

CV

PROFESSOR CLIFF S JOHNSTON

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Present posts

Director, Digitata Ltd, formerly Johnston Environmental Ltd (since 2004)

Director, Orkney Seaweed Company Ltd (since 1988)

Posts previously held

Board Member Scottish Environment Protection Agency (1995-99)

Director, Institute of Offshore Engineering (1980-1992)

Managing Director, Environment & Resource Technology Ltd (1982-1997)

Managing Director, Orkney Water Test Centre Ltd (1986-1997)

Director, Orkney Enterprise Ltd. (1990-98)

Director, IOE Group (1993-1997)

Director, Johnston Environmental Ltd (1998 - 2004)

Resume of Experience

His general environmental pedigree, particularly relating to pollution control and a special interest in island issues was recognised in 1995 by his appointment to the first Board of the then new regulatory body - Scottish Environment Protection Agency, SEPA. The width and depth of his offshore experience has been recognised by both industry and regulatory agencies in the UK and internationally.

In the energy industry sector Professor Johnston provides:

- detailed knowledge of the energy industry (particularly the oil and gas sector) internationally, with over 40 years consultancy, contract services, research and training experience with most major international operators;
- good understanding of environmental management issues, ranging from policy, regulation and impact assessment through to definition of engineering solutions;
- understanding of wider, particularly environmental technology, market opportunities, with contacts throughout relevant industry and governmental agencies;
- 40 years academic/training experience at all levels from in-house company training to advanced post-graduate teaching, with strong interests in issues across policy - environmental science - engineering interfaces;
- proven track record in project development and management, with strong innovative / lateral thinking abilities; and above all,
- strong commitment to provision of top-level **independent** professional support, working for industry and government agencies.

He has a strong interest and expertise in political: stakeholder issues in environmental decision making, e.g. making company director level presentations on key issues, providing facilitator role in stakeholder meetings, and leading company in-house environmental workshops (e.g. ENVID- Environmental Issue Identification workshops).

Both his oil industry and wider regulator (SEPA and DTI) experience has helped develop a strong interest in the interpretation of global environmental issues, from scientific, perceived public and political viewpoints, notably:

- global warming
- biodiversity
- sustainable development.

Increasingly he is being invited to peer review projects.

CONSULTANCY

Initial expertise, in the 1970s, focused on the **assessment of the marine environmental impact** of coastal oil terminals, including Flotta and Sullom Voe in Scotland. He has directed studies for a wide range of offshore operators both in UK waters and internationally, including BP, Shell, Occidental, Elf, Total, Marathon, Conoco, Esso, Amerada Hess . His team in ERT worked for a wide range of industry and government clients, certainly most international operators in the North Sea. Outside the oil industry activities have been extensive, covering such issues as gravel extraction, quarrying, sewage disposal, shipping/port operations, renewable energy and military (including ‘restricted’ nuclear) activities.

Overseas experience has involved projects in the USA, Canada, France, Denmark, Spain, Norway, Azerbaijan, Georgia, Romania and India.

For over 20 years he was involved in investigations relating to the use and environmental **effects of drilling muds /cuttings**, with major studies in the UK, Norway and Canada, including joint industry - government agency programmes (such as major programmes funded by SFT-industry in Norway). Throughout these mud studies he maintained a strong independent interpretation of the science and politics. Professor Johnston has had a long interest in industry - environment issues in Canadian waters, participating in Government and industry workshops relating to environmental impact assessment and planning for large industrial developments, from the early 1980s (Venture and Hibernia). Several Canadian projects also dealt with issues associated with drilling operations.

A major interest throughout the past 30 years relates to water quality and treatment problems, with a special interest in the treatment and disposal of **oily wastes** and oil contaminated water (notably produced water). Early studies involved collaboration with industry and government leading to such publications as "Oily Water Discharges - Regulatory, Technical and Scientific Considerations", Edit Johnston, C S and Morris, R J (1980). Applied Science Publishers. Today, this experience is being applied in studies relating to offshore zero emission targets.

In 1986, he launched and managed the establishment of a specialist centre – Orkney Water Test Centre Ltd – adjacent to the oil terminal on Flotta in Orkney, providing researchers and industry with full-scale testing of oil:water plant for the offshore industry. The £3 million funding for the initial facility construction was led by Conoco UK, supported by Occidental, Orkney Islands Council and the (then) Highlands and Islands Development Board.

