Features of the SNOLAB exhibit at Science North

The base: The base that the sphere sits on was created to transport the part into the mine and through the mine drift to SNOLAB. That meant traveling 2km (6800ft) down a vertical mining shaft. Since it was too large to fit inside the mine cage, it had to be transported underneath. That required a special sling and for the cage to go very slowly; 100 ft/ min as opposed to 2100 ft/min during a regular cage run.

The ridge along the base: When this component was transported from surface to the underground clean lab it was enclosed in an aluminum box to protect it from dust and damage while it was being transported. Notice the holes along the sides - these were used to bolt in the side panels of the box to the base.

Forklift holes: Note the forklift holes in the base. The base and the object had to be lifted onto a rail car and secured for transportation. In total the base and the sphere weigh in at 3600lbs!

The steel: This 1.5m vessel is made from ultra low radioactive stainless steel. 8000 stainless steel bolts were hand cleaned individually before being used. The manufacturers of the steel inner vessel specially designed it to withstand very high pressures.

The weld line: During the decommissioning of this experiment, the sphere was cut in half for easy removal from the mine. When the modifications were done to turn it into an exhibit, it had to be welded back together - this was done by hand at Specialty Alloys Stainless - the same company that worked on it before it was installed at SNOLAB.

Lifting lugs: There are 6 lifting lugs along the base so that the piece could be hoisted during transportation and the installation/ construction of the experiment at SNOLAB.

Pressure vessel: This sphere was the internal vessel (IV) of the experiment and was a certified pressure vessel - you can find the square metal plate within the certification information. The liquid argon purchased for the experiment has purity level as 99.999%, and each dewar had to go through purification testing prior to being injected into the inner vessel.

Initials: Scientists and students from around the world worked on this experiment. Some engraved their initials into it - can you find the sets of initials on the sphere?

Light sensors: This experiment had 92 special light sensors to collect information about particle collisions happening inside. These sensors are called photomultiplier tubes (PMTs for short!) and were fitted into the 92 holes of this sphere. Look for the PMT information that is etched into the sphere marking where each PMT would go.

Bolt holes: The light guides and sensors were attached to each circle. Each circle has 32 bolt holes and there are 92 - that's a total of 2,944 bolt holes.

Cold temperatures: The stainless steel inner vessel was required to maintain a temperature of 87K (-185.15°C) when liquid argon were in the detector versus the 27K (-246.15°C) required for liquid neon. To put that into perspective, the average temperature in outer space is 2.7K (-270.45°C) and water freezes at 273.2K (0°C), meaning that the temperature of the inner vessel was much closer to that of outer space than to what we experience on a daily basis.

A big move: The crane operator who moved this piece here to Science North said it was the most interesting thing he had transported in his career. The second most interesting thing they moved was the big nickel over at Dynamic Earth!