

Promoting Electrical Safety in the Transmission and Distribution of Electricity in Singapore

促進新加坡輸配電的電氣安全

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Abstract

This paper examines the respective roles of the regulator Energy Market Authority (EMA) and the operator of the transmission and distribution network SP PowerGrid Ltd. (SPPG) in relation to promoting safe practices in the management, maintenance and operations of the components in the network infrastructure.

The paper will first cover the range of assets managed by SPPG to show the magnitude of the task faced by SPPG.

There will be an overview of the processes put in place by SPPG with the objective of minimising the risk of injury to personnel and damage to equipment and property arising from electrical incidents. There will also be a brief description of the Contractor Safety Management System, an initiative which was implemented by SPPG in April 2009. This initiative enables project officers to monitor and evaluate the performance of their contractors in relation to safety. The obligations and responsibilities of the contractors are specified and incorporated in the contract documents.

Electrical incidents usually occur because maintenance and operational personnel deviate from established standards and best practices. An investigation will be conducted for every electrical incident to establish the root cause of the incident. This will be followed by the identification of possible deficiencies in the processes. There could also be areas of improvement in the processes. Lessons learnt from the investigation are utilised to formulate corrective courses of action for implementation to improve the processes and to prevent a recurrence. A few case studies on fatal and non-fatal electrical incidents will be presented to illustrate the process to improve safety in network operations as well as lessons learnt from these incidents.

摘要

本文探討新加坡的能源市場監管機構Energy Market Authority (EMA)及當地輸配電網公司SP PowerGrid Ltd. (SPPG)在推行電網基建元件的管理、保養和操作的安全措施上，分別所擔當的角色。

本文會首先介紹SPPG所管理的一系列資產，以展示該公司所面對的工作是何等重大。

然後，會概述SPPG所設立的流程。這些流程的目的是將電力事故所引致的人身受傷、設備及資產損毀的風險減至最低。另外，亦會簡介SPPG在2009年4月開始實施的承建商安全管理系統。這項新措施讓有關工程項目人員可以監察及評估承建商的安全表現，而合約文件亦會加入承建商的義務及責任的明確規定。

電力事故的發生，往往是由於維修和操作人員偏離既定的標準和最佳做法。每宗電力事故均會作出調查，從而找出事故的根本原因，流程中不足之處及可改進的地方。調查所得的經驗教訓，會用作制定流程改善方案及防止事故再次發生。本文亦會列舉一些致命及非致命的電力事故案例，以說明在改進電網操作安全的流程，以及從這些事故中所汲取的經驗教訓。

Biography

Joseph obtained an electrical engineering degree from NUS, Singapore and is a registered Professional Engineer.

He has worked with Singapore Airlines, Public Utilities Board and Energy Market Authority.

His experience covers maintenance of building services, high voltage distribution network projects and operations, investigation of electrical incidents, ensuring compliance with statutory requirements and national standardization work.

Presently, he monitors the technical performance of transmission and generation licensees and serves as Deputy Chairman of a TC drafting an "Earthworks" Code of Practice.