

Society for Underwater Technology

# Publications Catalogue



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# NEW PUBLICATION FOR 2010

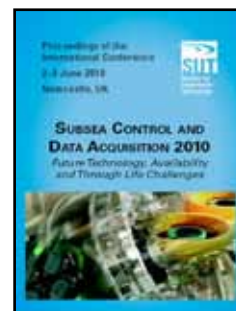
## Subsea Control and Data Acquisition 2010: Future Technology, Availability and Through Life Changes

Proceedings of the international conference held in Newcastle, UK,  
2-3 June 2010

This long established international conference dealing exclusively with underwater instrumentation, control and communication technology for subsea oil and gas production has been structured to cover relevant experience and new thinking in subsea developments. Providing a unique forum for the supplier and operator of subsea technology to exchange views and experiences, its aim is to bring together the many diverse disciplines engaged internationally in this technology. Experience gained and current challenges, as well as new advances in technology, will be the main topics to meet the future challenges. Equal importance has been placed on reliability and global issues such as environment, decommissioning, deepwater problems and long distance offsets. These proceedings will feature contributions from professionals giving experience gained and new challenges to overcome and is therefore of interest to all in subsea engineering.

### Contents:

*Subsea All-Electric* – A-K Aadland and K Peteren; *All-Electric System Performance Assessment* – D Abicht; *A Control System for Subsea Processing and Injection of Seawater* – JO Hallset; *Controls Reliability and Early Life of Field Failure of Subsea Control Modules* – PA Broadbent; *Control System and Condition Monitoring for a Subsea Gas Compressor Pilot* – KG Eriksson; *An Application of Optical Temperature Sensing for Under Insulation Monitoring during a Subsea Tree Cool-Down Test* – DM Faichnie, A Graham and D McStay; *Optoelectronic Leak Detection System for Monitoring Subsea Structures* – D Moodie, L Costello and D McStay; *Use of a Parallel System for Improving Subsea Intelligent Well Control, Monitoring and Reliability* – G Deans and D Chaplin; *Cutting the Umbilical: NASCoM Technology, the Latest Developments in Acoustic Subsea Control* – M Bavidge; *Reliable Wideband Acoustic Communication Links in Critical Subsea Control and Monitoring Applications* – T Kenny; *Solutions for Improved Operational Efficiencies and Enhanced Oil Recovery by Mid-Life Technology Insertion into Older Fields* – R Tester; *Subsea Control and Automation: Evolving for the future* – S Cohan; *Blockage Avoidance in Subsea Production Control and Chemical Injection Fluid Conduits* – D Stables; *Subsea High Temperature Production, Past and Future: a Control Fluid Manufacturer's Perspective* – S McManus; *Experiences from Operating Second Generation Electric Intervention Control Systems in Riserless Light Well Intervention* – V Sten-Halvorsen; *Is the Subsea High Integrity Pressure Protection System (HIPPS) Coming of Age?* – V Hutchings



**Price: £95**

Order Ref. C41

ISBN 0 906940 52 4

ISBN-13 978 0906940525

Hardback, 2010

176 Pages; 210x150mm

## The Operation of Autonomous Underwater Vehicles, Volume One: Recommended Code of Practice for the Operation of Autonomous Marine Vehicles, Second Edition

This is the first update to the pioneering *The Operation of Autonomous Underwater Vehicles, Volume One: Recommended Code of Practice*, published in 2000. Since then, a great deal of experience has been gained in the operation of these vehicles, and related matters – such as insurance and the legal aspects – informs this update. Since any AUV will spend time on the surface, the ambit of this code has been extended to include this, and the vehicles are now classified as autonomous marine vehicles (AMV). It is intended that this code will be widely taken up by the industry, and the relevant parts will eventually be incorporated in international maritime law.

This AMV CoP has been written as a voluntary code that the SUT endorses for adoption by the AMV community. It is a non-legal document which encapsulates the combined experience of the members of the AUVLWG, spanning most – if not all – aspects of civil and military AMVs and should be regarded as a guide, based on best practice, to the issues to be considered in the design, build, and operation of an AMV. The code is primarily aimed at the users, designers, researchers, and manufacturers of AMV systems in the United Kingdom. Though the CoP is focused on the UK, it is believed by both the AUVLWG and the SUT that it could be used as a basis of a codified procedure to be adopted by the international AMV community.



**Price: £75\***

Order Ref. C40

ISBN 0 906940 51 6

ISBN-13 978 0906940518

Paperback, 2009

78 Pages; 210x150mm

## \*SPECIAL OFFER

All three volumes of **The Operation of Autonomous Underwater Vehicles**, when purchased together, may be obtained at the discounted price of **£165** when purchasing the series with Volume 1 Second Edition, 2009  
(see page 8 for additional books in the series).

# SPECIAL OFFER

Both volumes of *The Collaborative Autosub Science in Extreme Environments* series, when purchased together, may be obtained at the discounted price of £170.

## The Collaborative Autosub Science in Extreme Environments: Workshop on AUV Science in Extreme Environments

Proceedings for the international science workshop held at the Scott Polar Research Institute, University of Cambridge, 11–13 April 2007; *Edited by K Collins and G Griffiths*

Autonomous underwater vehicles (AUVs) are well suited for the task of gathering data and making observations from some of the most extreme environments on earth. This workshop brought together an international group of scientists and engineers to review a range of missions that have been tackled by AUVs in extreme environments, from beneath polar ice to deep-sea hydrothermal vent sites, and to examine the science and technology requirements for the future. This volume provides a record of AUV achievements and outlines of plans for using AUVs and other vehicles in extreme environments through the contributed papers and abstracts, and provides pointers for the future from the records of discussion sessions.

