Proceedings of the Institution of Civil Engineers
**Water & Maritime Engineering 154**
March 2002 Issue 1
Pages 77–78

# Elsewhere in *ICE Proceedings*

Simon Fullalove, Editor

The following are summaries of papers published in other parts of ICE *Proceedings* during 2001 that readers of *Water and Maritime Engineering* may find of interest. You can get copies of individual papers emailed or posted to you for £5 or faxed to you for £2 a page from the ICE library (telephone +44 (0)20 7665 2251; fax +44 (0)20 7976 7610; e-mail library@ice.org.uk). In all cases you need to complete a copy request form which can be downloaded from the ICE website at www.ice.org.uk/library/icepbprq.html. Summaries of all papers in ICE journals are also freely available and fully searchable at the 'journals online' section of the ICE website at www.ice.org.uk/jol.

**The Three Gorges project on the Yangtze river in China**
R. Freer
*Proceedings of the Institution of Civil Engineers—Civil Engineering*, 2001, **144**, Feb., 20–28

Taming the mighty 6300 km long Yangtze river in south China was never going to be easy. Its history is littered with catastrophic flooding events that have destroyed lives and livelihoods and caused untold economic loss. The proposal to build what will still be the world's largest flood-control dam at the Three Gorges site in the river's mid-section was put forward as long ago as 1919. Wars and revolutions delayed the start until 1993 and completion is not now scheduled until 2009. This paper describes the planning and design of the £15 billion project and reports on construction progress to date. It highlights in particular the difficulties experienced in assessing the scheme's benefits against its costs-not least the need to relocate and reskill over one million people.

**Using the NEC for multiple-site, undefined contracts**
R. L. Patterson
*Proceedings of the Institution of Civil Engineers—Civil Engineering*, 2001, **144**, May, 78–83

This paper shows that the ICE's NEC Engineering and Construction Contract really is a well-structured and flexible tool that can deliver rather than dictate procurement strategy. It describes how Yorkshire Water Services simply and neatly modified the contract to allow new parcels of work on a rolling reservoir-upgrading programme—from feasibility studies to construction at different sites-to be let on a reimbursable, a lump-sum or a target-cost basis within a single contract. It explains the simple innovations with the ECC conditions and the structure of the contractor-consultant teams commissioned to undertake the work. A review of the possible wide-ranging applications of the modified contract is then given.

**Civil engineering for leisure: restoring the Wilts and Berks Canal**
D. J. Van der Cruyssen
*Proceedings of the Institution of Civil Engineers—Civil Engineering*, 2001, **144**, May, 84–89

The dedicated and resourceful volunteers who are rebuilding the abandoned 200-year-old, 85 km long Wilts and Berks Canal between Bath and Oxford in southern England are probably gaining more hands-on civil engineering experience than many civil engineers. Using a variety of funding sources-including the Heritage Lottery Commission, landfill tax credits, section 106 agreements and construction industry sponsorship-they are gradually working their way through a technically challenging, £103 million restoration project that they hope to complete within 'a generation'. This paper shows that such projects can be wonderful advertisements for civil engineering as well as providing real rewards for both engineers and non-engineers alike.

**Corporate development support for St Petersburg water services–a case study**
W. D. G. Lawn, M. Wilkes and M. Rystedt
*Proceedings of the Institution of Civil Engineers—Civil Engineering*, 2001, **144**, special issue, 39–44

The state-owned water and wastewater utility in Russia's former capital St Petersburg was voted best Russian public-sector organisation last year, thanks in part to the help of a western-European corporate development support team. As described in this paper, the team helped the utility set up a strategic planning and policy framework and introduced corporate development planning for the first time in the Russian water sector. The corporate plan became the catalyst for a process of change from a command structure towards a more commercially orientated business. Not surprisingly, the Russian federal authorities are now applying the lessons learnt to water utilities in other cities.

**Britain's concrete dams: the final 50 years?**
C. Scott and D. Molyneux
*Proceedings of the Institution of Civil Engineers—Civil Engineering*, 2001, **144**, 170–180

The second half of the 20th century saw over 60 large concrete dams built in Britain for a wide variety of water supply

and hydroelectric reservoirs. However, with increasing social and environmental concerns about such projects. the Maentwrog gravity dam built 10 years ago could be the UK's last. The late Geoffrey Binnie described the development of concrete and masonry dams in the UK up to 1942, from Vyrnwy to Haweswater. This paper aims to complete the at history. It describes the development of concrete dams. from simple mass-concrete gravity structures to prestressed and double-curvature arch designs, and the effect of improving technologies. It also looks at how the expertise of UK dam desingers has been exported worldwide and concludes with a brief review of the World Commission on Dams report.

