

JOHN H LARGE

John Large is a Consulting Engineer, a Chartered Engineer, a Fellow of the Institution of Mechanical Engineers, Graduate Member of the Institution of Civil Engineers, Learned Member of the Nuclear Institute, and a Fellow of the Royal Society of Arts.

From the late 1960s through to the late 1980s, John Large undertook research as a tenured, full-time member of the Academic Staff at Brunel University in the role of Senior Research Fellow for the United Kingdom Atomic Energy Authority (UKAEA) on several aspects of advanced reactor and other nuclear systems. John Large continued with the post of Academic Tutor on the full-time teaching staff at Brunel University until 1994 and since then he retained strong links with academia, presenting specialist topic lectures at Bath, London South Bank, Oxford and Brighton Universities. In the late 1980s he started the Consulting Engineers Large & Associates that specialises in the nuclear field.

More recently, John Large has published on the safety of nuclear plants and processes, irradiated fuel and nuclear weapons transport, insurance, risks and risk management, on decommissioning of large-scale nuclear facilities, radioactive emissions and discharges, and the safety of nuclear reactor propulsion units at sea. Building on his research interests in the AGR nuclear power plants, John Large has published a number of reports and assessments of the now ageing AGR nuclear power station design.^{1,2} Most recently, on the subject of the Fukushima Daiichi incident he has prepared and presented an intervention to the European Parliament,³ an issues paper at the UK House of Commons,⁴ and a number of specific topic papers and reports for international clients.^{5,6,7,8,9}

John Large has personally given evidence to the UK House of Commons Environment and Energy Committees, the New Zealand Government Special Commission on Nuclear-Powered Ship Berthing Facilities and its Parliamentary Select Committee on MOX fuel,¹⁰ the Australian Federal Commission on the Lucas Heights reactor decommissioning, to the Hinkley Point Public Inquiry on the Safety of the PWR nuclear power station for which he acted for a combine of twenty UK Local Authorities, and to the United States Nuclear Regulatory Commission (NRC).¹¹ John Large has prepared and given evidence to the Court of Human Rights at Strasbourg and, quite frequently, he provides expert evidence on aspects of system failure and technical issues in the UK Crown and Civil courts. John

- 1 Brief Review of the Documents Relating to the Graphite Moderator Cores at Hinkley Point B and Other Advanced Gas-Cooled Reactors, R3154 5 July 2006
- 2 *Safety of the Existing and Future Nuclear Power Plants at Dungeness - Aircraft Crash Risk*, Planning Applications Y06/1647/SH and Y06/1648/SH, March 2007
- 3 ALDE Open Hearing, *Nuclear Safety and Nuclear Policy after Fukushima Daiichi*. Intervention of Jon H Large, *Implications for the World-Wide Nuclear Regulatory Regimes - Specific Application to Europe*, JAN4Q1 European Parliament, Brussels, 23 March, 1011 - see also, *Fundamental Flaws in the Worldwide Nuclear Safety Regulatory Regime, Nuclear Safety: A Much Needed Debate*, European Economic and Social Committee, European Parliament, Brussels 12 December 2011
- 4 *Implications of Fukushima for the UK Nuclear New Build Programme*, House of Parliament, London 14 June 2011
- 5 *Possibility of Pre-Tsunami Seismic Damage a Fukushima Daiichi*, R3202-A1 1 July 2011
- 6 *Review of the IAEA Mission Team Preliminary Summary for Fukushima*, R3201-A1 5 June 2011
- 7 *Update on the Nuclear and Radiological Situation at Fukushima Dai-ichi.*, R3197-AR1, 24 May 2011
- 8 *TEPCO Proposal to Floor the Primary Containment of Unit 1 of the Fukushima Dai-ichi Nuclear Power Plants.*, R3197-A1, 11 May 2011
- 9 *Incidents, Developing Situation and Possible Eventual Outcome at the Fukushima Dai-ichi Nuclear Power Plants.*, R3196-A1, 8 April 2011
- 10 Review of the Sea Transportation of Mixed Oxide Fuel: i) Transportation Risks and Hazards, ii) Physical and Dispersion Characteristics of MOX Fuel, iii) MOX Fuel, a UK Perspective, Evidence to the New Zealand Government Foreign Affairs, Defence and Trade Select Committee, May 2001 - further details of the work and publications of Large & Associates and John Large can be accessed directly at <http://www.largeassociates.com/>
- 11 NRC Hearing *Disposition of Surplus Weapons Plutonium Using Mixed Oxide Fuel, US Nuclear Regulatory Commission Hearing, 2004*
 - i) *Comments on Opinion on the Applicability and Sufficiency of the Safety, Security and Environmental Requirements and Measures as these Apply to the Transatlantic Shipment, European Waters and France*
 - ii) *The Role of PNTL Ships in the Atlantic Transit Phases, United States of America Nuclear Regulatory Commission, 26 November 2003,*
 - iii) *Summary of the Findings of the French-sourced Plutonium Dioxide Transportation, 23 March 2004*