**Contents:** *Foreword* – G Griffiths; *Preface: AUVs in the Context of Global Climate Change* – C Summerhayes; *Preface: Where Might AUV Science Go?* – K Heywood; *Ice/Ocean Interactions: Urgent Questions for AUVs* – D Vaughan; *Turbulent Heat Flux, Salt Flux and Friction Velocity from an AUV under Arctic Summer Pack Ice* – D Hayes, J Morison and M McPhee; *Seabed Photography from an AUV* – D Jones, S McPhail, B Bett, C Flewelling and M Conquer; *A Comparison of Swath-Bathymetric Imagery from High-Latitude Glacier-Influenced Fjords Derived from AUV, ROV and Shipboard Systems* – JA Dowdeswell, R Noormets, J Evans, G Griffiths, RD Larter and C Cofaigh; *Animals as Exploratory Underwater Vehicles* – L Boehme, M Biuw, M Fedak, K Nicholls, Sally Thorpe and M Meredith; *Deployments of an Underwater Glider at the Mouth of Illulissat Fjord, Greenland* – R Bachmayer and B de Young; *Ice-Borehole ROV – a New Tool for Subglacial Research* – S Vogel, RD Powell, I Griffith, K Anderson, T Lawson and SA Schiraga; *Hydrothermal Exploration Using WHOI's ABE AUV* – C German, DR Yoerger, M Jakuba, A Bradley, TM Shank and K Nakamura; *Glider Experiments from Cyprus: Continuous Surveys in the Levantine Basin* – D Hayes, G Zodiatis and G Georgiou; *Charting Lacustrine Environments with UBC-Gavia* – AL Forrest and B Laval; *Seasonal Thermal Structure of Pavilion Lake* – AL Forrest and B Laval; *Developing AUVs for Science* – J Ferguson and L Mackay; *Autosub6000 – a Long-Range and Deep-Diving AUV* – S McPhail; *Exploration of Hydrothermal Vents on the Gakkal Ridge, Arctic Ocean, Using AUVs* – SE Humphris, RA Reves-Sohn, H Singh, TM Shank and HN Edmonds; *MUN Explorer AUV: Current and Future Plans for Science in Extreme Environments* – S Adams, R Lewis and N Bose; *Brief Overview of some Collaborative Efforts between UUVs and UAVs in the United States* – ML Patterson and A Brescia; *Subglacial Environments – Potential for AUV and ROV Operation in Sub-Ice Environments* – S Vogel; *Ellsworth Subglacial Lake: Exploration and Technologies* – M Mowlem, C Floquet and the Lake Ellsworth Consortium; *plus records of group breakout sessions and summaries of the NERC Autosub Under Ice projects*



**Price: £95 or £170 for both volumes**

Order Ref. C39

ISBN 0 906940 50 8

ISBN-13 978 0906940501

Hardback, 2008

202 Pages; 210x150mm

Colour; 90 Figures/Tables

## The Collaborative Autosub Science in Extreme Environments: Masterclass in AUV Technology for Polar Science

Proceedings for the international Masterclass held at the National Oceanography Centre, Southampton, 28–29 March 2006; *Edited by G Griffiths and K Collins*

Maritime polar environments are some of the most challenging areas on earth. Autonomous underwater vehicles (AUVs) offer tremendous potential as one solution to cost-effective data-gathering for science and industry in these inhospitable areas. The International Polar Year 2007–2009 provides a particular focus for science. In preparation for an upsurge in the use of AUVs for polar research, this Masterclass—organised by, and held at, the National Oceanography Centre, Southampton, and supported by the UK Natural Environment Research Council—brought together an international group of engineers and scientists to assess current performance and future requirements. The contributed papers provide both a resource for new AUV users and critical analyses of what remains to be achieved if, after the International Polar Year, AUVs are to be a lasting legacy as observers of the polar oceans.

**Contents:** *Foreword* – G Griffiths; *Why Polar Marine Science Is Important* – P Wadhams; *Research and Development of Past, Present and Future Autonomous Underwater Vehicle Technologies* – I Yamamoto; *Autosub Operations in the Arctic and the Antarctic* – S McPhail; *Sensors and Instrument Requirements for Autonomous Underwater Vehicles* – D Hayes, T Boyd and M Patterson; *Communications* – DR Blidberg; *Future Technologies and Requirements* – N Størkersen; *Autonomous Underwater Vehicle Operations – Needs of New Users* – N Bose, D Hayes and G Griffiths; *Launch and Recovery of Autonomous Underwater Vehicles in Polar Regions* – P Stevenson; *Autonomy and Collision Avoidance* – M Pebody; *When Things Go Horribly Wrong* – J Ferguson; *Towards a Risk Management Process for Autonomous Underwater Vehicles* – G Griffiths and A Trembanis; *Future Autonomous Underwater Vehicle Campaigns and Missions* – J Wilkinson; *Autonomous Underwater Vehicle Navigation and Proximity Operations for Deep Phreatic Thermal Explorer (DEPTHX)* – W Stone, N Fairfield and G Kantor



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ISBN-13 978 0906940488

Hardback, 2007

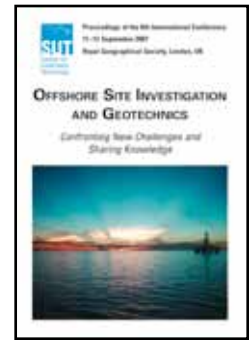
146 Pages; 210x150mm

## Offshore Site Investigation and Geotechnics: Confronting New Challenges and Sharing Knowledge

Proceedings of the international conference held in September 2007

This international site investigation conference, organised by the Offshore Site Investigation and Geotechnics (OSIG) Committee of the Society for Underwater Technology, is the sixth in a series started by SUT in 1978. This conference, 'Confronting New Challenges and Sharing Knowledge', continued the aims of this established series of disseminating and communicating the latest developments in all aspects of marine geotechnology. The needs of the offshore community have changed substantially since the first conference in 1978 and, today, interest is primarily focused around geohazards, deepwater development with floating production facilities, the shallow geotechnical aspects of subsea tie-backs and development of renewable sources of energy. Leading practitioners and academics in the offshore industry have contributed keynote papers to these proceedings: Prof R Jardine, Dr T Lunne, Prof M Randolph and H Mannaerts. Included are over 50 peer-reviewed papers, with 800 colour images and graphs, covering twelve sessions of the diverse specialities within this field.

**Contents:** *The Role of ROV Technology in Offshore Shallow Geohazard Observation and Monitoring: Environmental Stewardship in the Gulf of Mexico* – H Mannaerts et al.; *North Falkland Basin Geohazard Study* – K Day and J Gale; *Integrated Multidisciplinary Assessment and Mitigation of West Nile Geohazards* – R Moore et al.; *Experience and Lessons Learned from Procurement of Site Investigation Campaigns at Sheringham Shoal Offshore Windfarm* – P Fish and C Leach; *Behaviour of a Piston Corer from Accelerometers and New Insights on Quality of the Recovery* – J-F Bourillet et al.; *Rapid Determination of Soil Sample Quality Using Shear Wave Velocity and Suction Measurements* – S Donohue and M Long; *An Improved Tool for In Situ Pore Water and Gas Sampling* – E Tervoort and J Peuchen; *PROD Delivers an Accurate Site Investigation at Maari* – D Pennington and P Kelleher; *Novel Data Gathering Platforms for Offshore Site Surveys* – H Young et al.; *Determining the Extent of Sabellaria Reefs during Seabed Surveys* – R Birchall; *Casing Integrity in Hydrate Bearing Sediments* – R Freij-Ayoub; *Pipe-Soil Interaction in Highly Plastic Clays* – H Dendani and C Jaeck; *The Axial Resistance of Buried and Unburied Pipelines* – J Oliphant and A Maconochie; *The Influence of Pipe-Soil Interaction on Lateral Buckling and Walking of Pipelines* – the SAFEBUCK JIP – D Bruton et al.; *Soft Clay Shear Strength Parameters for Deepwater Geotechnical Design* – T Lunne and K Andersen; *Full-Flow Penetrometer Testing in Bothkennar Clay* – N Boylan et al.; *Rate Effects in Vane Shear Testing* – J Peuchen and P Mayne; *The Harpoon Free-Fall Cone Penetrometer for Rapid Offshore Geotechnical Assessment* – DC Mosher et al.; *Shallow Gas and Its Multiple Impact on a North Sea Production Platform* – TI Tjelta et al.; *Formation of Packmarks in the Norwegian Channel* – C Forsberg et al.; *Small Scale Model Testing of Gas Migration in a Soft Seabed as a Basis for Developing a Mechanical Model for gas Migration* – MH de Vries et al.; *Foundation Behaviour of a Giant Gravity Platform of Soft Soils as Evidenced after Ten Years of Monitoring* – G Svano et al.; 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**Price: £190**

