

BOC Helium floats giant balloon for star research

All eyes were on the neutron star Vela Pulsar last week when the Australian Balloon Launching Station at Alice Springs Airport, successfully launched a colossal research balloon filled with 1,830 cubic metres of BOC Helium into the sky to observe the star located 1,000 light years away from Earth.

Expanding to nearly the size of the Melbourne Cricket Ground and weighing more than 1,500 kilograms, the balloon with its scientific equipment spent the day in the Earth's stratosphere measuring high-energy gamma rays from the Vela Pulsar before safely landing in central Queensland near Longreach.

Melissa Webber, BOC Scientific Specialist says extensive planning and testing was undertaken by BOC to ensure the helium requirements were met for this highly complex and innovative research project.

"Our network of specialists were very focused on delivering this helium with pinpoint precision. After producing the helium at our Darwin plant, it was transported to our Sydney operations centre where we filled and tested the helium to ensure purity levels above 99.995 percent and correct pressures. We then transported a trailer with 12 helium tubes manifolded together to Alice Springs."

Associate Professor Ravi Sood, Director of the Australian Balloon Launching Station explains the successful inflation of the balloon depended greatly on BOC's ability to supply helium at very specific pressures and purity.

"The high purity helium provided by BOC helped ensure minimal moisture in the balloon which is very important as it reaches temperatures of -80 degrees. This was essential as helium with lower purity levels and more moisture can condense at low temperatures resulting in mission failure.

"A high level of detail and careful calculations were also required to ensure the starting pressure from its manifolds and tubes were accurate when transferring the helium into the balloon. This was achieved with precision and we are very pleased this collaboration resulted in a successful research mission."

Research collaborators at Kobe, Nagoya and Sydney Universities are currently analysing the data obtained from the Vela Pulsar, which is expected to increase scientific knowledge of high-energy gamma rays polarisation in collapsed stars.

BOC is the only producer of helium in the southern hemisphere with a Helium Plant in Darwin that provides a valuable source of helium to many innovative projects across the country. The Australian Balloon Launching Station at Alice Springs has completed more than 130 successful balloon missions since 1975.