



Power Systems
Consultants

PSC NEWS

NEWS AND VIEWS FROM THE TEAM AT POWER SYSTEMS CONSULTANTS MARCH 2004

CONTENTS

Page 1

seePower for Transpower

Page 2

PSC expands
Telecommunications
Services

Page 3

PSC IT Projects Group
Team Building with
Ruth Pretty

HVDC Remodelling Project

Page 4

Transpower National
Co-ordination Centre
Wellington
Establishment Project

PSC powers Transpower
Dragonboaters to victory!

PSC Welcome to
Andrew Robbie

Power Systems Consultants New Zealand Ltd

PO Box 57095, Mana, Wellington,
New Zealand

Phone: +64-4-232 7680

Fax: +64-4-232 7682

Web: www.psc.co.nz

Email: info@psc.co.nz

Power Systems Consultants Australia Pty Ltd.

PO Box 4109, Richmond East,
VIC 3121, Australia

ABN 35-089-074-019

Phone: +61-3-9421 8828

Fax: +61-3-9421 8806

Web: www.psc.au.com

Email: info@psc.au.com

seePower for Transpower

PSC has been instrumental in the recent successful rollout of the seePOWER™ Energy solution for the Electricity Market systems at Transpower.



Transpower is responsible for optimally dispatching generation to meet the demands of the New Zealand electricity market, using multiple market clearing engine solvers to produce both long-term and short-term "solutions", which predict the optimal generation to dispatch at any time. Transpower's staff must analyse these solutions to rapidly detect anomalies, impending security issues, etc. so that the grid can be operated optimally in real time. A solution may have slots for each half-hour looking up to 42 hours into the future, each slot containing 800+ branches and 400+ buses, so there is a lot of data to analyse.

The seePOWER™ Energy visualisation tool uses visual presentation techniques to present all this data on a single system map. Exception-emphasising techniques like colour contouring, leverage a person's natural aptitude to process information visually, allowing the detection and comprehension of important situations and anomalies at a glance. Drill-down

then can be used to view the details. seePOWER is providing critical, actionable insights about market system performance that were not previously available.

PSC was engaged by Transpower in 2002 to study the use of its market system tools and recommend improvements to lift the level of compliance with electricity marketplace rules. One of PSC's key recommendations was to implement graphical visualisation techniques to improve the presentation of market data to front-line staff.

Transpower selected the contractor, Wellington-based firm Compudigm International, from a short list of worldwide vendors of suitable data visualisation software drawn up by PSC. PSC was retained to provide specialist expertise and advice to the project team, to develop custom software to interface the SCADA/EMS, and to lead the acceptance testing team.



PSC expands Telecommunications Services

In the last year PSC has experienced huge growth in demand for its telecommunications services.

Analogue Radio Replacements

Transpower recently awarded PSC design service contracts for the replacement of Ashley, Studholme, Woodville and Masterton Analogue Radio systems which have reached end of life with Aprisa 4RF digital microwave radios. PSC scope of work includes conceptual design review, detailed design reports and preparation of installation specifications. The work includes securing radio licenses, radio path analysis and rearrangement of protection signalling equipment. The Woodville and Masterton design jobs were secured by PSC in a competitively tendered environment.

Voice Over IP Implementation for Coordination Centres

Over the last two years, PSC has assisted Transpower to implement Cisco Voice over IP (VoIP) telephone systems in their Co-ordination Centres. The previous Sopho S1000 and V band systems had been in service for more than 12 years and were reaching the end of their useful life. PSC has been extensively involved in the project starting with project conception, preparation of the business case for approval, management of the RFP, project management of the implementation and working with the successful vendor to finalise long term support arrangements. This included the new Wellington Co-ordination Centre, which was established in Transpower's head office. The project was not without its difficulties given that this was the first major deployment of VoIP technology within Transpower; it included wireless VoIP phones, and that the Co-ordination Centres are mission critical sites.

Core Data Network Design

PSC has recently been assisting Transpower with the management of its core data network design project. Transpower is planning to replace its ageing core data network, which is based on Cisco routers, with newer quality of service (QoS) enabled technology. PSC's role has been to prepare and manage an RFP for this work and manage the successful design contractor effort on behalf of Transpower.



*Pictured is Warwick Glendenning,
PSC's New Zealand Services Manager*

Bearer Network Replacement Investigations

PSC has been providing investigations of bearer options for Transpower, including replacement of its Haywards – Islington NEC Fibre Optic Transmission System with newer technology and communications options for Kopu substation on the Coromandel, which is currently served by inadequate analogue communications.

Alliance Contractor Telecommunications Assistance

Recently, PSC has been called on to provide technical assistance to the Transpower Alliance Contractor in the Waikato. This included PLC maintenance and communications design and installation supervision input for the new Transpower Te Kowhai Substation tender.

Metering Data Network

On the data network side of things, PSC has been investigating options (on behalf of Transpower) for a secure data network connection between Vector (NZ's largest distribution company) and Transpower for the sharing of check metering data from shared meters at Silverdale substation.

For further information regarding PSC's telecommunications capability please email Warwick at warwick.glendenning@psc.co.nz or phone him on 021 404 558

PSC IT Projects Group Team Building with Ruth Pretty

In the second week of October, PSC's Wellington-based NZ IT Projects team got together with the Wellington half of the NZ Service team, and PSC's Administration team for a highly successful team-building activity at the Ruth Pretty Cooking School at Te Horo. The guys and girls were prepared to get pretty stressed out in the heat of the kitchen, and envisaged a "Jamie Oliver's restaurant" type of scenario, complete with tongue-lashings, tears and the consigning of slightly imperfect dishes to the bin.