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ISBN 0 906940 49 4

ISBN-13 978 0906940495

Hardback; 2007

558 Pages; 300x210mm

## Subsea Controls and Data Acquisition 2006: Controlling the Future Subsea

Proceedings for the international conference held in Toulon, France, on 7–8 June

Subsea Controls and Data Acquisition (SCADA) is a unique, long established international conference which represents the oil industry control systems groups and deals with control, communication, remote data acquisition and the enabling technologies associated with hydrocarbon exploitation from the subsea environment. This conference is aimed at professionals working in the field of subsea engineering. The emphasis is placed on future technology requirements, availability and obsolescence. Equally, importance has been placed on global issues such as environment, decommissioning, deepwater problems and long-distance offsets. Topics include: all-electric systems, seabed processing, fibre optic transmission and distributed systems. Reliability of systems continues to play a dominant role, coupled with contributions from professionals giving experience gained and new challenges to overcome. *Subsea Controls and Data Acquisition 2006*, therefore, is of interest to all in subsea engineering.

**Contents:** *The Need to Adopt a Proactive Approach to Obsolescence Management in Subsea Controls* – D Saul; *Application of Virtual Flow Metering as a Backup or Alternative to Multiphase Flow Measuring Devices* – B Bringedal and A Phillips; *Opto-Electrical Solutions for Offshore Fields* – M Fullenbaum; *Composite Materials for Subsea Oil Separation* – D Mischeaux et al.; *Using Platelet Technology™ to Locate and Seal Leaks in Long Subsea Umbilical Lines* – N Ryan et al.; *Enabling Subsea Surveillance* – G Deans and R MacKenzie; *Ultra-Long Offset 'Subsea to Beach' Controls Technology – Case Study, Statoil Snøhvit* – W Acworth; *Development and Approval of HIPPS for Application in the Gulf of Mexico* – CJ Lindsey-Curran; *Multi-Axis Finite Element Analysis of Helical Umbilical Structures in Bending, Tension and Crushing* – A Dobson et al.; *Long Offset Control System Using All-Electric CameronDC System* – W Menz; *Subsea Architectures to Facilitate Increased Recovery from Reservoirs* – R Neri and K Falk; *Tordis Subsea Separation Boosting and Injection (SSBI) Project* – JH Neuenkirchen; *Subsea Data Mapping* – D Saul; *Feasibility Study: SWIMMER, a Hybrid AUV/ROV for Intervention on Subsea Production Systems* – G Grenon

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ISBN 0 906940 45 1

ISBN-13 978 0906940419

Hardback, 2006

174 Pages; 210x150mm

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134 Figures/Tables

## Offshore Site Investigation and Geotechnics— Diversity and Sustainability

**Price: £110**

Proceedings of the international conference held in November 2002

Order Ref. C26

This international site investigation conference, organised by the Offshore Site Investigation and Geotechnics (OSIG) Committee of the Society for Underwater Technology, is the fifth in a series started by SUT in 1978. The last quarter of a century has seen dramatic changes in the technologies, areas and water depths in which we work, and the speed with which projects move from conception to implementation. Moving into the twenty-first century we have seen a new focus on sustainability issues at global and local levels. Sustainability has implications for the natural environment, resource and energy management, and on the economic survival of complete industries, as well as companies and individuals. Engineers and scientists need to focus on new ways of working, increasing their effectiveness and breadth of thinking to ensure that projects meet the triple requirements of economic efficiency, environmental protection and social acceptability. To do this we need to be both more innovative and diverse in our activities. The theme for this fifth conference was, therefore, 'Diversity and Sustainability' with over 30 papers encompassing the widest possible range of geographic, technological and innovative projects.

ISBN 0 906940 42 7

ISBN-13 978 0906940426

Hardback; 2002

454 Pages; 297x210mm

335 Figures/Tables

Colour

### Contents:

*Geotechnical Solutions for the Offshore* – S Lacasse; *Deepwater Canyon Slope Stability* – K Day; *Adding Value to Site Specific Geohazards Investigations from Regional Studies* – Z Harrison et al.; *Study of the Effects of Gas Hydrates on the Seafloor Slope Instability in the Lower Congo Basin* – S Sultan et al.; *Gravity Base Design for Subsea Structures* – R Fisher et al.; *The Pros and Cons of Different Foundations Used for the Åsgard Field Development* – G Haland; *Girassol* – J-L Collait-Dangus and H Dendani; *Geotechnical Aspects of the Maureen Gravity Platform Removal* – P Broughton et al.; *Optimising Integrated Site Investigation for Offshore Wind Farm Projects* – C Jenner et al.; *Continuous Burial Assessment of Pipelines and Cables* – A Puech; *Cemented Hardgrounds on the Norwegian Continental Shelf and Their Impact on Submarine Cable Installation* – R Comrie et al.; *Reducing Backfilling Risks* – T Powell et al.; *Accurate Detection of Buried Pipelines in River Crossings and Inshore Areas by Magnetic Methods* – T des Vallieres and T Slater; *Ormen Lange Geoborings* – TI Tjelta; *The Storegga Geomodel and its use in Slide Risk Evaluation* – P Bryn et al.; *Slope Stability at Ormen Lange* – TJ Kvalstad; *Integrating Geophysics and Geotechnics* – C Huslid and E van Raaij; *An Integrated Deepwater Site Investigation: Southern Green Canyon, Gulf of Mexico* – EA Liedtke et al.; *Quantifying Geohazards Through Advanced Visualisation and Integration in the Terang-Sirasun Development, Kangean Psc. Indonesia* – P Cook et al.; *SE Asia Jack-up Punch-throughs* – JJ Osbourne and JM Paisley; *Assessing the Effects on Jack-up Structures of Eccentric Installation Over Infilled Craters* – R Jardine et al.; *Axial Capacities of Jetted Well Conductors* – TG Evans et al.; *A Calibrated Model for the Interpretation of Cone Penetration Tests (CPTs) in North Sea Quaternary Soils* – N Ramsey; *The Cyclic Resistance of Calcareous Sediments* – IMS Finnie and P Hefer; *Correlation Between Compressive Seismic Velocity and Cone Resistance at Shallow Penetration in Sands* – P Foray et al.; *Shear Wave Velocity Integrated in Offshore Geotechnical Practice* – J Peuchen et al.; *Wireline Logging for Deepwater Geohazard Assessment* – A Digby; *Excess Pore Pressures Induced by Installation of Suction Caissons in NC Clays* – J Cao et al.; *Very High Resolution Marine 3D Seismic Method for Detailed Site Investigation* – B Marsset; *Implementation of GIS within the Offshore Community* – S Buchan and GP Cooper; and *Managing Geotechnical Risk in Deepwater* – C Clayton and P Power

