

Roger Hill

Mr Hill is an Independent Consultant with over forty years' worldwide experience in onshore oil, gas and chemical pipelines, risk assessment and safety management. Mr Hill is a former Managing Director of both Arthur D. Little's Global Energy Practice and their Risk and Safety Management Practice and Vice President of Arthur D. Little Inc. He is based in Cambridge, UK.

Mr Hill's international consulting experience covers feasibility studies, design, engineering, procurement, operations, project management, construction supervision, inspection and testing of oil and gas pipelines; safety and environmental management, quantified risk analysis and acting as an expert witness including:

2008 to present: Independent Consultant

- Prepared expert reports for the ICC International Court of Arbitration in London in connection with claims related to the construction of a major gas pipeline in North Africa for a contracting company (2016-18).
- Provided technical advice to a law firm in connection with litigation associated with the construction of a major gas pipeline in Australia (2015).
- Prepared an expert report for the High Court of Justice in London for a major oil company in connection with the construction of an oil pipeline in Colombia (2015).
- Review and Implementation of Safety Management System for RAC Motor Sports Association (2015).
- Prepared an expert report for an international law firm into the effects of pipeline construction on the abstraction of water resources (2014).
- Project Management advice to a management consulting company in connection with the owner construction management organisation for a major new international gas pipeline project (2014).
- Prepared an expert report for the High Court of Justice in London in connection with a gas transmission pipeline failure in the supply of gas to a major power station for an international law firm (2013).
- Prepared an expert report for the ICC International Court of Arbitration in London in connection with construction defect claims related to a major international oil pipeline for a contracting company (2013).
- Prepared an expert report in connection with a gas pipe failure in a transmission pipeline compressor station for an international law firm (2012).
- Prepared an infrastructure assessment of a Middle Eastern country in connection with a dispute on a gas supply contract for an international law firm (2011).
- Prepared an expert report for the ICC International Court of Arbitration in Paris in connection with claim relating to instrumented pigging of a major international oil pipeline for an international law firm (2010).
- Prepared a report on factors affecting safety of ageing pipelines for a major European Gas Transporter including a worldwide review of transmission safety management processes required by regulators in Europe and North America in respect of aged pipelines (2010).
- Performed an integrity management audit of a major 60 year old European oil pipeline. The audit considered processes in place to assure continued safe operation until the end of its predicted life (2010).
- Technical advice in connection with a manpower review of Saudi Arabia's oil and gas export pipeline network (2009).
- Review of pipeline repair processes and emergency response management for a European jet fuel pipeline (2008).
- Prepared an expert report for the High Court of Justice in London on Explosion Foreseeability for a law firm acting on behalf of an international oil company in connection with the Buncefield Storage Depot explosion (2008).
- Preparation of gas expert report for a law firm in connection with litigation following a major fire at a distribution depot (2008).

- Delivery of lecture course on risk and safety management of onshore pipelines.
- Review of technical, safety and environmental aspects of the proposed Nordstream subsea gas pipeline between Russia and Germany.
- Review of Safety and Quality Management of UK rail infrastructure manufacturer.
- Preparation of Risk Assessment for door locking interlocks for a Bus Company.

1987 to 2008: Arthur D. Little Limited

Safety and Risk Management

- Hazard and Operability (HAZOP) studies and quantified risk assessments of numerous pipelines for the transport of methane, propane, butane, ethylene, ethane, chlorine, ammonia, oxygen, nitrogen, hydrogen, crude oil, and multiproducts around the world.
- Quantified Risk Assessment of hazardous pipelines in the UK, including petroleum products, ammonia, LPG, chemical and National Grid (formerly British Gas) transmission pipeline network for the UK Health and Safety Executive to assist in the framing of the 1996 Pipelines Act.
- Development of Pipeline Safety Instrument for the European Union for the control of hazardous pipeline in Europe.
- HAZOP and quantified risk assessment of sections of the natural gas transmission network in Greece.
- HAZOP and quantified risk assessment of ammonia pipeline and storage terminal in the Middle East.
- Risk Management Audit of gas pipeline network during pressure elevation process for major Canadian Gas Pipeline Company.
- Business risk management system for a major international oil company. Developed process for business risk identification, quantification, control and implementation of a business risk management system
- Assessment, design and implementation of integrated Environment, Health and Safety Management System for British Gas. The work comprised strategy, specification, manuals and roll out.
- Training courses on quantified risk assessment for transmission pipelines for international gas transport companies.
- Safety and Operability Audit of over pressure and control systems for a UK multiproduct pipeline following commissioning. The study identified improvements in safety and operations in the pump station and pipeline receipt facilities.
- Project manager for quantified risk assessments in connection with Safety Cases for the offshore oil production platforms and pipelines in the North Sea.
- Project risk assessments to determine likely cost and schedule outcomes for a \$3bn oil and gas field development and pipeline project.
- Quantified Risk Assessment of major gas fractionation plant for Shell Expro and Exxon Fife Ethylene Plant at Mossmorran in the UK. The study included a HAZOP and risk analysis of pipelines and shipping at marine terminals in the Firth of Forth port associated with a major expansion of existing chemicals, LPG traffic and crude oil for BP, Shell and Exxon. The study included the public presentation of risk assessment studies.
- Risk management studies using Issues Analysis for the Swiss Government in connection with the \$9bn AlpTransit high-speed rail tunnel project.
- Evaluation of the UK Decommissioning and Radioactive Waste Management Operations Programme with a focus on management systems and project management processes for the UK Department of Trade and Industry.