Large has also advised the Bulgarian State Government on emergency planning and reactor safety, the Italian Government on reactor safety and irradiated fuel transportation, the ANC South African Government on a confidential nuclear matter, and the Russian Federation Regional Authorities of Sverdlovsk (Urals) on transuranic contamination and Severodvinsk (Kola) on nuclear propulsion submarine fuel storage, and the Russian Federation central ministry Minatom on environmental impact aspects of the sunken submarine *Komsomolets*, with its nuclear reactor and two nuclear warhead tipped torpedoes lost the Barents Sea. John Large advised the Government of Gibraltar on the nuclear safety of the Royal Navy nuclear powered submarine *HMS Tireless* throughout its year-long berthing at Gibraltar in 2000 whilst undergoing repairs to her nuclear power plant¹² and he headed up the team of nuclear and weaponry experts evaluating the hazards of the Russian Federation Northern Fleet sunken nuclear powered submarine *Kursk* throughout the world-first successful recovery operations of 2001, advising both the salvagers Mammoet-Smit and the Russian Federation Government.¹³ John Large was awarded a commemorative medal for his contribution to the *Kursk* salvage by the Russian authorities.

John Large is a nationally and internationally recognised professional, consulting engineer who, not infrequently, contributes comment and opinion on nuclear and technical matters to national and international media.¹⁴

LARGE & ASSOCIATES

In the specialised nuclear area, Large & Associates has completed major projects for City and County authorities in the UK, including the Mayor of London,¹⁵ Lincolnshire County Council, City of Plymouth, City of Rochester, East Sussex County Council, and Somerset County Council, and in the Republic of Ireland for the Republic Government, Dublin Corporation and other Irish local authorities. The Company previously advised the National Fire Brigades Union of nuclear accident risks to fire-fighters and other emergency personnel, and the National Union of Seamen on the dumping of radioactive wastes at sea.

The company has worked on overseas projects in Russia, with this work including in the former Soviet Bloc states investigation and assessment of the Russian Northern and Pacific Fleet sea dumping of radioactive wastes and reactor hardware in the Barents and Kara Seas, assessment of the current operational state of the nuclear-powered submarine fleets, accidents and deliberate scuttling of nuclear-powered submarines, to the fuel plants at Chelyabinsk, Mayak and Tomsk, including assessing the potential for military plants such as Sverdlovsk 44 and 45 to convert to civilian production, and assessments of the environmental state of the nuclear test sites of Semipalatinsk and Novaya Zemlya immediate post-incident assessment of nuclear plant accidents by on site investigation, such as at Chernobyl, Sosnovy Bor, Tomsk. and elsewhere in Taiwan and North Korea on the transfer and containment of radioactive wastes; in Japan on plutonium transportation and nuclear fuel reprocessing; in Sweden and Switzerland on the development of irradiated fuel and radioactive waste repositories; and in France, Finland and the States of Jersey on the European Pressurised reactor (EPR) development at Olkiluoto and Flamanville,¹⁶ the latter of which involved modelling the radiological impact of a projected seriously damaging reactor accident. Work undertaken in the nuclear field has also involved a number of confidential assignments for an international nuclear control agency.

