

Preface

This book describes a diagnosis method for steam generator clogging diagnosis and the process of its elaboration. It is mainly intended for nuclear maintenance engineers and industry researchers. As a strong emphasis was put on methodology, it can also be useful for physical modellers in general interested in the use of statistics for “model exploration”. Besides, members of the computer experiment community will find here a detailed account of the application of modern techniques on real-world model and data, formulated in a way to be as much reproducible as possible.

Most of the work presented in this book was accomplished during my Ph.D. thesis at Électricité de France (EDF), the French electricity utility. I benefited from the guidance of Hans Wackernagel and Thomas Romary from the centre for geostatistics of MINES ParisTech, Pascal Stabat from the centre for energy and processes at MINES ParisTech, and Jean-Mélaïne Favennec from EDF R&D department.

The first version of the physical model and diagnosis method, as well as its stochastic extension with particle filtering, are due to Vincent Chip. Subsequent improvements of the physical model, including extensive rewriting of the code and addition of transverse flows and phase speeds difference, were carried out by Julien Ninet and Olivier Deneux. The *vena contracta* deposition model was designed by Thomas Prusek. I gratefully thank Pascal Stabat, Jean-Mélaïne Favennec and Marion Paty for proofreading the manuscript.

Paris, June 2014

Sylvain Girard

Physical and Statistical Models for Steam Generator
Clogging Diagnosis

Girard, S.

2014, IX, 97 p. 76 illus., 42 illus. in color., Softcover

ISBN: 978-3-319-09320-8