Expert Witness

- Prepared an expert report as an Expert witness for gas transporter for the Quantified Risk Assessment of Medium Pressure Ductile Iron and Cast Iron Mains in connection with a fatal gas explosion in Scotland.
- Member of expert witness team for gas transporter following a gas explosion in a UK apartment block after residents returned to their property following an earlier gas leak.
- Prepared an expert report for an International Chemical Company in connection with a prosecution following a major gas release at a UK chemical plant.
- Prepared an expert report for the Royal Commission set up by the State of Victoria, Australia following an explosion at the Longford gas plant.
- Prepared an expert report as an Expert witness for an international oil company in arbitration between major gas producer and gas purchaser in connection with gas under delivery. Provided expert testimony in respect of adequacy of gas investment.
- Prepared an expert report as an Expert witness for an oil company in connection with a release of jet fuel at Stansted Airport.
- Prepared an expert report as an Expert witness in arbitration relating to take or pay provisions in a Transportation and Processing Agreement in the North Sea in respect of Project Management.
- Prepared an expert report for the ICC International Court of Arbitration in London as an Expert Witness for an international oil company in connection with litigation relating to metering, flow capacity, operation and design for 3rd party use of an international gas transmission pipeline line.
- Prepared an expert report for a Public Inquiry in Scotland as an Expert witness for Exxon in connection with a new ethylene pipeline. Provided expert testimony on the effect of subsidence of old coal mines on acceptable stress levels and safety of the pipeline.

Techno-economic Consulting and Project Management

- Feasibility study for a 500km long Trans Andean heavy crude oil pipeline in Ecuador. The study considered routing, pipeline design, capital cost estimating and economic attractiveness.
- Review of major projects of \$14bn in value for an international oil company. The projects included a major international gas pipeline, three oil field developments and associated export pipelines, a power station and refining research projects. Our client wished to identify problem areas and process improvements on their major onshore and offshore international projects. We identified the need for changes to their project management processes including contracting strategy, procurement processes, project management accountabilities, front-end loading and project execution. Our client accepted our recommendations and implemented the necessary changes in project management.
- Techno-economic study and contract negotiation for \$250m gas infrastructure project in a European country. Techno-economic study included pipeline design options, LNG Terminal, and capital and operating cost estimates. Negotiation included establishment of form of contract, contract terms and conditions and technical specification.
- Technical and operations audit of Khuff gas transmission pipeline system for the State of Bahrain. The study considered the operations of the system from well head to consumers and including technical design, risk of interruption of industrial consumers and public safety.
- For the Federal Ministry of Economics, Czech and Slovak Federal Republic (CSFR) evaluated and compared alternative options for supply of oil by pipeline to meet overall national requirements.
- Study of impact of change in operations management of the British Gas transmission system from dedicated gas supply with nominated suppliers to a free access third party supply system. The impact considered a range of issues including the impact of the management on system integrity and safety. The UK Government commissioned the study.