## Subsea Controls and Data Acquisition 2002: Performance and Reliability—Lessons Learned

**Price: £65**

Proceedings of the international conference, held 13–14 June 2002 in Paris, France

Order Ref. C25

SCADA is a unique, long established international conference which represents the oil industry control systems groups and deals with control, communication, remote data acquisition and the enabling technologies associated with hydrocarbon exploitation from the subsea environment.

ISBN 0 906940 41 9

ISBN-13 978 0906940419

Hardback; 2002

196 Pages; 210x150mm

85 Figures/Tables

The theme for this conference, held in Paris on 13–14 June 2002 and entitled 'Performance and Reliability—Lessons Learned', was structured to cover a wide range of subjects in those areas which emphasise the reliability of and lessons learned from operation of subsea systems. Aimed at the professionals active in subsea production systems and, in particular those engaged in the control and monitoring of such systems, the proceedings from the conference cover a subject matter ranging from fibre optics to smart wells, and wave generation systems to patentable technology.

### Contents:

*Subsea Electrical Failures* – K Williams and Z Bruce; *Steel Tube Umbilicals—Past, Present and Future* – D Stables and P Fellows; *A Systematic Approach to Reduce Subsea Equipment Failures* – T Mellem and B Hugaas; *Reliability of Subsea Control Systems: HIPPS a Case Study* – G Gall et al.; *Subsea Technology: Can it be Patented and How?* – W Buskop; *Deepwater Control System Reliability Results from the Ceiba Development* – J Cattanaach and J Bodine; *Intelligent Well Interface Standardisation (IWIS)* – R Baird; *Achieving Reliability Improvement for Subsea Challenges* – C Roberts and T Laing; *KOS 200, The Subsea Control System for the Millennium* – S Corneliusen; *The Application of Fibre Optics to Subsea Systems* – D Pye; *Advanced Applications of Subsea Control Systems* – B Clark et al.; *Remote Power Generation for Deepwater Offshore Facilities* – R Thornton; *Otter Development—Enhanced ESP Protection by Use of Subsea Control System* – F Coudeville and I Watt; and *A Systems Approach to the Reliability of Hydraulic Subsea Production Control Systems* – R. Rowntree

## **The Operation of Autonomous Underwater Vehicles, Volume One: Recommended Code of Practice**

**Price: £50\***

The first volume of SUT reports on the operation of autonomous underwater vehicles

*C Carleton, C Fay, G Griffiths, A Holt, R Rogers and A Tonge; edited by JC Dering*

This SUT publication, produced by the Society's Autonomous Underwater Vehicles Legal Working Group, provides the AUV community with a Code of Practice for use and voluntary adoption as a community standard. The concept of AUVs has been in evidence for at least 20 years with a wide range of operating capabilities and technical solutions. However, the safety and legal framework for their use has yet to be properly formulated. The wide and everyday use of the technology is still relatively immature as an established part of the underwater marine technology scene.

Early AUV deployment and research, as would be expected, has its roots in the military maritime operational requirement, with major maritime powers such as the United States and Russia being examples of leading developers of an early military AUV capability. However, more recently in the UK both the civil research and industrial communities have developed ocean going AUV capabilities of international repute, examples being Autosub as a research platform and the Marlin vehicle being offered as an industrial AUV platform.

AUV development and, more importantly, routine usage is on the increase. This is partly being driven by the costs of ship time incurred when doing routine operations such as pipeline inspection or simple repetitive oceanographic measurements.

This growth of AUV usage has been under a loose legal framework and because of current legal status of the technology, this has meant the AUV community has had to be self regulating. This Code is in some way and expression of that self-regulatory approach.

Order Ref. C22  
ISBN 0 906940 38 9  
ISBN-13 978 0906940389  
Paperback, 2000  
48 Pages  
292x206mm  
Black and White

## **The Operation of Autonomous Underwater Vehicles, Volume Two: Report on the Law**

**Price: £80\***

The second volume of SUT reports on the operation of autonomous underwater vehicles

*ED Brown and NJJ Gaskell*

This report was commissioned to provide the Natural Environment Research Council's Autosub programme with an up-to-date review on the law relating to autonomous underwater vehicles. AUV operations are sufficiently novel that guidance on operating practice and the legal constraints that may apply has been rather scarce.

By the nature of the commission, the report focuses on the national and international legal regimes applicable to a UK operator and as they appertain to an autonomous vehicle engaged in marine scientific research, such as Autosub. Nevertheless, much of this authoritative publication is relevant to the international operation of an AUV of any nationality and it will also prove valuable to commercial operators. As an aid to dialogue, it should also prove valuable to those in the maritime law community interested in the questions posed by this exciting new underwater technology.

Order Ref. C23  
ISBN 0 906940 37 0  
ISBN-13 978 0906940372  
Paperback, 1999  
274 Pages  
292x206mm  
Black and White

## **The Operation of Autonomous Underwater Vehicles, Volume Three: The Law Governing AUV Operations—Questions and Answers**

**Price: £50\***

The third volume of SUT reports on the operation of autonomous underwater vehicles

*ED Brown and NJJ Gaskell*

This report was commissioned to provide the engineers and programme administrators working on the Natural Environment Research Council's Autosub projects with an easily accessible digest on the law relating to autonomous underwater vehicles. The questions have mostly come from the AUV community and reflect the concerns that it has about operating these novel vehicles in accordance with national and international law.

In providing answers to questions put to them by AUV practitioners, it has been the objective of the authors of this publication to give concise, practical guidance on the law governing problems which may arise in the day-to-day management and operation of AUVs.

Order Ref. C24  
ISBN 0 906940 40 0  
ISBN13 978 0906940402  
Paperback, 2001  
82 Pages; 292x206mm  
Black and White

### **\*SPECIAL OFFER**

All three volumes of **The Operation of Autonomous Underwater Vehicles**, when purchased together, may be obtained at the discounted price of **£150** when purchasing the series with Volume 1 First Edition, 2000, or **£165** when purchasing the series with Volume 1 Second Edition, 2009 (see page 4).

