

**T  
I 1  
E 9  
M 9  
E 6  
C**

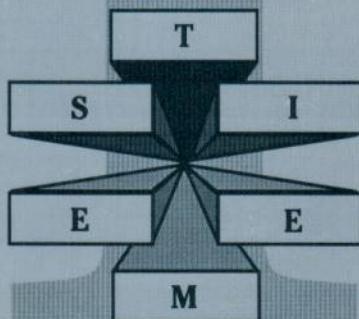
# **THE INTERNATIONAL EMERGENCY MANAGEMENT AND ENGINEERING CONFERENCE 1996**

**National and International Issues  
Concerning  
Research and Applications**

**May 28-31, 1996  
Montréal, Canada**



**ÉCOLE DES MINES  
DE PARIS**



**Sponsored by  
TIEMES**

**The International Emergency Management and Engineering Society**

**Co-Sponsored by  
École des Mines de Paris**

**J. L. Wybo • M.-C. Therrien • F. Guarnieri**

Belongs to: A/s QUASAR CONSULTANTS

**T  
I 1  
E 9  
M 9  
E 6  
C**

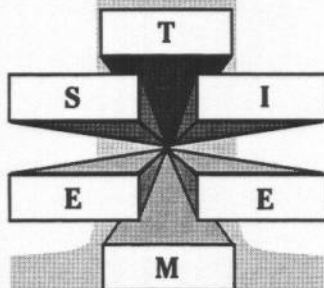
**THE  
INTERNATIONAL  
EMERGENCY  
MANAGEMENT AND  
ENGINEERING  
CONFERENCE 1996**

**National and International Issues  
Concerning  
Research and Applications**

**May 28-31, 1996  
Montréal, Canada**



**ÉCOLE DES MINES  
DE PARIS**



**Sponsored by  
TIEMES  
The International Emergency Management and Engineering Society  
Co-Sponsored by  
École des Mines de Paris**

**J. L. Wybo • M.-C. Therrien • F. Guarnieri**



# THE INTERNATIONAL EMERGENCY MANAGEMENT AND ENGINEERING CONFERENCE

National and International Issues  
Concerning  
Research and Applications

MAY 28-31, 1996  
MONTRÉAL, CANADA

**Edited by**

Jean Luc Wybo  
Marie-Christine Therrien  
Franck Guarnieri

*École des Mines de Paris*

**Conference Sponsor**  
**The International Emergency Management  
and Engineering Society (TIEMES)**

**Conference Co-Sponsor**  
**École des Mines de Paris**

THE INTERNATIONAL  
EMERGENCY MANAGEMENT  
AND ENGINEERING  
CONFERENCE

National and International Issues  
Concerning  
Research and Applications

MAY 28-31, 1996  
MONTREAL, CANADA

Edited by

Jean-Luc Wybo  
Marie-Christine Therrien

© 1996 TIEMES, The International Emergency  
Management and Engineering Society

Responsibility for the accuracy of all statements in each paper rests solely with the author(s). Statements are not necessarily representative of nor endorsed by TIEMES or any cooperating organization.

Permission is granted to photocopy portions of this publication for personal use and for the use of students providing credit is given to the conference and publication. Permission does not extend to other types of reproduction nor to copying for incorporation into commercial advertising nor for any other profit-making purpose.

Conference Co-sponsor  
École des Mines de Paris

PRINTED IN QUÉBEC, CANADA

**The 1996 International Emergency Management  
and Engineering Conference Steering Committee:**

Laurent Buisson, CEMAGREF, Division Nivologie, FRANCE

Christos Douligeris, University of Miami, USA

Adrian Gheorghe, Federal Institute of Technology, SWITZERLAND

Franck Guarnieri, Ecole des Mines de Paris, FRANCE

John R. Harrald, George Washington University, USA

A. M. G. Jarman, University of Canberra, AUSTRALIA

Jun Kawai, Mitsubishi Research Institute, JAPAN

Kathleen M. Kowalski, Madland Consulting, USA

Ross Newkirk, University of Waterloo, CANADA

S. Ramani, Academy for Management Excellence (ACME), INDIA

Marie-Christine Therrien, Ecole des Mines de Paris, FRANCE

Suleyman Tufekci, University of Florida, USA

Eugeny D. Vyazilov, RIHMI-WDC, RUSSIA

Jean Luc Wybo, Ecole des Mines de Paris, FRANCE