Professor Johnston has been involved in several initiatives in both the Caspian and Black Seas, with his original ERT team deeply involved in Azerbaijan, working for several western consortia. He provided valuable input to the development of an environmental protection framework and associated standards for the BP led Shah Deniz development, involving close collaboration with the Azeri State Committee for Ecology (regulator), leading to development of Azeri environmental standards.

Professor Johnston retired from ERT Ltd in 1997, to focus on specialist consulting and his non-oil interests. From 2004, he retired from work on ‘routine’ environmental assessment studies and now focuses on

provision of high-level policy consultancy and peer review. With his 40 years experience he has been compiling a historical perspective on oil industry-environment interaction, globally but a main focus on offshore UK operations.

He has a major interest in decommissioning of offshore structures, with particular interest in assessing environmental aspects of different strategies, including stakeholder issues in environmental decision making. A recent example was the role as the independent environmental specialist in a study of the BP Miller Field Decommissioning , a project led by Xodus.

TEACHING / TRAINING

Responsible for the design, introduction and direction of BSc Marine Biology (1972-1980), and for direction of the two MSc courses run in the Institute of Offshore Engineering, Heriot-Watt University (in both Edinburgh and Orkney):

- MSc Marine Resource Development and Protection,
- MSc Marine Resource Management.

He was responsible for establishing the International Centre for Island Technology (**ICIT**) in Orkney, with the major energy related interests of IOE extended to island related projects, including renewable energy potential.

He was specifically responsible for a course in Environmental Policy, Control and Monitoring; with detailed treatment of the wide energy industry issues.

Professor Johnston retired from academic activities at Heriot-Watt University at the end of 1996.

He has coordinated and contributed to a wide range of short courses and in-service training related to environmental management, impact assessment and monitoring, including several packages for overseas clients under various government / international funding programmes.

RESEARCH

Research and commercial activities have concentrated mainly on environmental aspects of industrial developments, notably the oil industry, originally relating to environmental survey and monitoring, but increasingly focusing on **policy and management issues including public / stakeholder consultation.**

Research studies have been funded from industry, Research Councils, central Government Departments and the European Commission. Details of research projects available if required.

Examples of Specific Consultancy Studies:

2002-present Johnston Environmental Ltd, now Digitata Ltd [in 'attempted retirement' some strategic confidential studies (not listed) –and some limited general studies often in collaboration with other consultants], including:

Aquamarine Power – Impact Assessment of Kelp Clearance: Oyster 2 (2010)

BP – Miller Field Decommissioning Comparative Assessment. Report by Independent Review Consultant Xodus Group, with Prof Johnston retained on environmental matters (2008-2009).

Aquatera – peer reviews of studies relating to renewable energy generation and power transmission (2007-2008)

Aurora Environmental –peer review of study relating to Carbon Capture and Storage (CCS) and related offshore EOR/CO₂ disposal (2006)

Aquatera –peer reviews of projects such as tanker-tanker oil transfer to fishmeal processing (2006)

Orkney Enterprise & Orkney Islands Council –Feasibility of Continued Development of an International Centre for Postgraduate Teaching and Research –in collaboration with Aquatera Ltd (2004)

Total E&P UK PLC –Peer Review of MCP-01 Decommissioning EIA (2004)

Department of Trade and Industry - Peer Review of Environmental Statements (2002-2005)

Department of Trade and Industry - Strategic Environmental Assessment - Peer Review/Steering Group roles

(2002-2005)

BP - Clair Field Development –Development of drilling cuttings disposal BPEO (2003 - 2004)

BP – Schiehallion Field : Ongoing ‘umbrella’ Development - Environmental Assessment; in conjunction with Aurora Environmental Ltd (2002- 2004)

Petro-Canada UK –Grebe (Pict) Field Environmental Assessment; in conjunction with Aurora Environmental Ltd (2003)

Confidential Clients: Peer review of OCR chemical permit preparation (2002- 2003)

BP - Clair Field Development - Environmental Assessment/ Devices; Register in conjunction with Aurora Environmental Ltd (2002- 2003)

Orkney Seaweed Company –Market Intelligence and Development of Marketing Strategy (2002-2003)

1998-2002 Johnston Environmental Ltd (some in collaboration with other consultants)

BP –Schiehallion Field : Phase 4 Development – Environmental Assessment; in conjunction with Aurora Environmental Ltd (2001- 2002)