**Underwater Technology 25(2): Science of Decommissioning Special Issue****Price: £30**

The Society for Underwater Technology is pleased to announce the publication of the second Special Issue of the SUT journal Underwater Technology.

As hydrocarbon resources begin to run out in some areas of the North Sea, production companies are beginning to turn their attention to the process of decommissioning platforms and the associated pipelines and subsea installations. This increasingly political process has been highly influenced by the OSPAR 98/3 agreement which effectively means that large amounts of oil and gas associated infrastructure in the North Sea will have to be removed upon cessation of exploitation. The issues surrounding decommissioning are large and wide ranging. The programme will present the industry with huge engineering challenges and, along with the public exchequer, major costs. It is a process that will affect the industry and science for many decades. It is hoped that this publication goes some way to laying the foundation for some of the work ahead.

**Contents:** *Foreword* – GB Shimmield; *Personal View* – K Forrest; *Modelling the behaviour and environmental impact of cutting piles during decommissioning* – AO Tyler, ZA Sabour and MC Hockley; *Erosion of cutting pile sediments: a laboratory flume study* – KS Black, DM Paterson and IR Davidson; *Fundamentals of drill-cutting pile formation in the sea* – I Eames and D Vadnjaj; *A multi-capability sensor for hydrocarbons, synthetic based fluids and heavy metals: applications for environmental monitoring during removal of drill cutting piles* – D McStay, P Robertson, P Pollard, I Edwards, E Bonsen, A Al-Obaidi and D Tait; *A novel approach for the study of North Sea drill cutting accumulations* – E Breuer, OC Peppe and GB Shimmield; *The occurrence of the coral Lophelia pertusa and other conspicuous epifauna around an oil platform in the North Sea* – JM Roberts; *Rigs to reefs: a critical evaluation of the potential for reef development using decommissioned rigs* – MDJ Sayer and MSP Baine; *Sampling and analysing drill cuttings* – AC Skinner, D Long and GJ Tulloch; *ARMS – Decommissioning pipelines and subsea equipment: legislative issues and decommissioning processes* – JM Roberts

80 Pages

292x206mm

Black and White

60 Figures/Tables

**Man-Made Objects on the Seafloor 2000****Price: £39**

Proceedings from the international conference held in London on 2–3 May 2000

The seafloor is no longer a pristine environment. From the shallow continental shelves to the deep ocean floor, it is visited regularly by sampling devices, autonomous instruments and human beings. Cables are laid, structures placed, waste dumped; shipwrecks and lost equipment all inevitably finish up on the ocean floor.

This unique collection of papers, presented earlier this year at the SUT's international conference Man-Made Objects on the Seafloor, covers a diverse selection of topics from around the world, ranging from the mid-Atlantic to the Sunda Straits. The application of technologies, equipment, methods and reasoning to areas as varied as artificial reefs, seafloor autonomous research stations, submarine telecommunication cables, subsea pipelines, radiological surveys, deepwater trawling, wreck exploration, decommissioning and mine warfare makes this 195-page volume a must for marine scientists, engineers and all those wishing a better understanding of Man's activities in the marine environment.

Order Ref. C21

ISBN 0 906940 36 2

ISBN-13 978 0906940365

Paperback; 2000

196 Pages; 200x145mm

Black and White

80 Figures/Tables

**Lower Cost Offshore Production****Price: £10**

A report of a Foresight workshop to identify missing technologies for future hydrocarbon production, by INL Gallett and AP Hunt

This report of a workshop by the Subsea Engineering and Operations Committee of the Society for Underwater Technology on Tuesday 9 November 1999, as a contribution to the UK Government Foresight programme. The aims of the day were to identify key technologies needed to lower the cost of production by 2020 and to produce plans for their development.

An initial presentation first sets the scene, reviews the scenarios to be examined and discusses a possible methodology to be adopted. Two break-out groups, representing as broad a knowledge base as possible, each takes a single scenario and uses it as a basis for detailed review. This report summarises and presents the outcome of these processes.

Order Ref. C27

ISBN 0 906940 39 7

ISBN-13 978 0906940396

Ringbound; 1999

27 Pages; 297x210mm

Black and White

**\$10 Oil: Is Underwater Robotics the Answer?****Price: £25**

A report of a workshop on autonomous underwater vehicles and other underwater robotics

This is report of a workshop run by the Society for Underwater Technology in London on Thursday 17 June 1999. The aim of the day was to see whether underwater robotics was a cost-effective way forward for the underwater industry; and identify how this technology could be brought to market; pinpoint the areas of technology which needed to be developed.

Presentations first set the economic scene, looked at the business case for autonomous underwater vehicles (AUV), and considered where underwater robotics could ideally help in survey and subsea engineering in the next decade and by 2020. Another set of presentations looked at what development work was going on now across a wide variety of disciplines. Break-out groups then looked at the potential and the problems in bringing the technology to market in the near future. They looked to the possibilities in the longer term, and tried to identify major stumbling blocks. This report summarises and presents the outcome of this process.

Order Ref. C20

ISBN 0 906940 35 4

ISBN-13 978 0906940358

Ringbound; 1999

20 Pages; 297x210mm

Black and White

## Offshore Site Investigation and Foundation Behaviour '98: 'New Frontiers'

**Price: £85**

This set of proceedings focus on geographical and technical frontiers within the oil and gas industry. They show the continued pursuit of an integrated approach to the use of geological, geophysical and geotechnical data in determination of site conditions in all water depths and diverse international locations. Developments in acquisition techniques and in interpretation of data are considered in relation to depth of water and geographical setting. Field experience, full-scale tests and monitoring of soil foundation behaviour are reviewed and relevance to offshore design practice is appraised.

