



概率风险评估在电力系统运行规划中的有效应用
张沛

摘要：美国电力科学研究院开发的基于概率的风险/可靠性评估（PRA）方法已经由多家电力公司验证，并在复杂的规划研究中得以成功应用。与传统确定性静态安全分析方法不同，PRA将事故的发生概率和事故的严重程度合并为一个可靠性指标——概率可靠性指标（PRI）。EPRI开发了PRI程序。该程序以静态安全分析结果数据及传输设备停运信息作为输入数据，计算并以图表的形式显示可靠性指标。本文介绍的是EPRI与纽约电力局（NYPA）合作，应用PRI程序对NYPA传输网络进行研究，验证了PRA方法能有效帮助运行规划人员分析系统静态安全状况。

关键词：运行规划；概率风险评估；PRA程序

Utility Experience Performing Probabilistic Risk Assessment
for Operational Planning of Electric Power Systems

ZHANG Pei

Abstract: EPRI has developed a Probabilistic Risk/Reliability Assessment (PRA) method under Power Delivery Reliability Initiative, which has been successfully implemented by various energy companies in planning studies of growing complexity. Unlike the traditional deterministic contingency analysis, PRA combines a probabilistic measure of the likelihood of undesirable events with a measure of the consequence of the events (that is, the impact) into a single reliability index – Probabilistic Reliability Index (PRI). EPRI internally developed the PRI program that uses contingency analysis results as well as the transmission facility outage information as the input to compute and graphically display the reliability indices. This paper presents an application of PRI program to study the transmission network of New York Power Authority (NYPA), demonstrating that the PRA method significantly improves the ability of conducting effective transmission operational planning.

Key words: operational planning; probabilistic risk assessment; PRI program

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