BP - Clair Field Development - Environmental Assessment/ Preparation of Environmental Statement; in conjunction with Aurora Environmental Ltd (2000-2001)

Shell UK –Pilot Study (Meeting) –Biomass for Fuel Production (2000)

Department of Trade and Industry - Peer Review of Environmental Statements (1999-2002)

Department of Trade and Industry - Strategic Environmental Assessment - Peer Review Role (1999-2002)

Orkney Enterprise/Elf Petroleum / ERT - Flotta Facilities: Opportunities Assessment (1999 - 2000)

OKIOC - Awareness Training - Kazakhstan Officials, UK visit (1999)

Department of Trade and Industry - Environmental Advisor - St Kilda Heritage Site Appraisal (1999)

ERM / Statoil UK - Environmental Awareness Training (1999-2000) Statoil UK –Environmental management, including preparation for ISO 14001 EMS (1999)

Confidential Client - review of COMAH requirements (1999)

Confidential Client - review of IPC requirements (1999)

BPAmoco - Development of Environmental Regulatory Framework for Azerbaijan offshore operations, including detailed work on BPEO and EQS setting procedures (1998 - 1999)

Elf Petroleum - Environmental Awareness Training - Flotta Terminal Workforce (1999)

1995 - 1998 Environment & Resource Technology Ltd

ARCO - environmental management, including preparation for ISO 14001(peer reviewing and strategic inputs)

Elf UK - Oil Terminal waste minimization planning within IPC requirements, including ENVID (1998)

Shell - Mandarin:Turnstone Development, EIA incorporating an ENVID (1998)

Elf UK - Confidential Project - involving BPEO assessment (1998) Shell - Penguin Development : ENVID (1997), within a wider EA programme

Jacques Whitford - Terra Nova Project-Newfoundland; consultancy and peer reviews on EA and baseline study design (1997-98)

Amerada Hess - Client at all UK sites taken through by ERT team to ISO 14001(1997-98); the first UK oil company to achieve this certification across all sites and activities

Confidential Client - Reputation Management Assessment (1998)

BP - Pipeline Options for Clair Development: potential marine and overland routes (1997)

Scottish Environment Protection Agency (SEPA) -Decommissioning of offshore oil and gas installations; incl.onshore implications (1997).

ODCP - Decommissioning of offshore structures: Energy use considerations (1997)

Confidential Client - Assessment of Accuracy of Greenpeace / NGO positions regarding West of Shetland developments (1997)

BP - Schiehallion Development and the Environment - review of environmental assessments and preparation of EA overview (1997)

BP - several contracts to provide peer review and facilitator roles at both internal and stakeholder meetings (1996-present)

1991-1995 Institute of Offshore Engineering Group (incorporating ERTLTD)

Esso Exploration. Major series of environmental assessment studies for exploration / drilling programme in

the Irish Sea; with major consultation role.(1994-96)
Conoco - Theddlethorpe Gas Terminal; effluent study (1995)
Amerada Hess - Pipeline Route Environmental Assessment, with major overland studies (1994)
Hamilton Oil - Douglas and Lennox Fields, Liverpool Bay : EIA and related environmental studies. *EIA submitted for formal peer review for successful application for certified membership of the Institute of Environmental Assessment (1993-94)*
Elf Enterprise (Caledonia) - Evaluation of potential VOC and hydrocarbon emissions from Flotta Terminal and possible mitigation measures (1993)
Elf Enterprise (Caledonia) - Appraisal of present general waste management policy with recommendations for a revised waste management policy (1993)
Confidential Client - Investigation of foreshore chemical pollution (to court case) (1992)

1980 -1990 Institute of Offshore Engineering (Director)

Occidental, then Elf Enterprise - Ongoing monitoring and process related projects at Flotta Oil Terminal (1980 -1990)
OIC and Orkney Enterprise - Scapa Flow Management Plan. Review of resources and recommendations to make more efficient long-term utilisation of resources (1990)
Westminster Dredging -Assessment of loss to Folkestone and Hythe trawlers from a proposed aggregate loading and transport system. (1988)
Eurotunnel - Shakespeare Cliff, English Channel. Environmental assessment of seawall development. (1988)
Conoco - Establishment of a major technology facility, a new full-scale offshore water treatment test facility on Flotta, with major funding from Conoco (2.4 million dollars), then Occidental and others (total value over 4 million dollars); (1986).
Marathon - Peterhead harbour shorebase; drainage pattern from pipe yard, series of investigations for Marathon (1984-86)
Marathon - Environmental assessments for Brae A (1984) Canada - various companies / agencies - input to EIAs for Venture (gas) off Nova Scotia and Hibernia (oil) off Newfoundland (1984)

