



HYPERSONIC RESEARCH RAMPS UP

EWEN LEVICK | SYDNEY

IT'S hard to think of any next-generation defence technology more discussed than hypersonic flight. The possibility of vehicles travelling at over five times the speed of sound – that's Melbourne to Adelaide in six minutes – tends to be seen as the holy grail of defence industry R&D.

"About a decade ago we could clearly see the trend towards hypersonics as a real discriminator for the future," Jerome Vethecan, BAE System Australia's Principal Technologist, said. "And it's become evident that other nations also recognise [their] disruptive value."

The company responded by focusing two decades of experience in guided weapons technology directly on the quest for hypersonic flight.

"The Nulka decoy and the JORN over-the-horizon radar systems are excellent examples of indigenous-led effort in innovation and engineering that's given us some of our real frontline defence capabilities today," Vethecan said.

"For a long time people thought that if you want high end guided weapons, high speed weapons, technology programs, that you have to look overseas towards the US," Mat Jones, BAE's Senior BD Manager for Future Tech, added. "But we believe - and we've proved in a range of relevant programs - that we have the capability and the engineering prowess to do certain elements of these weapons programs here."

An example is Project HiFire, a series of hypersonic flight tests at the Woomera Range in SA. The project was a collaboration between BAE Systems Australia, DST Group, the University of Queensland, Boeing Phantom Works (US) and others.

"The whole aim of HiFire was to be able to achieve understanding of the technology front, to solve some of the scientific problems around hypersonic flight," Vethecan said. "It has been an incredible achievement for Australia. We have been able to bring our considerable missile systems background at BAE Systems to develop solutions for some really challenging problems."



LEFT: The HiFire program is a strong foundation to further build upon Australia's hypersonic research efforts

BAE Systems Australia is also using its expertise to research systems that can defend against hypersonics; an approach that, according to Jones, is yielding great results.

"It's almost impossible to design, develop and implement a system to defend against a weapon that you don't know much about," Jones said. "So we're finding that all our work on the weapon and the vehicle technologies has direct relevance to the work that we're also undertaking on [hypersonic] defence technology."

The formation of Red Ochre Labs could accelerate Australian efforts towards successful hypersonic weapons and their counter-measures.

"There's a significant engineering effort that needs to be put into the development of scramjets," Vethecan said. "There are [also] some of the more obvious technolo-

gy limitations - things like very high temperature materials, avionics and systems that can survive the really hostile thermal environment of hypersonic flight."

"These are all core aspects of the future capabilities resident within Red Ochre Labs," Jones said. "We're working closely with DST to bring these technologies together to form an effective and cohesive response to the emerging threat in our region." ■

PARTNERED CONTENT

These pages were a paid partnered effort between ADM and BAE Systems Australia to celebrate and showcase the R&D efforts of the company in the wake of the opening of their Red Ochre Labs.