

Table of Contents

Plenary Session A The Current Status of the Containment Art

Performance of Containment Systems for Water Cooled Nuclear Power Reactors

Speaker: M.W. Jankowski International Atomic Energy Agency

Containment Research Overview

Speaker: K. Soda

Japanese Atomic Energy Research Institute

PWR Severe Accident Mitigation Measures: A French Point of View

Speaker: J. Duco

Commissariat a l'Energie Atomique, France

Plenary Session B Next Generation and Beyond Containment Concepts

Containment Challenges and Requirements in a Nuclear Powered World

Speaker: M.R. Hayns AEA Technologies

Future Containment Concepts

Speaker: A.A. Abagyan

All-Union Research Institute for Nuclear

Power Operation

To Contain or Not to Contain, that is the Question

Speaker: M.W. Golay

Massachusetts Institute of Technology

SESSION 1 Commissioning and Operating Experience

Testing of the Emergency Carbon Filters Used for Containment Venting Following a Loss-of-Coolant Accident

> J. Holtorp Ontario Hydro, Canada

Specially Formulated Polyurethane Applied to Increase Containment Leak Tightness

C. Seni

Atomic Energy of Canada Limited, Canada

A Successful Approach to Containment Integrated Leakage Rate Testing

H.T. Hill

BCP Technical Services, Inc., USA

Experience With Commissioning of Concrete Containments

D. Bhattacharyya Nuclear Power Corporation, India

Effectiveness of Inservice Inspection Requirements of Prestressed Concrete Containments - U.S. Experience

H. Ashar

U.S. Nuclear Regulatory Commission, USA

Relaxation of Containment - Pickering NGS-A Unit 3 Rehabilitation Outage

> R. G. Barton Ontario Hydro, Canada

Mass Transfer of Gas, Water and Water Vapour Throung Concrete for Reactor Buildings B.H. Mills

University of Toronto, Canada

Evaluation of Concrete Permeability After 25 Years Exposure to Nuclear Operating Environment

B.H. Mills

University of Toronto, Canada

SESSION 2 Regulatory and Performance Requirements

Impact of Source Term Research on Regulatory Processes and NPP Design

E. della-Loggia

Commission of European Community, Belgium

Regulatory Aspects of Containment Leakage Testing E.G. Arndt

U.S. Nuclear Regulatory Commission, USA

The US Nuclear Regulatory Commission's Containment Performance Improvement Program

W. Beckner

U.S. Nuclear Regulatory Commission, USA

The UK Regulatory View on Containment Requirements

R.D. Bye

Health and Safety Executive, England

Containment Design Requirements and their Application to 500 MWe Plant

M. Das

Nuclear Power Corporation, India

Inservice Requirements for Containments in the United States

R.F. Sammataro

General Dynamics, USA

Update on Periodic Inspection of Containment T. Kapaklili Ontario Hydro, Canada

SESSION 3 Reliability, Risk and Severe Accident Evaluation

Evaluation of a Mark I Containment System Under Severe Accident Pressurization

F. Beltran Principia, Spain

A Risk-Based Approach to Assessing CANDU Containment Reliability Requirements

K.S. Dinnie

Ontario Hydro, Canada



A New Modelling Approach for Containment Event Tree Construction: Accident Progression Stage Event Tree Method

> N. Watanabe Japan Atomic Energy Research Institute, Japan

Evaluation and Verification of the Reliability of Pressurized Heavy Water Reactor Containment and Associated Engineered Safety Features

D. Bhattacharyya Nuclear Power Corporation, India

Proving Test on the Reliability for Reactor Containment Vessel

A. Nonaka

Nuclear Power Engineering Test Center, Japan

Application of Thermal-Lag Analysis to Equipment Qualification for a Main Steam Line Break Environment Inside Containment

> J.H. Scobel Westinghouse Nuclear and Advanced Technology Division, USA

SESSION 4 Future Containment Systems

Severe Accident Mitigation Through Containment Design

K.D. Bergeron Sandia National Laboratories, USA

Considerations on Alternative Containment Concepts for Future PWRs

> B. Kuczera Kernforschungszentrum Karlsruhe, FRG

Containment Integrity Analysis for the (W) Advanced AP900

R.M. Jakub Westinghouse Nuclear and Advanced Technology Division, USA

Performance of the Westinghouse AP600 Passive Containment Cooling System under Severe Accident Conditions