1974 - 1980 Marine Science Unit (Institute of Offshore Engineering)

Standard Oil of Indiana - Amoco Cadiz -oil spill (1978-79) project Manager/ senior scientist in post spill survey to US court requirements.
BP - Environmental assessment and monitoring in terminal environs at Sullom Voe, Shetland (1978 onwards).
Conoco - Development of environmental assessments (EIAs) for at onshore and offshore sites including Murchison and Hutton (1978 - 1982)
Shell-Esso - EIA of Mossmorran -Braefoot NGL Terminal (1976) .
Occidental - Flotta Terminal - EIA, planning and representation; annual marine surveys ,ongoing audit / monitoring projects; other studies on design of oil-water separation systems and many ongoing environmental and waste management studies (first and longest rolling contract : 1974- 2001).

Examples of Publications

Seaweed Related Publications

Johnston, C. S. (1968). Industrial uses of algae. *Process Biochemistry.*, 3; 11-14.
Johnston, C. S. and Cook, J. P. (1968). A preliminary assessment of the techniques for measuring primary production in macrophytic marine algae. *Experientia*, 24: 1176-77.
Johnston, C. S. (1969). The ecological distribution and primary production of macrophytic marine algae in the Eastern Canaries. *Int. Rev. ges. Hydrobiol.*, 54: 473-490.
Johnston, C. S. (1969). Studies on the ecology and primary production of Canary Islands marine algae. *Proceedings 6th International Seaweed Symposium.*, Santiago: 501-506.
Johnston, C. S. (1973). Macroalgae and their Environment. *Proceedings of the Royal Society of Edinburgh (B)*, 71: 195-207.
Johnston, C. S. (1977). The sub-lethal effects of water-soluble extracts of crude oil on the fertilisation and development of *Fucus serratus* C., *Rapp.P-v Reun. Cons. int. Explor. Mer.*, 30: 184-5.
Johnston, C. S., Jones, R. G., and Hunt, R. D. (1977). A seasonal carbon budget for a laminarian population in a Scottish sea-loch. *Helgolander wiss Meeresunters*, 30: 527-545.

- Johnston, C. S., Ferrier, N. C. and Jones, R. G. (1981). A critical assessment of estimates of macroalgal primary production based on short-term measurements of photosynthesis. *Proceedings 8th International Seaweed Symposium*, Bangor: 372-376.
- Ferrier, N. C., Davies, J. M., Snedden, I. and Johnston, C. S. (1981). Physiological changes during the growth of laminarian sporophyte cells. *Proceedings 8th International Seaweed Symposium*, Bangor: 172-175.
- Knight, S. T. and Johnston, C. S. (1981). Effects of pollution on the seaweed distribution in the Firth of Forth. *Proceedings 8th International Seaweed Symposium*, Bangor: 383-387.
- Johnston, C. S. (1985). The seaweed potential of Orkney waters. *Proceedings of the Royal Society of Edinburgh* 87B: 1-14.

