

## Executive Summaries

### 2009-2010 Bursary Vacation Placements in **Western Australia**

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**STUDENT:** **Pascal How Chit Mun**  
**Curtin University of Technology**

**COMPANY:** Western Power

On the 11<sup>th</sup> of January 2010, I started my vacation program at Western Power in the Transmission Primary Engineering and Construction branch. This was an amazing opportunity for me to start my practical learning experience in such a big company which specialises in the distribution of electricity throughout the whole Western Australia.

The section in which I would be spending the coming six weeks was lead by Hooman Dehbonei who is also my supervisor. After a brief introduction on what the section was responsible for, I learned that the section was relatively new. This is because it was only recently that engineers learned more about issues surrounding Earth Potential Rise, Low Frequency Induction and the theory behind lightning and lightning design.

Soil resistivity testing is a very basic but essential aspect of any substation. It plays a major role in the section's designs and this was where I started. After two site visits and writing some soil reports, I understood that a good soil model will determine the earthing design for a substation. Earthing is a critical aspect of safety and if poorly done, it may even cause death. Obtaining data for a soil model was not always simple due to real world limitations such as lack of space for testing, nature of the site, climate, interferences and location of sites. That was so different from a University environment where many parameters are idealised or neglected.

Lightning design used to be done in substations by randomly placing lightning masts and did not have any proper theoretical background. Nowadays, Western Power uses the Rolling Sphere method to design the lightning protection within a substation. Lightning design was the next step of my learning process and I really enjoyed it for it enabled me to discuss with people from other sections and even from Sydney. With constant reference to the Australian and Western Power standards, I designed the lightning protection for the Pinjarra substation. The design process was not easy even with the help of my supervisors because the site had some challenges and we had to deal with budget restrictions.

My internship at Western Power was memorable and I had the opportunity to network not only with other professional engineers but also with those from CAD, Document control and Human Resource services. Bonds were created and I am sure that the day will come when we will all be working together to create a better world.



**STUDENT:** **Jaden Williamson**  
**Curtin University of Technology**

**COMPANY:** ABB

This report attempts to give an overview of the tasks and challenges I encountered during my vacation employment and the methods I used to overcome them. Between the dates of the 30<sup>th</sup> November 2009 and 19<sup>th</sup> February 2010, I was employed as an Engineering Student at ABB's Malaga facility. This facility was involved with both the design and production of transformers, which enabled me to not only work alongside the drafting engineers who create these designs but also to then witness these designs being used in the construction of their associated transformers.

I found my time at ABB to be highly beneficial to my understanding of power engineering and the tasks/challenges faced by these engineers on a daily basis. This was achieved through my appointed tasks, which enabled me to make actual contributions to the company itself, this resulted in me being an actual member of the engineering team rather than just an observer. I feel that this aspect of my employment was the most beneficial to me as the work that I completed during my time at ABB was actually significant.

During my employment I worked on several projects, which included the creation of a standardised trunking/cable box spreadsheet which would be used by other employees in the design of their transformers. I also worked on several macros which were to be used to verify what components of a transformer were to be ordered and what process needed to be conducted on them (e.g. welding, drilling etc).

These projects enabled me to gain a deeper understanding of what is required of power engineers in the field of transformers, as well as the complexity involved with the design and construction of this product which many people take for granted.



**STUDENT:** **Natalie Cushion**  
**UWA**

**COMPANY:** Western Power

My vocational work experience was undertaken at Western Power Jandakot, in the Standards, Policy, and Data Quality division. This division is responsible for providing technical excellence in plant equipment; provide frameworks for others to manage capital and to provide public safety and electrical safety compliance.

The purpose of this report is to provide details on the work that I undertook during my time at Western Power. Whilst at Western Power, my main projects involved compiling a document for the tensioning of new and existing overhead powerlines and drafting of the capacitor bank specification. Furthermore, I was also able to spend some time on site, which enabled me to apply my theoretical teachings to produce an engineered solution as well as a practical one. In addition, I have also had the opportunity to be part of a tender review for surge arresters.

**STUDENT:** **Shehab Haque**  
**Curtin University of Technology**

**COMPANY:** Western Power

Vacation employment for the 2009/10 vacation period in the Asset Driven Section (Service Delivery Division) of Western Power provided me with valuable experience in the distribution design area of electrical power engineering.

The purpose of this report is to outline the activities and experiences of my vacation work and discuss challenges and problems that I faced and how these were overcome. I have elaborated on selected jobs that I assisted with and completed during my vacation work.

During my vacation work experience I learned more about the challenges facing the Power Industry as well as the values of Western Power. From a Distribution Design perspective, some of the main challenges facing the power industry include the need for environmentally friendly design solutions, safe, sustainable and cost effective designs, and ensuring that the community and the company interact in a productive and cooperative manner. From my vacation work, I saw the need for environmental and safety standards, as well as good customer interactions. An example of the safety standards is the Dial-Before-You-Dig checks that are required for most underground works. These are conducted in order to identify other utility services in the area to ensure that construction work is conducted in a safe manner.

In accordance with my learning contract, the work and learning opportunities that I was required to do included safety awareness and procedures, familiarisation with Western Power standards and policies, learning through on-site visits and design projects that required the use of different software platforms. Through these learning processes, I obtained valuable knowledge in this field and this has allowed me to better understand how the asset driven works are done and the current challenges being faced.