Submission to the Senate Inquiry on the capability of Defence's engineering (PSE) workforce

My name is Geoff Day and I am an electronic Technician at Defence Science and Technology Group (DST Group). I am pleased to write a submission into the Senate Inquiry into the capability of Defence's engineering (PSE) workforce.
I started work at DST Group or DRCS as it was then known, in 1983 as a Radio Apprentice and have been working as an electronics technician for DSTO and now DST Group ever since. In mid-1996 I joined Electro Optical Seekers, now Electro Optical Sensors and Processing (EOSP), and have been working with lasers, IR detectors and sensor systems. I design the electronics that allow us to gather imagery and data and to control these systems.

The Government seems to be happy to let DST Group wither and die. The average age of workers here is 52 and there's been almost no recruitment for 8 years. Staff numbers are falling, especially in the technical ranks, and the admin overhead is increasing, so we're having difficulties meeting our work commitments. We're having to ask for help from other groups when we need to organise a field trial because our technical workers are in short supply and we're supposed to be passing our accumulated knowledge on to the younger generation but there isn't any younger generation here. Collectively we have a great deal of knowledge of defence systems and technology but this appears to hold no value with our country's leaders. In the next decade many of us will retire and much of that knowledge will disappear. Yet the Defence forces regularly call upon DST Group to solve problems that they face, to understand the intricacies of the weapons that they use, or those of our enemies.

When I joined EOSP one of my first tasks was testing laser designators. EOSP has had a long history with laser guided weapons, in the late seventies and into the eighties we developed a number of systems which were used in the early laser guided weapon trials in Australia. Put simply, Laser guided weapons are bombs or missiles that home in on a target that is being designated or illuminated by a coded laser beam at a particular wavelength. Coding the beam allows there to be multiple weapons in the air at the same time all heading for different targets. Designator operators coordinate with the launch aircraft with radio messages so that their weapons are correctly coded. The designation laser can be anywhere in view of the target, on the aircraft launching the weapon, on another aircraft in the vicinity of the target or with soldiers on the ground.

In the late 90's a number of Ground Laser Target Designator sets were purchased from an American company and a field trial was duly organised. Laser Guided Bombs were to be dropped from an aircraft on to a target that was being designated by one of the aforementioned Laser Designator sets. Two Laser Designator units had been selected, at random, from the batch of designators received, one for use and one for backup. They were set up near the test area, and aimed at the target. No testing of the designators was performed as we didn't purchase the designator test set (it was too expensive) and it was expected that everything would just work. After all, these things were brand new from our American friends, what could go wrong?

Several aircraft would have been launched, each loaded with a number of these weapons, they would have made their way to the target area and altitude and upon the appropriate signal released a bomb. After some calculated interval, one of those designators would have been switched on to designate the target and shortly after the bomb would impact the target....or not in this case. A number of bombs were dropped at great cost to the Australian taxpayer and not a single hit on the target was seen.

After the failed trial, DST Group was approached to test the designators. We examined the batch of Laser Designators and all but two were working correctly, those selected for the trial were not generating the correct codes. Whether it was a coincidence that these were the two that had been

chosen for the field trials or whether they were damaged en route to the field trial is not known but had we been involved in these trials in the first place, the first thing we would have done is a functional test of the designators in the lab. A lot of embarrassment would have been avoided and the taxpayer's money wouldn't have been wasted. Shortly after, another trial using known good designators achieved 100% success.

Laser Guided Weaponry was a still new technology for our defence forces and they didn't have the knowledge of the system or experience with it to know what caused the failure, nor did they have the equipment to check if the designators were operating correctly. It's not their job to fault find the technology, and that's where Defence Science and Technology comes into the picture.

A few months later, I designed and built a small device slightly larger than a cigarette pack, which could be placed on the designator output optics and, when the designator was operated; give an indication of the code and power level. This device was a success and a case was made for one of these to be produced for each of the laser designators. A local company was contracted to manufacture them. They were included in the kit with that batch of laser designators. In short time DST Group created a solution to a problem and organised manufacture of a device that enabled soldiers to verify the correct operation of their laser designators in the field immediately prior to their use.

Modern Warfare is increasingly technological. It's not enough to buy weapons systems and assume they will work. Researching modern weapons and understanding how to use them to best advantage is DST Groups forte but we're increasingly being seen as an expensive and unnecessary overhead. Allowing DST Group to waste away will only save a few percent of the overall Defence budget but will have ramifications far into the future. The government portray us as just another bunch of public servants burdening the taxpayer, but they don't realise how much knowledge we have or how much we can do. In fact the opposite is true; if the government wants to make best use of the taxpayer's money then they need DST Group.

It's time to change the current policy of attrition and recruit new people to the organisation so that our knowledge, capabilities and research can be carried on into the future. There's still a need for technical people which is largely unmet by the current university and TAFE systems. DSTO in the 50's through to the 90's had the best technical apprentice training facilities in Australia but these were closed in 1993. Two decades on and competent technical people are hard to find so it would be beneficial to consider some sort of Defence apprentice training scheme once more.

Thank you for allowing me to make a submission into this important inquiry.

Geoffrey S Day 15/10/2015