Oil:Environment Pedigree –general examples

- Johnston, C. S. (1973). Oil in water - how real is the pollution threat? *Scotland*, 17(8): 40-43.
- Johnston, C. S. (1976). The design on onshore oil/water treatment systems - environmental and technical criteria. *Proceedings Institute of Offshore Engineering/Department of Energy Seminar*: 46-48.
- Johnston, C. S. and Morris, R. J. (1980), Edits. *Oily Water Discharges - Regulatory, Technical and Scientific Considerations*. Appl Science Publ, London, 225pp.
- Johnston, C. S. (1980). Oil - How serious an environmental threat? pp.66-72 In: *Petroleum Development and the Environment*. Institute of Petroleum Conference, London. Publishers Heyden & Son. 142pp.
- Johnston, C. S. (1981). The Flotta Terminal and its effects on the marine environment. In: *The Marine Environment of Sullom Voe and the Implications of oil developments* ed. Pearson, T. H. and Stanley, S. O. *Proceedings of the Royal Society of Edinburgh*. 80B: 341-354.
- Johnston, C. S. (1982). Protection of the marine environment of Scapa Flow and Sullom Voe: pp.263-273. In: Cairns, W. J. and Rogers, P. M. (edits.). *Onshore Impacts of Offshore Oil*. Applied Science, London. 319pp
- Johnston, C. S. (1983). Environmental monitoring and the petrochemical industry. pp.306-325. In: *Environmental Toxicology, Interim Document 13, European Cooperation on Environmental Health Aspects of the Control of Chemicals*, WHO, Copenhagen.
- Johnston, C. S., Side, J. C. and Davies, S. R. H. (1987). The use of environmental audit in offshore operations. pp 147-164 in *Microbial Problems in the Offshore Oil Industry*, *Proceedings of the International Conference*, 15-17 April 1986, Aberdeen. Institute of Petroleum, E. C. Hill, J. L. Shennan & R. J. Watkinson (eds), John Wiley & Sons, Chichester. 240 pp.
- Johnston, C. S. (1990). Changes and Trends in Technology for Offshore Exploration and Development. *Financial Times Conference: North Sea Oil and Gas - The Brighter Business Outlook*. Financial Times. London.
- Johnston, C.S. (1992). Managing risk from chemicals in liquid effluents. pp.221-235. In: Richardson, M.L. (Ed.) *Risk Management of Chemicals*. Royal Society of Chemistry Publ., London.
- Johnston, C. S. (1992). The Short and Long-term Effects of Oil Spills on Marine Ecosystems. In: *Use and Misuse of the Seafloor*. Edits. K. J. Hsü and J. Thiede. *Dahlem Workshop Reports*. John Wiley and Sons, Chichester.
- Johnston, C.S. and Side, J.C. (1992) Environmental Impact - Offshore (Section Editors). In: W.J. Cairns (Ed.) *North Sea Oil and the Environment: Developing oil and gas resources; environmental impacts and responses*. Elsevier Applied Science.

Transfer of North Sea Experience- example offshore Canada

(working with both industry and regulators)

- Johnston, C. S. (1982). Offshore Environmental Monitoring: North Sea Experience. *Study on behalf of Mobil Oil Canada Ltd*. Institute of Offshore Engineering, Edinburgh. 213pp.
- Conover, S. A. M., Johnston, C. S., Menzie, C. and Tsui, P. T. P. (1983). Major problems and issues in environmental planning for offshore petroleum development in the temperate/tropical regions. *Proceedings International Workshop on Environmental Planning for Large Scale Development Projects, October 1983*, Whistler, B. C., Canada, Background Paper
- Thomas, D. J., Duval, W. S., Johnston, C. S., Lewbel, G. S., Birdsall, A., Hutcheson, M. S., Greene, G. D., Buchanan, R. A. and McDonald, J. W. (1984). Effects monitoring strategies and programs for Canada's East Coast. E.S.R.F. (EMR). *Canada Oil and Gas Lands Administration, Ottawa, Canada*. 102pp.
- Johnston, C. S. (1985). The North Sea (Hydrocarbon Development). *Proceedings Workshop on Strategic Planning for the Coastal Marine Environment*. March, 1985, Wolfville, Nova Scotia 1: 23-56. Environment

Canada, COGLA, Fisheries and Oceans, FEARO.

Thomas, D.J. and Johnston, C.S. (1985). The development and current status of environmental monitoring programmes in the North Sea. In: *Proceedings of the 8th Annual Int. Soc. Petrol., Ind., Biol. and Hydrocarbon Development, Environmental Problem Solving, September 24-26 Banff, Canada*, pp 309-318.

Policy/Stakeholder Interaction

(example from special interests developed in late 1990s through to today)

Johnston, C.S. (1997). The stakeholder factor in environmental management. In: Meeting Environmental Standards for the Offshore Industry. *IBC Conference Proc., 8-9 December, Aberdeen*.

Johnston, C.S. (1997). The way forward. In: Environment, Safety and Health- Perception and Reality. Management Session, *Offshore Europe Conference, SPE Aberdeen*.

Performance Benchmarking

Johnston, C.S. (1999). Benchmarking Environmental Performance in the Offshore Industry - towards acceptable targets and the challenges presented. In: Meeting Environmental Standards for the Offshore Industry. *IBC Conference, 6-7 December 1999 Aberdeen*.
[also chaired conference].

Cliff Johnston – February 2011