> J.H. Scobel Westinghouse Nuclear and Advanced Technology Division, USA

Containment and Subsphere Design for the System 80+

W.A. Fox Duke Engineering & Services Inc., USA

On Improving the Passive Safety Features of the PIUS Concept

H.F. Khartabil Ohio State University, USA

Bistable Passive Heat Transfer System for Emergency Core Cooling

G. Anand Ohio State University, USA

SESSION 5 Severe Accident Evaluation

The Potential Effects of Ex-vessel Molten Core Debris Interactions at CANDU Nuclear Power Plants M.J. Lewis

Electrowatt Consulting Engineers and Scientists, England

Containment as the Focus of U.S. NRC's Revised Severe Accident Research Program

F. Eltawila

U.S. Nuclear Regulatory Commission, USA

The VVERs Containment Studies (Presentation only)

M.W. Jankowski

International Atomic Energy Agency, Austria

Buckling Experiments with a Spherical Steel Containment Model Under Seismic Loading

> R. Krieg Institut fur Reaktorentwicklung, FRG

Direct Containment Heating Calculations for Ringhals 3

V. Gustavsson Swedish State Power Board, Sweden

The Influence of Operator Actions on Containment Loads and Fission Product Releases Resulting from PWR Severe Accidents

D.B. Utton NNC Limited, England

SESSION 6 Activity Transport Experiments

Canadian Program on the Behaviour of Reactor Containment Atmospheres during Postulated Accidents

> K.N. Tennankore Atomic Energy of Canada Limited, Canada

Characterization of Aerosol Source to CANDU Containments

B.H. McDonald

Atomic Energy of Canada Limited, Canada

The CANDU Containment Aerosol Program at the Atomic Energy of Canada Research Company B.H. McDonald

Atomic Energy of Canada Limited, Canada

The Water Aerosol Leakage Experiments: Program Description and Preliminary Results

R.J. Fluke Ontario Hydro, Canada

Aerosol Behaviour in the Water-Aerosol Leakage Experiments

> K.R. Weaver Shaftesbury Scientific Limited, Canada

Interpretation of Early Experimental Results and Code Predictions from the Radioiodine Test Facility R.J. Fluke

Ontario Hydro, Canada



The Effect of Zinc Primer Surfaces on Aqueous lodine Chemistry within Containment

W.H. Kupferschmidt

Atomic Energy of Canada Limited, Canada

SESSION 7 Activity Transport Analysis

The Liric Database/Model

G.J. Evans

Atomic Energy of Canada Limited, Canada

SMART: a Simple Model for Activity Removal and Transport

M.S. Quraishi

Atomic Energy of Canada Limited, Canada

The Development of Radiological Consequence Accident Analysis Methods for the UK PWR

R.E. Tout

Nuclear Electric, England

CONTAIN Code Calculations for the LA-4 Experiment

F. Gelbard

Sandia National Laboratories, USA

Use of IDRA Code for Calculation of Fission Product Transport and Retention in the Containment: Comparison with National and International Experimental Results

F. De Rosa

Nucleare e delle Energie Alternative, Italy

Thermal-Hydraulic Analysis of the Lace Experiments and its Fall-Out on the Safety Analysis of LWRs Containment Systems

F. Oriolo

Pisa University, Italy

SESSION 8 Containment Structural Analysis

Summary of NRC - Sponsored Research on Containment Integrity

M.B. Parks

Sandia National Laboratories, USA

Estimation of Differential Pressure Loadings Across R.B. Internal Structures of 500 MWe PHWR Containment

R.N. Bhawal

Nuclear Power Corporation, India

Local Effect on Concrete Containment Due to Pipe Impact - Coupled and Decoupled Analysis

H.P. Lee

Ontario Hydro, Canada

Failure Prediction of BWR MARK-I Containment due to Overpressurization

H.M. Pan

Institute of Nuclear Energy Research, Taiwan, Republic of China

Finite Element Analysis of a 1/10 Scale Prestressed Concrete Reactor Containment Vessel Subject to Overpressurization

