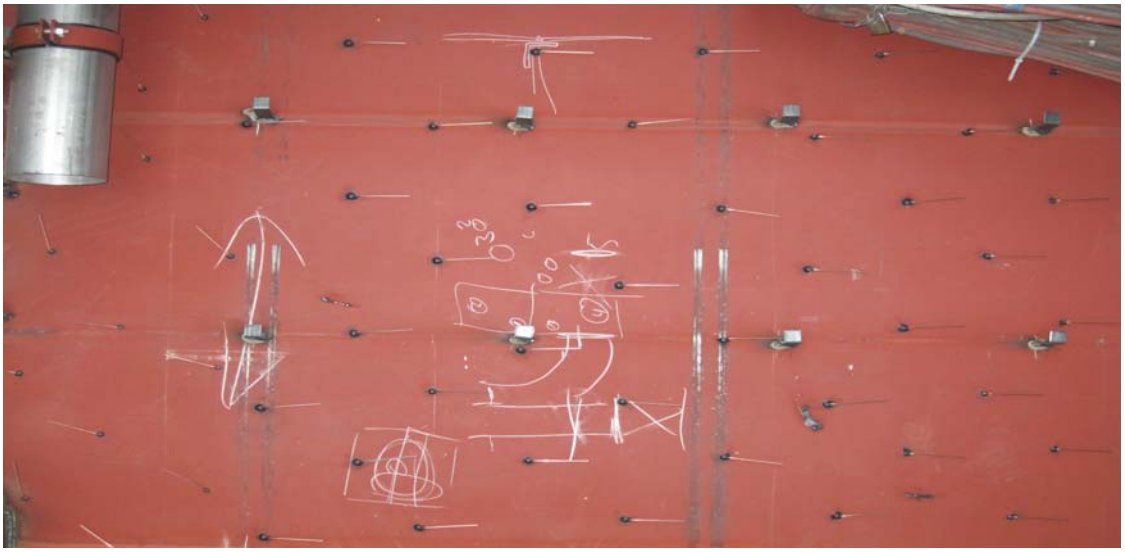
These pictures represent the passive Structural Fire Protection system in place on all cruise ships.

This is structural fire insulation, A-class to be exact. The insulation that is formed into the corner and extending along the adjoining bulkhead is known as a heat bridge or heat extent. Per SOLAS II-2/9.3.4, it needs to extend at least 450 millimeters. The purpose of this extra insulation is to reduce the chance of heat from either of the abutting spaces from transmitting through the intersection point of the two steel bulkheads. This applies to all connection/intersection points, deck and bulkhead, steel girders, longitudinals, etc…anything that could transmit heat to or from the adjoining space.

This system is typically examined during the initial Foreign Passenger Vessel COC exam (or the preceding Structural Fire Protection exam attended by the Marine Safety Center). But, in situations where space alterations are being conducted, it may be worth checking during an annual exam. After a ship is constructed and the space closed up with ceiling and wall liners, examining the insulation becomes more difficult but it is possible to utilize existing panel openings (and a strong flashlight) to look at these intersections. Insulation is examined visually but you may desire to double check the installed thickness to verify the material complies with the approved certificates on board.

The small silver buttons are the clips used to hold the insulation to the wall.

Below is a picture of a bulkhead before the insulation is installed. You can see the pins that are attached to the bulkhead. The insulation is impaled to these pins and held up using the round clips (or their equivalent).
We do not typically observe the installation of these pins but it should be obvious that the only occasion to view them in this condition is during construction (the SFP Exam conducted by MSC). It is unlikely that any work of this degree would be conducted outside of a shipyard.
You may be asking whether we're concerned about the intersection points of these pins given the above discussion on heat bridges, particularly given that there are so many of them. We're not. The pins are typically of a material that disippates heat rapidly, the connection point to the bulkhead is very small (maybe an eighth to a quarter inch in diameter), and the pin is surrounded in the insulation already.



One potential problem that you may encounter with installed insulation is if the clips are too tight, compressing the insulation. This will create a dimpling effect. This isn't always indicative of a problem. However, if the installation requires a certain thickness and the insulation is exactly that thickness, compressing it with the clips may render the material insufficient. This situation, if found, should be discussed with the attending Recognized Organization.

The final example is a picture of a draft (draught) stop. These are typically seen in the overheads above dropped ceilings and are designed to limit the spread of smoke and, potentially fire, in these areas that are hidden from view and most often above the smoke and heat detectors (typically installed in visible locations on the dropped ceilings). If a fire starts in one of these areas, the draft stops will cause the smoke to more rapidly drop below the ceiling panels (and activate a smoke detector) than it would otherwise without the draft stops. These may also be found behind bulkhead panels in areas where the uninterrupted length is over 14 meters.

In public spaces that have perforated dropped ceilings (i.e. there is an opening of 40% or more), draft stops are not required to be installed.

This is another SFP component that is examined visually. SOLAS II-2/8.4 requires they be spaced no more than 14 meters apart. They must be close-fitting. In this picture, there is a bulkhead that is yet to be installed on the facing side of the draft stop. Note that this is just one example of a draft stop installation. Areas with extensive cables, pipes, etc may utilize more of a fire-resistant mastic than pieces of insulation.

MSC/Circ. 1120 provides detailed instruction on acceptable methods for constructing draft stops.

Again, these components are examined closely during the SFP Exam. However, you may find it worthwhile to check areas that had recently been involved in an alteration. As new pipes and cables are installed, often any existing insulation and draft stop will have to be removed or cut. Sometimes, it may not be replaced or the “close fitting” criteria re-established.