- Review of Security of Supply criteria and accountabilities in the European gas market for a European Gas Transporter. Data was provided for the UK, Germany, France, Italy, Spain, Belgium, Eire, Denmark and the US.
- Study for an Italian company to identify best maintenance technologies for gas transmission and distribution systems and recommendation of licences. A new company was formed to exploit the technologies in the Italian market.
- Technical and operations management advice on new gas import project for Middle Eastern country for fuel supply to gas fired power stations. The advice covered technical issues in the Gas Sales and Purchase Agreement, operations management, development of a reliability model and the impact of daily supply and demand variation on the technical performance of the gas pipeline network.
- Development of a methodology for the evaluation of the business attractiveness of investments in multinational long-distance oil and natural gas pipelines for a major far eastern investment company. A series of risk guidelines were prepared covering hydrocarbon price, supply and demand, project start date, capital cost estimating, oil/gas contracts, international political relationships, project interruption, operation and reliability and fitness of design.
- Development of a pipeline management and organisation for the products pipeline system in Argentina as part of an oil company restructuring project. The pipeline system comprised 6,000 km of oil and gas pipelines.
- Project risk assessment to determine likely cost and schedule outcomes for a \$3bn oil and gas field development and pipeline project in Kazakhstan.
- Gas network analysis of gas transmission pipeline network to evaluate current and future capacities of European natural gas transmission pipeline systems throughout seven major countries using state-of-the-art engineering gas network software. Identification of requirements for additional pipelines and/or system modifications to meet future demand.

1975 to 1987: Penspen Engineering Consultants

Engineering and Construction Management

- Project and Construction Manager for a 40 km long twin gas pipeline project for Exxon Chemical. The project included process design of terminal facilities, subsea pipelines, intermediate stations and computer-based supervisory control and data acquisition systems. As construction manager responsible for supervision of contractors with oversight of subsea and land pipelines construction, hydraulic testing, drying and acceptance of pipelines.
- Chief engineer and construction manager for ethylene gas pipelines in the UK for ICI and Shell as part of a UK pipeline upgrade, addition of underground storage facility and addition of new link including oversight of pigging, hydraulic testing, methanol swabbing and nitrogen drying of the pipeline.
- Chief engineer, project and construction manager for a 220 km long multiproducts pipeline for Esso Petroleum. The project included the hydraulic design of the pipeline, the design and installation of a SCADA System, supervision of contractors during construction and initial operations of pipeline system. Personal oversight of hydraulic testing, caliper pigging and acceptance of pipeline.
- Design, construction and commissioning manager of multi-products pipeline stations and terminals at a UK airport and storage depot for gasolines, kerosenes, jet fuel and gas oil for Esso Petroleum. The project involved the design, procurement, supervision of construction, testing and commissioning of pipeline receipt facilities including interface tankage, metering and control facilities and tank farm interface.
- Author of "*BS 8010-2.8:1992 Code of practice for pipelines. Pipelines on land: design, construction and installation. Steel for oil and gas.*" in association with the Department of Energy, Institution of Gas Engineers, the Institute of Petroleum and the British Compressed Gases Association.
- Hydraulic design of a 660 km long multi-products pipeline and preparation of the Design Basis Memorandum for a national oil company in the Middle East.

- Design and preparation of specifications for a petroleum products rail loading facility and tank farm at a pipeline products terminal in East Africa.
- Responsible for the preparation of specifications and the subsequent supervision of manufacture, testing and acceptance of line pipe for oil and gas pipelines from UK and German steel pipe mills.
- Project manager for a number of water engineering and sewerage infrastructure projects including pumping stations, treatment plant, wellfields, reservoirs and pipeline systems in Qatar and Libya.

1972 to 1975: Rolls-Royce Allen Gears

Mechanical project engineer

- Design and project management of epicyclic gear transmissions for gas turbine driven pipeline compressors and oil/gas tanker main propulsion systems.

1964 to 1972: David Brown Corporation

Mechanical design engineer

- Design of high-powered gear transmissions for naval gas turbine and diesel main propulsion systems.
- Student apprenticeship.

Education

- Mr Hill holds an honours degree in Mechanical Engineering from the University of Bradford.
- He is a Chartered Engineer and Fellow of the Institution of Mechanical Engineers.

Publications

- Author of BS 8010 Pipelines in Steel on land standard on behalf of British Standards Institution, 1990.
- "Pipeline Risk Analysis" Major Hazards Onshore and Offshore, IChemE Symposium Series 130, 1992.
- "Risks from Hazardous Pipelines in the UK", UK Health and Safety Executive, HMSO, 1994.
- "Current Issues and Questions concerning Pipeline Safety", Report of the OECD Workshop on Pipelines (Prevention of, Preparedness for, and Response to Releases of Hazardous Substances), 1997

Training

- Attended Bond Solon training course for Expert Witnesses
- Attended Project Management training course at the University of Manchester