Sections are: New Frontiers—The Challenges; Geohazards; Deepwater—Regional Assessments; Foundation Behaviour, Part 1—Suction Foundations; Foundation Behaviour, Part 2—Piled and Gravity Based Structures; Pipelines; and Case Studies

**Contents:** *Opening Address* – D Walker; *Future Geophysical Site Investigation: Looking for an Improved Depth of Field and Sharpened Focus* – A Hill; *Deepwater Development – The Metocean Challenges* – C Graham; *Sedimentary Processes on the Continental Slope – Perspectives for Site and Hazard Investigation* – DG Masson et al.; *Geotechnical Challenges West of Shetland* – TG Evans et al.; *The Investigation of Deepwater Geohazards Using Short Offset, High-Resolution Marine 3D Equipment* – C Sonnier; *Glory Hole Construction and Trenching Challenges, Offshore Canada* – M Finch; *Geohazards on the Continental Slope West of Shetland* – A Read; *The Western Frontiers Association – an Example of Joint Industry Funded Regional Studies of the Shallow Geology in a Frontier Region* – D Long et al.; *Use of Integrated Study to Characterize the Marlin Deepwater Site* – P Jeanjean et al.; *Shallow Gas Migration Mechanisms in Deep Water Sediments* – AG Judd and RH Sim; *The GEOSIS Method for Integrating VHR Seismic and Geotechnical Data in Offshore Site Investigations* – J-F Nauroy et al.; *Sample Disturbance effects in Deep Water Soil Investigations* – T Lunne et al.; *Improved Seabed Strength Profiling Using T-Bar Penetrometer* – MF Randolph et al.; *A Review of Soil-Steel Interface Testing with the Ring Shear Apparatus* – N Ramsey et al.; *Minimal Intervention DCS for Well Buoy Applications* – RA Hawkins and A Markus; *Behaviour of Miniature Suction Cassions in Clay* – AJ Whittle et al.; *Pull-out Capacity of Bucket Foundations in Soft Clay* – L Zdravkovic et al.; *Comparison and Back Calculation of Penetration Resistance from Suction Anchor Installation in Soft to Stiff Clay at the Njord and Visund Fields in the North Sea* – E Solhjell et al.; *Foundation Design of Wandoo B Concrete Gravity Structure* – C Humpheson; *The Applicability of the New Imperial College Pile Design method to Calcerous Sands* – GWL Thompson and RJ Jardine; *The Implications of the Load and Resistance Factor Design Method for North Sea Pile Design* – AKC Smith et al.; *Design and Operation of a Seafloor Burial Assessment System* – TM McGinnis and ME Williamson; *Geotechnical Investigation for Performance Prediction of Submarine Trenching Ploughs* – PG Allan; *Pipeline Foundation Considerations* – M Finch and JB Machin; *Frontier Geohazard Site Investigations – Experiences from the Caspian Sea* – R Orren and I Hamilton; *Advances in Technology for Integrated Route Analysis* – NT Carey et al.; *Safety Implications for Offshore Foundations of Conductor and Shallow Well Drilling* – R Hobbs and DWF Senner; *Endurance and Stability of Steel Structures on the Seabed* – R Haworth et al.

Order Ref. C19

ISBN 0 906940 33 8

ISBN-13 978 0906940334

Paperback; 1998

540 Pages; 297x205mm

280 Figures/Tables

## Oceanographic and Underwater Industries in Asia

**Price: £10**

Report on the international technology service mission to Korea and Japan

This report covers the findings of a Trade Mission sponsored by the Society for Underwater Technology through the International Technology Service of the Department of Trade and Industry. This Mission was concerned with finding the present state and future plans in Korea and Japan of both the oceanographic information and underwater robotics industries, the latter including remotely operated vehicles (ROVs) and autonomous underwater vehicles (AUVs).

Four working days were spent in the Republic of Korea, and then five working days in Japan. Government departments, Government research institutes, universities and industry were visited where comprehensive briefings were given, questions answered and tours of the facilities provided. This report sets out the findings, in which the team members have tried to assess the strengths, weaknesses of the two countries in their areas of interest, to assess the opportunities for UK industry and to indicate potential threats to UK industry from these countries.

The busy reader will get the gist of the report from the Executive Summary, amplified by the Analysis section in the country of interest. However, to those who do not have experience of either country but have a serious interest in doing business there, the cultural and economic background sections of the report are thoroughly recommended, as are the comprehensive annexes on ROVs and AUVs.

Order Ref. C18

ISBN 0 906940 34 6

ISBN-13 978 0906940341

Ringbound; 1998

78 Pages; 297x210mm

15 Figures/Tables

## Subsea Controls and Data Acquisition '98: Cost Effective 'Challenges' for a Geographically Expanding Industry

**Price: £65**

SCADA is a unique, long established international conference which represents the oil industry control systems groups and deals with control, communication, remote data acquisition and the enabling technologies associated with hydrocarbon exploitation from the subsea environment.

This international conference reflects the offshore industry's response to the challenge of exploiting marginal fields. A recent report commissioned by the Director General of the European Commission stated that marginal fields will make up 50 percent of production in the North Sea by 2005, and innovative production and control techniques are required to make them as cost effective as possible.

**Contents:** *Deepwater Production Systems* – M Taulois; *EPIC Contracts: The Contractors Viewpoint* – P Campbell; *Intervention on Subsea Production: Flow and Process Control Equipment* – J Thoresen; *The Foinaven Umbilical Performance Monitoring Systems – Performance Review* – GL Lyons et al.; *Multiplex Drilling and Production Control System Developments for Deep Water* – H Clayton; *Development of a Deep Water Workover Control System* – D James; *ROV Capabilities* – D Hartley; *APAC Concept: A New Umbilical-Less Control System* – S Byrne; *Optical Communication System* – P Wright and G High; *Integrated Control and Monitoring of a High Power Subsea Electrical Distribution System* – NA Sølvik and V Hutchings; *ARMS – Active Reservoir Management System for Intelligent Well Control* – N Douglas; *Distributed Control Systems* – G High; *Open Architecture DCS for Well Buoy Applications* – R Smith; *An Application of Subsea Distributed Controls* – C Vigne; *HP/HT Subsurface Safety Valve Control* – T Globe and R Smith

Order Ref. C17

ISBN 0 906940 32 X

ISBN-13 978 0906940327

Ringbound; 1998

224 Pages; 297x210mm

**Underwater Technology International '97: Remote Intervention****Price: £85**

Proceedings of the international conference, held April 1997

As the offshore industry moves steadily into deeper water, and the use of man and manned vehicles becomes increasingly dangerous, expensive and impracticable, so the tools of remote intervention have to be developed and exploited. These proceedings attempt to promote these technologies, and are applicable to a variety of industries, including hydrocarbon exploration companies, defense industries, deep ocean mineral exploitation, and salvage operations.

Sections are: Remote Intervention Experiences; Recent Advances in New Technologies and Techniques for Remote Intervention; Intervention Robotics and Systems; Remote Intervention—What of the Future?; Designing Now for the Needs of the Future; and AUV Intervention.