M. Wilkes

AEA Technology, England

Structural Analysis of the Reinforced Concrete Containment Under Extreme Static and Dynamic Pressure Loading

H. Kimura

Japan Atomic Energy Research Institute,

SESSION 9 Containment Design

Design of Containment System & Associated Engineered Safety Features in Indian PHWRs

S.K. Chatterjee

Nuclear Power Corporation, India

Localization of Accidents in Reactors of a Nuclear District Heating Plant

O.B. Samoilov

Experimental Machine Building Design Bureau, USSR

Early Localization of Containment Leakage During an Accident

C. Chauliac

French Atomic Energy Commission, France

An Assessment of the Effectiveness of Potential Improvements for Ice Condenser Containments

D.C. Williams

Sandia National Laboratories, USA

Application of Containment Integrity Margin to Allow for Increased Operational Flexibility of Service Water Systems

M.E. Wills

Westinghouse Nuclear and Advanced Technology Division, USA

Design for Constructability as a Contributor to Erection Schedule and Cost Reduction for Nuclear Generating Stations

J. Huterer

Ontario Hydro, Canada

SESSION 10 Future and Filtered Vent Containment Systems

General Containment Criteria for Nuclear Power Plants - A Model for Discussion

R.L. Seale

The University of Arizona, USA

Containment Filtered Venting - The Situation in Switzerland

G. Prohaska

Swiss Federal Office of Energy, Switzerland

Photochemcial Removal of Radioactive Iodine from Air

G.J. Evans

Atomic Energy of Canada Limited, Canada



Implementation and Full Scale Tests of Sand Bed Filter

> G. Liens Electricité de France, France

Filtered Containment Venting System

B. Eckardt Siemens AG, FRG

Filters Used in Post Accident Containment Clean Up System for Indian PHWRs

D. Bhattacharyya

Nuclear Power Corporation, India

The Performance Study of the Tube Water Wall PCCL and an Experimental Correlation for Steam Condensation in the Pressence of Air Under Natural Convection

M.W. Golay

Massachusatts Institute of Technology, USA

SESSION 11 Containment Response

The Contribution of International Standard Problem Activities to Containment Code Validation

H. Karwat

Technische Universitat Munchen, FRG

Comparison of CONTAIN Code Simulations to Experimental Ice Condenser Test Data

N.A. Russell

Sandia National Laboratories, USA

Pressure Suppression Pool Hydrodynamic Effects in Containment System of Indian PHWRs

S.S. Bajaj

Nuclear Power Corporation, India

Comparison of Code Calculation with Experiments on Containment Pressure Response During LOCA Conditions

S.S. Bajaj

Nuclear Power Corporation, India

Validation of the Arianna-2 Code on the Basis of the HDR V44 and T31.5 Tests

F. Oriolo

Pisa University, Italy

Pressure and Temperature Transient Analysis of 500 MWe PHWR Containment by Computer Code PACSR

R.N. Bhawal

Nuclear Power Corporation, India

SESSION 12 Hydrogen Combustion

Semi-empirical Correlations for the Burning Velocity of Hydrogen-Air Vented Deflagrations M.N. Carcassi University of Pisa, Italy

Deflagrations of Lean and Rich Hydrogen-Air-Steam Mixtures in Nuclear Reactor Containments M.N. Carcassi University of Pisa, Italy

Flame Acceleration in Hydrogen/Air Mixtures in a Vertical Cylinder Filled with Obstacles R.K. Kumar Atomic Energy of Canada Limited, Canada

Effect of Containment on Transition from Deflagration to Detonation

C.K. Chan

Atomic Energy of Canada Limited, Canada

Evaluation of Hydrogen Release, Dispersion and it's Management in Containments of Indian PHWRs Under Accident Conditions

S.S. Bajaj

Nuclear Power Corporation, India

Overview of First Results on the H₂ Distribution Test at the Large Scale HDR-Facility

L. Wolf

Battelle-institut, FRG

Passive Catalytic Hydrogen Mitigation G.W. Koroll Atomic Energy of Canada Limited, Canada

Catalytic and Spark Hydrogen Igniters
R. Heck
Siemens AG, FRG

				12
				,
1 1 :				
				*
	•			
1				
				, 7
[