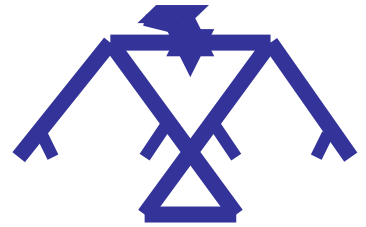


Nick Fraser

Technical Services Ltd



Curriculum Vitae

Nick Fraser

Crane Specialist

Personal Information

Nationality: British
D.O.B.: 28th March 1949

Summary of qualifications and key courses attended

BSc CEng FIMechE

- Expert Witness. Accredited by Cardiff University/Bond Solon
- Safety Case Author and Safety Case Management Foundation
- Reliability Centred Maintenance
- Availability Reliability and Maintainability
- Nuclear Familiarisation of Submarines
- CDM Training (Planning Supervisor and Designer)
- Project Management
- Knowledge Management
- Process Modelling Workshop (SIMUL8)
- BS EN 61508 Reliability and Safety Integrity of programmable electronic systems
- Risk Based Inspection
- CE Marking
- Decommissioning Safety Principles
- Design and Safety Process
- Life Cycle Management

CPD

Author and presenter of papers at a number of conferences to do with Cranes/Lifting
Articles for Technical Journals such as 'Cranes Today'

Author of numerous technical 'best practice' and engineering guidance notes

Member of the UK Nuclear Lifting Forum since its inauguration. Meets once a year.
Aim is to enhance safety, technical knowledge and best practice; share experiences learned and champion continuous improvement.

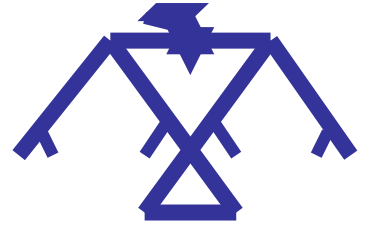
Attend Expert Witness conferences and workshops to keep up to date.

[Most recent workshop 'Giving Oral evidence in Court' by Lynden Alexander]

Patented easily transportable water filled ISO type containers for crane proof load testing system

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Current Employment

June 2011 – Present

Nick Fraser Technical Services Ltd, Bath

Engineering Consultant and Expert Witness

Since 1986 Nick has been working as an independent engineering consultant with his own company NFTS Ltd., located in Bath, specialising in the field of cranes and lifting appliances. His assignments have required the resolution of a wide variety of mechanical handling challenges from Clients involved in the Energy/Offshore Oil and Gas (13 years), Nuclear Power/Defence (13 years) and Construction/Industrial (15 years) sectors. With over 40 years of experience, Nick is able to act as an expert witness in crane incident investigations, an independent technical authority, carry out thorough examinations, condition evaluations, life extension assessments, feasibility studies, design audits, prepare specifications, technical assessments, calculations and evaluate tenders for the procurement of cranes, capital handling plant and lifting equipment.

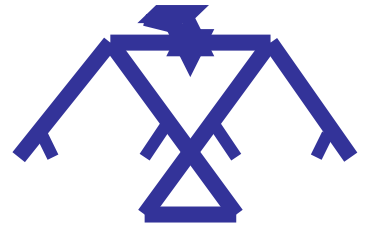
Specialist Expertise - Incident investigation

Expert Witness Assignments:

- Preliminary report on the cause of partial collapse of tower crane jib during storm 'Katie' on 28 March 2016. Acting for the Principal Contractor. *Ongoing. Awaiting report from the HSE.*
- Preliminary report on the collapse of a boom of an offshore crane situated on a drilling rig in the North Sea on 31 March 2016. Acting for the Rig Owner. *Ongoing. Awaiting report from the HSE.*
- Report on an incident involving the toppling of a Piling Rig.
- Report on the capability and adequacy of 2 telescopic cranes to perform the lifting of a new chimney at Exeter Airport in a dispute involving the crane hire company and the chimney manufacturer (Hirer). Acting for the County Court as Joint Expert. Case settled at Court.
- Preliminary investigation of circumstances surrounding the fatality of a worker struck by an excavator used for lifting a drain cover whilst carrying out ground works.
- Investigation into crane accident involving the serious injury of an overhead crane operator when the suspended load slipped from the hook. Acting for the crane manufacturer and maintainer. Case settled.
- Investigation of the collapse of the jib of a Tower crane during very windy conditions on 28th October 2013 at the same building site that a similar crane had a dangerous occurrence on the Old Kent Road, London (see below).
- Investigation of the unexpected release of a jib from a Tower Crane at a building site at the Old Kent Road, London in April 2013. Acting for the Principal Contractor.
- Site investigation and preliminary report on the circumstances following a helicopter collision with a tower crane at St George Wharf, Vauxhall, London in Jan 2013. Acting for the owner of the site.
- Handling Platform Incident on construction site in 2009. Case settled following clarification from HSE.
- Dangerous Occurrence acting for the Terminal Operator. Investigation of uncontrolled boom collapse of a Ship to Shore container crane onto a ship at Southampton Terminal in Jan 2008. Resulted in 4 similar cranes requiring structural strengthening work to pulley mounts on the A-frame. Outcome: - no charges following HSE investigation. Case settled in favour of Terminal Operator at Mediation in Dec 12 involving Contractor that had