**Contents:** *Shell International Deepwater Developments* – RW Dee; *From Sea to Space, A Perspective on the Effect of Subsea Remote Intervention Techniques on Space Station Design* – G Hughes and M Gittleman; *The Statoil Deepwater Pipeline Repair System* – D Norman; *Remote Rigid Spool Piece Tie-ins* – G Corbetta; *MAC Manifold – A Revolutionary Concept in Deepwater Production* – J Mair; *Overview of Fibre Optic Sensor Technology and Potential for Future Subsea Applications* – J W Berthold; *PO/SV – Aided Inertial Navigation Systems for Subsea Vehicle* – S Woolven; *The Remote Installation of Pipeline Bundles* – I Edwards; *Advanced Teleoperated Robots for Hazardous Environments* – G Pegman; *Remote Intervention in the Nuclear Environment* – P Misson; *Recent Innovations in Remote Connection of Standard Bolt Flanges* – D Cruikshank; *Recent Developments in ROV Deployed Multibeam* – PR Steensrup; *Future Requirements for Deepwater Remote Intervention – Proposal for a Remotely Operated Repair Station* – P Szelagowski; *Back to the Future (Technology on Strings)* – P Gledhill; *The RCU System – Workhorse of the Future?* – F Hoos; *'Extracting the Digit' – Time for an ROV Electronics Shake-up?* – D Stewart; *Deepwater ROVs – Beyond 2000 Metres* – D Stroud; *Experience and Current Status with the Subsea NORSOK Standards* – O Inderberg and J Bruun-Olsen; *End-User Applications of Wideband Piezocomposite Transducer Technology* – V Murray and C McLean; *The AUV Revolution: Tomorrow is Today!* – J McFarlane; *Hugin – an Untethered Underwater Vehicle System for Cost-Effective Seabed Surveying in Deepwaters* – N Størkersen and A Indreide; *The End of Research Ships? Autosub – an Autonomous Underwater Vehicle for Ocean Science* – G Griffiths et al.; *Autonomous Underwater Vehicle for Offshore Surveys* – A Bjerrum

Order Ref. C15

ISBN 0 906940 30 3

ISBN-13 978 0906940303

Paperback; 1997

370 Pages; 292x210mm

173 Figures/Tables

**ASPECT '96: Advances in Subsea Pipeline Engineering and Technology****Price: £40**

Proceedings of the international conference

As reservoirs that a few years ago would not have been considered for development become proposed for exploitation, the offshore industry continues to move into both technically and economically difficult areas. Consequently, the challenge of designing for subsea environments in deep water areas has had to be considered. These proceedings concentrate on the future of the industry, identifying the requirements for a new generation of pipelines, and will be of value to offshore designers and engineers.

Sections are: Managing Pipeline Integrity, Technical Developments, and Deepwater Developments. Also includes 110 figures and tables.

**Contents:** *Introduction of Pipelines Safety Regulations* – S Parkash; *Pipelines Safety Regulations 1996 – Impact and Implications* – AT Thayne; *FSM – Non-Intrusive Monitoring of Internal Corrosion, Erosion and Cracking in Subsea Pipelines and Flowlines* – RD Strømmen et al.; *Recent Developments in Defect Characterisation Techniques for Flexible Pipes* – K Henderson and G Watson; *Assessing the Integrity of Corroded Linepipe – an Industry Initiative* – MG Kirkwood et al.; *Advanced Crawler Inspection of Risers* – A Solberg and W Browne; *Rehabilitation Analysis of the Forties 32-Inch Pipeline* – S I McIntyre and M Lamb; *Experiences with Strain Based Limit State Design in the Netherlands* – A M Gresnigt et al.; *Use (and Abuse) of Strain Based Criteria in Offshore Pipeline Technology* – L Vitali et al.; *Lateral Buckling of Subsea Pipelines: Comparison Between Design and Operation* – D Kaye; *Characterisation of Thermoplastic Liners for Steel Pipes* – CJ Hamilton and JC Savidis; *Plastic Liners for Hydrocarbon Service* – A Maclachlan and A Headford; *Deepwater Compliant Riser Systems: The Technical Challenges and Solutions* – P O'Brien and E O'Sullivan; *Conceptual Design of a Plastic Pipeline in 1000 m Water Depth* – RDJ Stentiford and KJ Woolley

Order Ref. C14

ISBN 0 906940 29 X

ISBN-13 978 0906940297

Paperback; 1996

246 Pages; 234x153mm

**Towards 2000: Metres or Millennium?****Price: £30**

Collected papers of the international conference

Site investigations on the continental slope and beyond present a multitude of interesting challenges for the oil and gas industry. Acknowledging the increase in deepwater surveys, these papers seek to establish what the challenges are and how to address them. If you have an interest in the fields of deepwater engineering, survey systems or geological phenomena, this volume will be of interest to you.

Sections are: What Are the Site Investigation Challenges for Deepwater Field Development/Drilling?; Deepwater Engineering Geological Phenomena; Site Investigation Data Acquisition—Problems and Solutions; and Deepwater Site Investigation Case Histories.

**Contents:** *Environmental Concerns in Deepwater Areas – The Atlantic Margin* – M Ferguson; *Offshore Geotechnical Engineering: Reflections and Future Perspectives* – A Company View – HP Christophersen; *Deepwater Seeps, Hydrates and Associated Features* – A Judd; *Storegga Slide and other mid-Norway Engineering Geological Problems* – D Evans; *Deepwater Sedimentary Processes in the Gulf of Guinea* – P Cochonot; *Earthquake Induced Instability of Submarine Clay Slopes* – F Nadim; *An Integrated Environmental Survey of Twenty Thousand km<sup>2</sup> of Seafloor West of Shetland* – DG Massonet et al.; *Review of Acoustic Positioning in Deepwater* – R Williams; *Review of Available Deepwater Survey Geophysical Systems – Echo Sounders, Sidescan Sonars and Sub-bottom Profilers* – D Hussong; *A Deepwater Swathe Bathymetry System* – A Jack; *Deepwater Sediment Sampling* – T Lunne; *Deepwater PCPTs for Drilling Rigs* – P Power; *Oceanographic Measurements in Deepwater* – G Brown; *Oman-India Pipeline* – R Evans; *Geophysical Investigation of Foinaven/Schiehallion* – I Hamilton; *Geotechnical Investigation of Foinaven/Schiehallion* – K Hampson; *Accurate Measurement and Positioning West of Shetland – The Challenges of Temperature and Salinity Variations in Deep Water* – DRC Philip; *Deepwater Geotechnical Investigations in the Gulf of Mexico* – J Pelletier; *Deepwater Site Investigation Offshore West Africa* – H Kuhn

Order Ref. C13

Ringbound; 1996

232 Pages; 297x210mm

55 Figures and Tables

## Climate Change Offshore NW Europe—an Assessment of the Impact of Changing Meteorological and Oceanographic (Metocean) Conditions on Offshore Activities: Collected Papers

**Price: £25**

This volume discusses the mounting evidence of significant changes to the Metocean conditions in the North Atlantic, and assesses their impact on offshore operations and coastal engineering activities.