**Environmental regulation of groundwater abstraction for dewatering works**
M. Preene and F. C. Brassington
*Proceedings of the Institution of Civil Engineers—Geotechnical Engineering*, 2001 **149**, April, 75–76

The abstraction of groundwater for beneficial use or supply in England and Wales is restricted by law. The relevant legislation is currently the Water Resources Act 1991, but the Government has recently announced that new legislation is forthcoming. This paper outlines the licensing system currently in place and goes on to explain the proposed changes to legislation controlling dewatering works. It emphasises that in future it will be essential to keep the Environment Agency suitably informed of groundwater abstractions for whatever purpose and to comply with the new regulations, as failure to do so may well result in prosecution.

**The status of the global positioning system for dam surface monitoring**
M. Stewart and M. Tsakiri
*Proceedings of the Institution of Civil Engineers—Geotechnical Engineering*, 2001, **149**, Oct., 249–252

Dam monitoring relies on the long-term measurement of small structural changes at regular intervals. Traditional surveying techniques and geotechnical instrumentation can effectively monitor one- or two-dimensional modes of motion. However, spatial distribution of geotechnical instrumentation is usually limited to the locations that the instruments can be installed during dam construction, while surface monitoring by traditional surveying techniques is a relatively slow process which restricts the number of points that can be regularly monitored. As a supplement to existing geotechnical instrumentation, the Global Positioning System (GPS) offers a reliable and efficient method for three-dimensional monitoring. To date, GPS technology has been successfully applied to a variety of deformation monitoring applications. This is due to its ease of use, and capability of very high accuracy when the appropriate hardware, software and field procedures are implemented. This paper reviews current GPS technology in the context of its application to dam deformation monitoring and the advantages and disadvantages of using GPS for this type of activity are discussed.

**Experimental investigations of air sparging to control contaminated groundwater**
S. Catney and R. Lynch
*Proceedings of the Institution of Civil Engineers—Geotechnical Engineering*, 2001, **149**, Oct., 253–258

This paper investigates the feasibility of using air trapped in the pores of soil to reduce soil permeability and hence form a barrier to groundwater flow. The laboratory experiments carried out investigated: (a) how to inject air into the soil in such a way that contaminated water is discouraged from entering the air-injected (sparged) region; (b) what factors affect the airflow; and (c) whether the sparged region can deflect a plume of contaminant. It was found that this application of air sparging can be used to form a barrier to groundwater flow in laboratory scale experiments.

**Development of design form of reinforced concrete water towers**
M. H. Gould and D. J. Cleland
*Proceedings of the Institution of Civil Engineers—Structures and Buildings*, 2001, **146**, Feb., 3–16

This paper looks at the development of design form of reinforced concrete (RC) water towers in Britain and Ireland where free-standing towers have been used since the nineteenth century. Although brick was used up to the 1930s, after 1900 RC became common. Following a brief look at early designs, the paper goes on to discuss various aspects of water tower development, including multi-legged designs, solid-sided towers, shafts with fins, single-stem towers. It concludes with a comment on recent developments.

**11 000 t deck superlift for RBS-8M drilling semi-submersible**
K. R. Cho, Y. S. Kim and D. T. Fern
*Proceedings of the Institution of Civil Engineers—Structures and Buildings*, 2001, **146**, May, 203–216

A 25 500 t semi-submersible drilling rig, the RBS-8M, was assembled on shore in the Hyundai Heavy Industries fabrication yard in Ulsan (Korea) during 1999. The major components-the two 6000 t hull pontoons and the 11 000 t deck-were assembled at ground level and brought together to form the completed vessel during a period of only a few days. This was the first time such an operation on this scale had been attempted. This paper describes the design, construction and performance of the temporary structures that lifted the 11 000 t deck to a height of 38 m above yard level. The lift is known as the RBS-8M 11 000 t deck superlift.

**Jacket design to resist ship impact**
B. F. Ronalds
*Proceedings of the Institution of Civil Engineers—Structures and Buildings*, 2001, **146**, Aug., 285–294

The response of three jacket structures is investigated under accidental ship impact. Fully non-linear finite element analysis results agree well with the predictions of a locally non-linear beam–column model attached to an elastic structure. The results suggest that typical North Sea jackets in moderate water depth and carrying moderately large topsides may be able to resist very high impact energies. For very light jackets, however, sudden overall collapse is possible, particularly under nodal impact. The criticality of ship impact for jacket design is very dependent on the relative magnitudes of the loads at which the ship and the jacket collapse. The topside configuration is also important as it determines the manner in which tension loads generated during the impact are redistributed through the structure.