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- extended the crane boom by 4m in 2006.
- Expert opinion on the liability surrounding the circumstances of the fatality of a construction worker during the placement of concrete beam by a tower crane during the building of a Hospital, North London. Settled before report was completed, Nov 12.
- Report and expert opinion on behalf of Owner of 6 container cranes at Belfast harbour into their change in condition, quality of maintenance and competency of maintainers provided to the Operating Company since July 2008. Acting for the Owner. Case settled in favour of Owner on first day of court, Oct 12.
- Expert opinion on the extent and adequacy of statutory compliance, maintenance and inspections provided by the crane manufacturer leading up to the dropped load incident involving a 100t EOT crane whilst lifting a 97t mandrel used for crushing granite rock. Acting for the stone quarry owner. Case settled at Mediation in favour of owner, Aug 12.
- Investigation into the circumstances surrounding the fatality of a vessel's deckhand whilst loading fuel at Fawley marine terminal in Aug 2008: Acting for the Terminal Operator, I prepared my initial report in Sept 2011. The HSE/CPS prosecuted my client and the inspection/maintenance contractor in July 2012. I prepared further supplementary reports during March - May 2013. Client pleaded guilty in June 13 to breach of Reg 5 of PUWER and was sentenced in Oct 13.
- Investigation involving a 60t mobile crane which toppled over whilst lifting a redundant chimney: Acting for the factory owner. Case settled out of court, Oct 2011.
- Investigation into the fatality of an inspector whilst examining a 10t steam powered railway crane at a Museum. Acting for the Museum. Outcome - Settled out of court, June 2011
- Investigation for the Inquiry into the fatality of an operator whilst using an overhead crane in a metal foundry: Acting for the foundry. No further action known as Case was pending HSE investigation, March 2010
- Independent expert opinion on the competency of a crane hire company to continue to supply tower cranes to the Client following an accident in London to one of the Hirer's tower cranes. Assisted Client in carrying out quality/ LOLER 1998 audit, April 2009.
- Expert opinion on the competency of a tower crane operator following the destabilisation of his crane at Weston Super Mare causing him anxiety and stress disorder. Acting for the Principal contractor. Outcome: - Case settled in favour of the crane operator, Jan 2008.
- Incident investigation of boom collapse causing total loss of an offshore pedestal crane whilst undergoing fault diagnostic trials in North Sea. Acting for the Platform owner. Outcome: - Settled out of court, May 2009.
- Incident investigation of 70t mobile crane which toppled into Kingston harbour, Jamaica whilst carrying out the erection of a frame on a floating barge with another mobile crane. Acting for the barge owner. Outcome: - Settled in favour of the mobile crane owner, 2003.

Engineering Assignments

Babcock, Rosyth Sept 2016

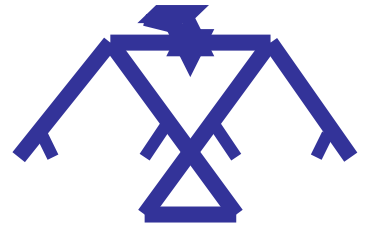
Carryout an assessment of the current design life of the 1000t Goliath crane in preparation for it being sold.

AECOM, Plymouth, Mar 2016 and Oct 2016 onwards

Technical advice on future crane selection for the FDFS Project for Babcock,

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Devonport. Continue to liaise with AECOM and Atkins (Bristol) on the development of the concept design of nuclear class cranes and mechanical handling equipment for the future facilities required to refit and maintain Astute submarines.

Babcock, Rosyth, Sept 2015

Carry out a visual inspection of the 1000t Goliath crane following a skewing incident on 18/9/15. Reported on the acceptability for continued service.

AECOM, Plymouth, Aug to Oct 2015

Technical advice on future crane selection for the FDFS Project for Babcock, Devonport. Liaising with AECOM and Atkins (Bristol) who were jointly tasked to produce a feasibility study for the future facilities required to refit and maintain Astute submarines.

4-Sight Consulting [Wilde Analysis], July 2014

Attendance at GEOG's Bristol office for an Operational Safety review of a IWOCs Umbilical lift winch made by ACE for Project Lianzi destined for offshore West Africa.

EnerMech, Aberdeen, April and Dec 2014

Project BP QUAD 204 – SPM. Visit to NFM factory, Le Creusot, in France where a 260t turret winch was undergoing acceptance testing (FAT) before shipment to a new floating production platform, destined for the North Sea to replace existing FPSO. Attend final FMECA workshop.

