API UNIVERSITY FUNDED PROJECT/S

FINAL REPORT/
6 MONTH PROGRESS SUMMARY TO JUNE 2011

University: The University of Queensland.

Project Name: Development of a comprehensive Power System Simulation Laboratory (PSS-L) at the University of Queensland

Project Objectives in Support of API Objectives

1. To collect and compile information related to power system analytical software tools (both from commercial and open sources).
2. To collect and compile detailed information about test power systems available for various power system analytical studies.
3. To set up a PSS-L with appropriate computing resources (hardware), analytical software tools, test systems and other pertinent information.
4. To develop five simulation experiments in load flow, fault analysis, transient stability, small signal stability and voltage stability.
5. To develop a comprehensive homepage to host the information related to PSS-L that would be useful both for UQ and other participating universities.

Final Report/Progress Summary of Deliverables

Activity/Deliverable (from Original Project Proposal)	Original Deliver Date	Actual/Expected Delivery Date	Comments and explanation of variances
1. Report on Power System Analytical Tools	April 2011	April 2011	This activity is completed and the report is attached.
2. Report of Test power systems	April 2011	April 2011	This activity is completed and the report is attached.
3. Purchasing of software tools and Completion of PSS-L	September 2011	September 2011	This activity is partially completed.
4. Five simulation laboratories	April 2011	April 2011	This activity is completed

			and the report is attached.
5. Homepage for the PSS-L	December 2011	December 2011	In progress

Delivered / Expected Final Outcomes and Timing of these Outcomes

1. **Which undergraduate subjects/units will be enhanced by these outcomes and how?**

    - The purchased software tool(s) and the reports will be used by the students from following undergraduate and postgraduate courses.
        - ELEC4300: Power System Analysis
        - ELEC7310: Electricity Market Operations and Security

    - The reports will be useful for most of undergraduate power engineering thesis students at UQ. Total number of power engineering thesis students in 2011 is 50.

    - The tools and reports will be useful for most of power engineering RHD students as well.

2. **How many undergraduate students take these subjects/units?**

        - ELEC4300: Power System Analysis (60-70 students)
        - ELEC7310: Electricity Market Operations and Security (30-35 students)

3. **Other benefits of these outcomes to enhancing teaching and learning in power engineering?**

    - The project is on setting up simulation laboratory for power engineering students (for undergraduate and postgraduate students) for simulation studies to better understand power system behaviour and design new solutions accordingly. The simulation laboratory can be used for teaching (and learning) and research.

    - The first two reports carry a comprehensive collection of test systems and software tools used all around the world. The report on software tools may be useful for power utilities as well.

Expenditure to Date (both cash and In-Kind)

Total expenditure so far (including committed expenses) is 16,000 AUS$ (Purchasing of computer hardware, rest of the analytical software tools and development of Website for Power System Simulation Lab are in Progress)
In-kind -computing hardware 12,000 AUS$.
In-kind – Analytical software tool 18,000 AUS$.

Completed by: Dr. Mithulan Nadarajah and Prof. Tapan Saha.