**Contents:** *Long-Term Metocean Measurements in the Northern North Sea* – M Leggett et al.; *Search for Evidence of Wave Climate Change in the North Sea and North West Approaches Region* – D Smith and P Owrid; *Climate Change and its Effects on Coastal Management* – A Brampton; *Statistical Interpretation of Wind Climatology in the North Atlantic and Northwestern European Region* – T-S Li et al.; *Wind Climate Fluctuations in the Shetland Area: a Study of Data from Lerwick Observatory* – J S Hopkins; *Weather and Climate Variability since Prehistoric Times and Recent Indications of Continuing Fluctuations in the NE Atlantic* – N Lynagh; *Variability in the NE Atlantic Wave Climate* – PD Cotton and D J T Carter; *Trends in North Sea Northerly Storms* – H D Lawes

Order Ref. C12

Ringbound; 1996

125 Pages; 297x210mm

80 Figures/Tables

## Umbilicals: The Future

**Price: £40**

*Umbilicals: The Future* was the title of a joint industry programme that aimed to improve umbilical technology to meet new and more demanding subsea applications. The R&D programme followed on from an OSO study, which found that the industry was not well supported by appropriate international standards or guidelines. The results of the two-year project—sponsored by Amerada Hess, BP, Brasoil, British Gas Elf, OSO, Shell, Statoil and Texaco—are comprehensively covered in these proceedings.

**Contents:** *Development of a High Pressure Thermoplastic Hose* – RR Jakeman and PH Knight; *The Dynamic Response of Thermoplastic Hoses* – PS McCarthy and PH Knights; *Bend-over-Sheave Fatigue Testing of an Electro-Hydraulic Umbilical* – DC Ricketts and B Kipling; *An Investigation of Accelerating Factors in Compatibility Testing of Thermoplastic Hose* – D Hutcheson and N Casey; *Umbilical Modelling and Design, Part 1: Analytical Theory* – A Waloen and J Benjaminsen; *Umbilical Modelling and Design, Part 2: Experimental Work* – J Benjaminsen and A Waloen; *Ultra-Low Permeability Hose Tests* – PH Knight and DA Newton

Order Ref. C11

ISBN 0 906940 28 1

ISBN-13 978 0906940280

Paperback; 1995

210 Pages; 234x153mm

179 Figures/Tables

## SUBTECH '95: Addressing the Subsea Challenge

**Price: £40**

Proceedings of the international conference, co-sponsored by IMCA

These proceedings address the needs of the subsea and intervention industry during a time of financial and physical challenges, with low oil prices and a need to develop small and deepwater fields economically. The resulting technologies include improved designs and the use of new and alternative materials to help reduce the burden of routine inspection and maintenance costs, and improve operating procedures.

Sections are: Keynote Address; Subsea Robotics; Deepwater Developments; Technical Developments; Diving and Physiology; and Operational Experience. Also includes 89 figures and tables.

**Contents:** *The Subsea Business Revolution—Sink or Swim for Offshore Contracting* – R Shepherd; *RD&D in the Market of the Millennium* – K Bassiti; *Dangerous Encounters: Safety to Installations and Fishing Gear* – K Knox and AG Hopper; *Inspection of Subsea Nodal Welds by the ARM Robot Manipulator* – DR Broome, TJ Larkum and MS Hall; *The TUUV Program*, I Edwards; *An AUV for Pipeline Survey—The Next Step in Low Cost Remote Operations Technology* – J Gooder and A Tonge; *Unmanned Mini-Submarine for Offshore Inspections* – A Bjerrum, B Krogh and L Henriksen; *Deepwater Welding and Intervention Technology* – JH Nixon and IM Richardson; *SnapLay—A Modular Pipelay Technique* – M Craig and M Dick; *Remote Low Cost Subsea Control System* – P Hands; *Back to Basics—The Economically Alternative Tree Design* – AC Dyson and JC Cullion; *The Next 5 Years*, M Witton; *Integrated Subsea Production Surveillance: Sensors for Subsea Production Systems* – ELE Kluth; *Detecting Freespans in Sidescan Sonar Records—Automatically* – C Reid and AD Tress; *Horizon 2000: A Novel System Approach to Inspection and Integrity Monitoring of Flexible Flowlines and Risers* – B G Redden; *Testing Communications Systems on Diving Installations* – V Flook; *The IMCA-HSE-UKOOA Dive Data Management System (DDMS)* – JC Gardiner and ST Brooke; *Noise Hazard in the Diving Environment* – J Nedwell and K Needham; *Development of Cyclops—A Diver's Helmet Display System for Offshore Inspection and Maintenance Operations* – AG Robinson and N Wright; *Operational Experience of Multipass and Backfill Ploughs* – JB Machin; *Work Class ROVs: What are the Performance Limits and How Can They Be Extended?* – HW Williams; *Towards ROV-less Installation: Experience Gained on BP Cyrus* – I Edwards; *Fulmar SALM Buoy Removal—An Application of Cold Cutting* – A West and AG Counsell; *Cold Cutting for Decommissioning* – T Copros

Order Ref. C10

ISBN 0 906940 27 3

ISBN-13 978 0906940273

Paperback; 1995

285 Pages; 234x153mm

## Man-Made Objects on the Seafloor: Discovery, Investigation and Recovery

**Price: £29**

Proceedings of the international conference

Ships, aircraft, mines, rejected munitions (including chemicals), lost trawls, archaeological remains, contraband and a host of amphorea lie on, or are buried in, the seabed. These proceedings address the issues that determine how and where these objects are found, bringing together the clients and the enabling technology for these operations from the shallow shelf seas down to five kilometres in the deep oceans.

**Contents:** *Salvage from 1200 m* – A Crawford; *Search for the Bulk Carrier 'Derbyshire': Unlocking the Mystery of Bulk Carrier Shipping Disasters* – DL Mearns; *Aircraft Lost at Sea: Search and Recovery Operations* – R Orren; *Resolving the Issue: A Look at Resolution and Related Topics in Sonar* – M Somers; *Deepwater Aircraft Recovery* – C Royce and M Cooper; *Laser Line Scan* – P Debrule, E Saad and A Palmer; *The Raising of the 'Mary Rose': Archaeology and Salvage Combined* – C Dobbs; *The 'Komsomolets' and Beyond* – RD Praaning, J Wellink and T Vergouw; *Close Encounters on the Ocean Floor* – T/G Francis et al.; *A Novel Method of Lifting Heavy Loads Underwater* – JE Stangroom

Order Ref. C8

ISBN 0 906940 26 5

ISBN-13 978 0906940266

Paperback; 1995

133 Pages; 234x153mm

50 Figures/Tables

# THE UNDERWATER SCIENCE GROUP

The Underwater Science Group (USG) of the Society for Underwater Technology aims to provide a forum for discussion of underwater science, reviewing diving technology and underwater scientific methods. It regularly holds symposiums, and promotes national and international links between members.

## The 6th Underwater Science Symposium 2003: Monitoring and Measuring the Underwater Environment

**Price: £30**

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