4-Sight Consulting [Wilde Analysis], April 2014

Attendance at GEOG office, Bristol of Operational Safety review of a IWOCs Umbilical lift winch (Project 1506) destined for Angola on a submersible.

Babcock, Rosyth, November 2013

Physical examination and condition evaluation of 25 year old HMC Munsters dockside crane at No. 2 Dock proposed to be used for decommissioning nuclear submarines.

Babcock, Rosyth, Sept 2013

2 year structural thorough examination and survey of 1000t Goliath crane

Amec Clean Energy - Europe, Quedgeley, Apr – July 2013

Update Technical Guidance Note on Lifting Points on Plant and Associated Lifting Equipment for EDF Energy, Barnwood, Gloucester.

Oxford Technologies, Abingdon, Mar – July 2013

Technical consultancy in developing the concept design for the Shaft Intervention Platform Package to recover intermediate level waste for decommissioning and clean-up from a facility at the Dounreay Site, Scotland

Babcock, Rosyth, Oct 2012 – Mar 2013

Verification of the Investigation into the final drive gear damage of 500t Hoist of the 1000t Goliath crane.

EnerMech, Aberdeen, July – Oct 2012

Feasibility study of methods/handling equipment to remove 5 Emergency Shut down Valves from Perenco's offshore gas platform in the southern North Sea.

ABP, Southampton, June – Sept 2012

Prepare specification for the procurement of 4 STS container cranes for Southampton Dock on behalf of Imes Ltd.

Technip, Aberdeen, June 2012

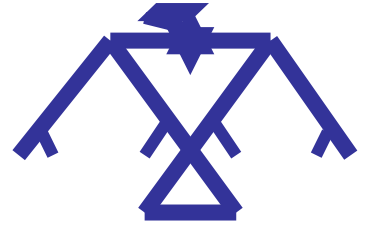
Prepare LOLER audit of Terex CC6800 crawler crane located at Lerwick, Shetland Isles on behalf of Imes Ltd.

Conoco, Cadiz, Spain, Nov 2011

Report on improvements in method of handling offshore deck structures weighing up to 1000t during platform construction using 4 crawler cranes on behalf of

Nick Fraser

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Imes Ltd.

Resume of previous Employment

Oct 2005 – June 2011 **Imes Ltd, Bristol** **Chief Engineer – Cranes & Lifting Equipment**

Reported to the CEO of the Group board. Appointed Engineering Manager in 2010 as part of the Management team to act as the focal point for Engineering Governance throughout the Company. To develop the engineering and technical management process, develop training schemes for technical personnel and act as mentor to graduate engineers. Also providing the role as technical authority and competent person in the specification, design, operation, testing and certification of cranes and lifting equipment. To provide a focus for ARM, RBI, FMEA and RCM techniques and promote best engineering practice to service the needs of Imes' customers. Responsible for innovating technical developments, tenders and delivery of engineering projects to time and budget.

Organisation of Imes Ltd

Imes Ltd turnover was £8m and comprised about 80 personnel offering specialist lifting and mechanical handling expertise to the Defence, Oil & Gas, Marine and Industrial sectors in the UK and internationally.

My role was to provide the necessary technical authority (TA) advice (both internally and to our customers) and competency/training to the particular subject discipline to ensure compliance in the highly regulated industries in which they operated. The role of the TA was planned around a matrix management organisation that works across the different locations of the company.

The range of engineering services offered by Imes:

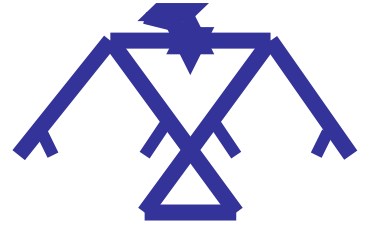
- Third party design verification of structures, lifting equipment, mechanisms and electrical control systems. Third party inspection during manufacture
- Design of bespoke cranes, manufacture, erection, installation, setting to work and testing.
- Accident investigation/expert witness (cranes and structures)
- Validation of load out and sea fastening of large structures
- Condition evaluation and thorough examination of cranes for continued service
- Procurement specification of high value/high integrity lifting equipment
- Independent Technical Assessment, particularly for higher integrity cranes used in the nuclear and defence applications for Regulatory compliance.
- Subsea infrastructure electrical integrity and associated manufacture
- Strain gauging, acoustic emission and ultrasonic (e.g. TOFD) testing of equipment
- Provision of condition monitoring systems and data management services

Sample of Projects that I have led

- Babcock Nuclear (Devonport) – Third party assessment (ITA) of the design of the Reactor Access House crane for 14 Dock to be used for defueling S and T class submarines.
- Babcock Marine (Rosyth) – Preparation of specification, peer review, FMEA, design assessment, review of test and commissioning schedules and carried out thorough examination/certification of newly erected 1000t Goliath crane prior to first use for assembly of the QEC aircraft carrier.
- Transnet Port Terminals – Project manager for design review and inspection of new Pneumatic Suction Unloading machine for bulk handling petcoke and alumina at Richards Bay, SA.
- South African Port Operations. Independent design verification of STS container cranes and RTG cranes. Managed the third party inspection (TPI) during manufacture and sea transit loading at ports across Europe. Value

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£430k.