However the tone was set as we donned our aprons in an elegant country estate kitchen, when our personal waitress handed out glasses of fine champagne to sip as we pondered



This was the active side of the evening, for the fitness freaks!



The delights of the busy country kitchen.

our task- to create a gourmet feast of 4 courses plus 5 different pre-dinner aperitifs. Willing hands were soon chopping, whisking and banging on the mortar and pestle, and a finer display of co-ordinated teamwork you are never likely to see as copper-bottom pans were manipulated over the gas flames, and blue ribbon delicacies were conjured forth.

Finally we could relax and enjoy the fruits of our labours, seated at a table of fine appointment and waited on by the obliging Ruth Pretty staff. A genteel round of croquet was indulged in on the lawn (I am afraid some were more genteel at this sport than others!). All in all, an excellent time was had and thanks are due to the highly professional Ruth Pretty Catering organisation for an excellent activity.

HVDC Remodelling Project

December 1st marked the successful implementation of the SPD HVDC Remodelling Project. This project involved altering the energy market model (SPD) of the HVDC Link to reflect the physical configuration more closely and maximise the HVDC transfer, particularly in south transfer.

For the past 7 months the project, led by John Cook from Transpower, engaged a number of PSC staff including Janna Gustavsson, David Schwartzfeger, Tristan Maunsell and Jeff Cowley in key roles. Tristan experienced the delights of Seattle providing the Oracle/SPD interface for ESCA. This proved to be essential due to the complex nature of the changes. (A detailed piece on the bars, clubs and general Seattle nightlife will be in the next issue).

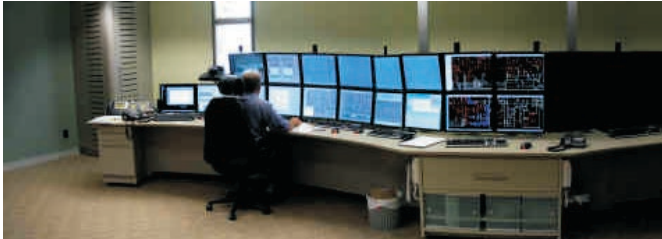
The project was split into two stages. The first stage involved changing the model of HVDC Pole 1 itself. The old model treated Pole 1 as a single integral whole connecting to a single node, whereas the new model reflected the reality of two discrete half-Poles each connecting to a physically separate node. A major component of this change was the half-pole scheduling application (termed DCSA),

which was a new tool designed to reflect the forecast HVDC configuration based on schedule outcomes and allow the HVDC model to be easily configured to align with the actual operational configuration. This stage was implemented successfully on November 17th.

The second stage added mixed constraints and redefined the risk formulation, requiring major changes in both SPD and RMT (Reserves Management Tool). The new mixed constraints optimise the HVDC ramp-up and ensure the Benmore T2 and T5 transformers' limits are not exceeded under contingent event situations. The risk formulation changes included additional reserve equations to better model HVDC Contingent Event and Extended Contingent Event risks. This stage was successfully implemented on December 1st.

Both stages of the project involved complex and significant changes to key market applications including DMT/RTD, RMT, MDE, Oracle applications and the SPD solver. The project's success is a great achievement by the team.

Transpower National Co-ordination Centre Wellington Establishment Project



Traditionally Transpower has had its Co-ordination Centres located in purpose built facilities. During 2003, Transpower relocated its Head Office in Wellington to a refurbished building also located in Wellington. A key component of this move was to relocate the existing Christchurch Co-ordination Centre to be within the Wellington Head Office building.

The computer processing power behind the Co-ordination Centres remained at its original locations and the new Co-ordination Centre plugged into these existing computing resources via LAN and WAN infrastructure.

The project basically required a plug'n play approach. However with the NCCS remaining operational until 3 months after the centre opened, all new equipment was required to fit out the new centre. Simon Lister (PSC) was involved in the project to sort out the frequency-monitoring requirement for the new centre.

PSC Welcome to Andrew Robbie



Andrew Robbie has recently joined PSC. Andrew graduated with an ME from the University of Canterbury in 1993 and joined Transpower NZ Ltd., where he carried out system studies for generation connections, new capacitor banks, and the static var compensator at Islington substation. He later joined ESBI Engineering in the United Kingdom, where he was responsible for the electrical design of 132 kV substations. Andrew then returned to New Zealand and joined Meritec Ltd. (now Maunsell), primarily providing services to Transpower. He is now with PSC providing system study services both within New Zealand and internationally.

Under the project management of Tony Neighbours (PSC), the first shift was undertaken from the NCCW on October 6th 2003. The final part of the implementation was completed on December 18th when the Cisco VoIP phone system for the Wellington Co-ordination Centre was made operational (just in time before Christmas).



Transpower Dragon Boaters have another win!

After winning the Social Division Grand Final at the Wairarapa Dragon Boat Festival, Transpower's "Power Dragons" powered on to take out the Corporate Championship Petite Final at the recent Wellington Festival.

The team, which comprised a number of first time paddlers, faced tough competition from teams who have been paddling together for a number of years. PSC was pleased to "power" the Dragons by providing the paddles, racing singlets, T-shirts and the team marquee.