12 *Forensic Assessments of the Nuclear Propulsion Plants of the Submarines HMS Tireless and RF Northern Fleet Kursk*, Forensic Investigation of Power Plant Failures, Seminar, IMechE, London, March 2005

13 *Risks and Hazards in Recovering the Nuclear Powered Submarine Kursk*, Warships - Naval Submarines 8, Royal Institution of Naval Architects, Conf, London, 23-24 June 2005 - <http://largeassociates.com/KurskRINA.pdf>

14 http://en.wikipedia.org/wiki/John_Large

15 *HM Government Energy Review and its Influence on London*, Greater London Authority, Mayor of London, R3155-2, August 2006

16 *Exploratory Review of the EdF Presentation in Support of the Proposal to Construct, Commission and Operate a 3rd Nuclear Power Plant at Flamanville, France, States of Jersey*, R3155-1, August 2006

On the risk of radioactive release incident at UK and overseas nuclear power plants, Large & Associates has reported on the vulnerability of nuclear plants to terrorist attack,¹⁷ undertaken detailed modelling and forecasting of radioactive fall-out¹⁸ and the health and economic consequences,¹⁹ including for the detailed prediction of aircraft crash rates on a nuclear power plant from a nearby commercial airport.²⁰

Fukushima Daiichi: John Large has visited the both Fukushima Dai-ichi (N° 1) and Dai-ni (N° 2) nuclear plant complexes (1998 and 2004), as well as other plants in Japan, including the Rokkasho fuel reprocessing plant,²¹ over on several extended trips.

From 14 March John Large has been analysing the developing situation at Fukushima Dai-ichi reporting with Daily Updates to Greenpeace Germany, and he has published an interim report that is presently itself undergoing update.²² On 23 March 2011 John Large presented an intervention at the European Parliament ALDE Group hearing during which he debated the implications of events at Fukushima Dai-ichi with the European Commissioner for Energy Günther Oettinger.²³

San Onofre: Currently John Large and Large & Associates are engaged in analysing the root cause of the replacement steam generators at the Southern California San Onofre nuclear power plant, with particular regard to safety issues relating to the proposal to restart the Unit 2 nuclear power plant.

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- 17 IPPNW Global Health Watch, Rethinking Nuclear Energy and Democracy after September 11, 2001, *'The Aftermath of September 11: Vulnerability of Nuclear Plants to Terrorist Attack'*, International Physicians for the Prevention of Nuclear War and Physicians for Social Responsibility, September 2004
- 18 *Assessments of the Radiological Consequences of Releases from Existing and Proposed French EPR/PWR Nuclear Power Plants*, February 2007
- 19 *Third Party Liability of Swiss Nuclear Power Plants*, ASNP, Berne, November 2007 - *Notice D'information - Adéquation De La Proposition D'amendement Aux Accords Financiers Devant, En Vertu De La Responsabilité Civile, Couvrir Les Dommages Survenus Pendant Et Après Un Rejet Radioactif Provenant D'une Centrale Nucléaire Suisse*
- 20 *Safety of the Existing and Future Nuclear Power Plants at Dungeness - Aircraft Crash Risk*, Planning Applications Y06/1647/SH and Y06/1648/SH, March 2007
- 21 *Submission to the Inquiry Committee on Rokkasho Reprocessing Plant Comprehensive Inspection [Rokkasho Saishori Shisetsu Soutenken ni kansuru Kentoukai], Meeting of 28 February 2004*
- 22 *Incidents, Developing Situation and Possible Eventual Outcome at the Fukushima Dai-ichi Nuclear Power Plants*, Interim Report R 3196-A1, 10 April 2011 – available upon request.
- 23 *Nuclear Safety and Nuclear Policy after Fukushima Dai-ichi, Implications for the World-Wide Nuclear Regulatory Regimes – Specific Application to Europe*, European Parliament, Brussels, 23 March 2011.
- 24 The information made available in this biographical note (Ref JHLL&ACVONRFUKU) is considered to be exempt from disclosure under the UK *Freedom of Information Act 2000*, it is to be treated as *Reserved Information* on the grounds for exemption that its disclosure to third parties would prejudice the commercial interests of Large & Associates and it must remain reserved information until the closure date specified previously or until the completion of the contract by whichever organisation/person has undertaken and completed the contract, whichever date is the later.