- US Navy. Structural integrity assessment using acoustic emission (AE) of 120t EOT crane, used for handling missiles, whilst being proof load tested.
- DML, Devonport Independent consultant during tender review process for dismantling 80t nuclear hammerhead crane. Independent technical assessment of Reactor Access House crane for refuelling SSN submarines.
- Magnox (south sites). Inspection of Chute Silo manipulator for handling radiological waste at Berkeley site. Review of Hinkley Point intermediate level waste 12t package handling crane for use at Berkeley Site.
- Babcock Marine Ltd at Rosyth Pre-purchase survey and intrusive examination of 1200t Goliath crane lying at Boston, USA for potential ship building use in the UK for Babcock. Value £200k. Consultancy and peer review during procurement of a 1000t Goliath crane from ZPMC of China for assembly of the CVF aircraft carriers.
- BVT/BAe Systems. LOLER audit for all lifting appliances/equipment at Govan, Scotstoun and Portsmouth shipyards.

Resume of Previous Employment (continued)

Feb 2002 – Sept 2005. BNFL Environmental Services, Berkeley Team Leader

Responsible for peer reviews and company standardisation of various plant and process systems, handling radiological inventory, requiring the specification and procurement of remotely operated cranes and mechanical handling plant.

- Verified all mechanical handling aspects of the design, design substantiation and manufacture of a generic (ILWS) to be located at a number of Magnox nuclear power station sites throughout the UK.
- Author of a report to the MoD on optioneering methods for removing a nuclear submarine's core barrel from a pond in Rosyth dock as well as a number of crane incident investigations at UK licensed sites.

Feb 1986 – Feb 2002. Nick Fraser Technical Services Ltd, Bath Engineering Consultant and Contractor

Responsible for the initial assessment, specification and procurement of specialist cranes for clients involved in the Power Defence, Construction, Industrial, Nuclear and Offshore energy (oil and gas) sectors.

DML, Plymouth

- Team leader (cranes) involved in the Dock improvements and future facilities programme (Project D154) for refitting TSSBN and SSN submarines for the MoD/Navy. Value of cranes £23m.

Other Clients for which I did similar EPIC work for lifting equipment included:

- AEA Technology, Risley and Harwell
- Bechtel International, London
- Brown and Root Vickers, Glasgow
- CEGB, Bristol
- Conoco (UK), Mablethorpe
- Humphreys and Glasgow, Glasgow
- Stephens & Carter, Erith. Responsible for the mechanical design, planning and supervision of approx. 40 contracts proceeding through the D.O. Supplying permanent maintenance access equipment for tall buildings, value £2.5m, design staff 12.

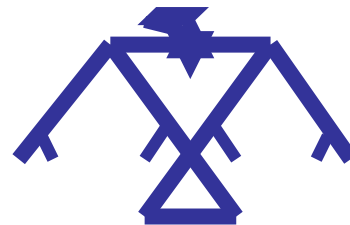
Sep 1984 – Feb 1986

G. W. Sparrow & Sons, Bath

Technical Director for Sparrows Crane and Contracting, reporting to the Managing

Nick Fraser

Technical Services Ltd



Director of the Parent Board.

Responsible for Engineering and Maintenance Depts. Duties included maintenance of 265 cranes from 6t to 1000t, equipment specification and selection, health and safety, heavy lift contract execution and developing the Company's technical resources.

Aug 1978 – Aug 1984

Sparrows Offshore Services, Aberdeen

Posts held: Contract Engineer, Engineering Manager, Engineering and Maintenance Manager and Technical Director, reporting to the Managing Director.

Responsible for all technical activities associated with offshore cranes. Also the planned preventative maintenance of 70 offshore cranes, control of workshops, yard and stores, preparation of tenders and engineering packages together with all follow on phases through to offshore implementation. Staff level 152, technical personnel 28. Other duties included equipment appraisal, project management, improving technical resources and systems and business development.

Nov 1972 – Aug 1978 Stothert & Pitt, Bath

Design Engineer

Crane and deck machinery: Development of pedestal offshore cranes for North Sea.
Contractors Plant: Prototype concrete slip-form paving machine and road mixer.

July 1972 – Nov 1972 Rotork Controls, Bath

Junior Engineer

Design of a new range of remote controlled process valve actuators.