



**BRITISH NATIONAL COMMITTEE
ON LARGE DAMS
(BNCOLD)**

British National Committee
on Large Dams (BNCOLD)

88 RESERVOIR RENOVATION

**PROCEEDINGS OF A SYMPOSIUM BY THE BRITISH NATIONAL
COMMITTEE ON LARGE DAMS**

UNIVERSITY OF MANCHESTER

MANCHESTER, 14-17 SEPTEMBER, 1988

Edited by D. A. K. HUGHES

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Committee on Large Dams.

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Edited by

Dr A K Hughes

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THE THEME

Reservoir Renovation is a broad theme, reflecting increased interest being shown in the complex problems associated with the continued safe operation of a stock of dams whose average age is almost 100 years.

The theme of the Symposium is of special interest to engineers in water authorities, inspecting engineers, supervising engineers and engineers working with the enforcement authorities, and all who are employed in or have an interest in the design, construction and operation of reservoirs.

THE EVENT

The Symposium was directed towards all engineers involved with old dams and those actively employed by the universities, the enforcement authorities and government.

The Symposium was intensive, with eight Technical Sessions concentrated into two working days.

The themes selected for the Technical Sessions were

- Technical Session 1 : 'Enforcement'
- Technical Session 2 : 'The Supervising Engineer'
- Technical Session 3 : 'Renewing and Updating Drawoff Works'
- Technical Session 4 : 'Overflow Repairs and Extensions'
- Technical Session 5 : 'Instrumentation and Drainage of Embankments'
- Technical Session 6 : 'Embankment Deterioration'
- Technical Session 7 : 'Gravity Dam Deterioration'
- Technical Session 8 : 'New Materials for the Renovation of Dams and Reservoirs'

The prestige lecture - the BNCOLD Lecture 1988 - was given by Dr D J Coats CBE BSc FEng FICE FIWEM FGS FASCE, and was entitled 'The Concerns of a Dam Engineer'.

On the third and final day attention was focused on selected local dams, participants visiting Winscar & Longdendale with a supplementary visit being offered to Haweswater.

SYMPOSIUM STEERING GROUP

The Symposium was organised by a Steering Group

R M ARAH	MA DIC FICE MIWEM
A K HUGHES	BSc PhD CEng MICE MIWEM MBIM
A I B MOFFAT	RD BSc CEng MICE FGS

PREFACE AND INTRODUCTORY NOTES

The theme of reservoir renovations was endorsed by the British National Committee on Large Dams late in 1986.

The interest in the theme proved to be much greater than originally anticipated and led to 36 Papers being presented before over 260 participants. It was particularly gratifying to note that some 20 overseas guests attended, representing a span of countries from Europe to the Far East and on to the Americas.

The Symposium proved to be a lively and stimulating affair, not least to the members of the Symposium Steering Group. Credit for this must rest with the Authors and Session Chairmen who contributed so much to the success of the eight Technical Sessions, and also with the participants who so actively involved themselves in discussion, formal and informal.

I would like to record my appreciation to my colleagues on the Steering Group, Messrs Arah and Moffat. I would especially like to thank Mr R M Arah for his assistance in editing the discussion contribution and Mrs E M Upton for her valuable assistance in typing the Discussion Document. Thanks are also due to Mrs G Arah and Mrs S C Hughes for their assistance with the Ladies' Visit and for their patient help with so much of the preparation.

The reports and discussion material presented in these Proceedings are based on tape recordings of the Technical Sessions. Editing of the recordings has been necessary but has been kept to a minimum and every care has been taken to provide an accurate account of what was said.

Many participants illustrated their contributions with the aids of slides, diagrams and other visual aids. Where this was the case the symbol S appears alongside a necessarily edited version of that contribution. In almost all cases Authors made a short presentation (5 mins). Comments which highlighted the main issues contained in their papers have been included in the discussions where they were not included in the Authors' papers.

A detailed Index for each Session immediately precedes the Papers presented in that Session. A list of participants, giving details of their affiliation and, where appropriate, of their contribution to the Symposium, appears at the conclusion of this volume.

The Editor apologizes for any inaccuracies of which he may inadvertently have been guilty.

Dr A K Hughes
November 1988

Note

All authors were allowed time for presentation of their paper prior to opening the session to discussion. These presentations have not been reported in the discussion documentation.

Unfortunately some authors were unable to meet the deadline set by the Editor for written contributions and answers.

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'The Concerns of a Dam Engineer'	Dr D J Coats
A brief history of 21 years of BNCOLD 1967-1988	M F Kennard
BNCOLD - 21 years of Science-based Advances in Dam Building	A D M Penman
'Pre Visit Presentation on Winscar Dam'	J D Humphreys

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