

KENNETH LEES BSc, MSc, CMRP - CURRICULUM VITAE

Postal address: 'Broadhaugh' 110 Camphill Road, Broughty Ferry, Dundee DD5 2ND, Scotland.

Telephone Nos: +44 1382 737736 (W); +44 7966 199416 (M)

E-mail: kenneth.lees@gmail.com
Addresses: kenny@M2K.com

Family: Married, with 4 girls.

Nationality: UK

Passport No.: 543248279

Education: BSc Civil Engineering & Economics (Joint Hons.), Dundee University, Scotland,
MSc Reliability Engineering & Safety Management, Heriot-Watt University, Scotland.



PROFILE

Experienced R&M (Reliability and Maintenance) Engineering Professional with significant expertise in developing and implementing R&M Improvement Programs, Maintenance Strategy Development using RCM, RBI, IPF and PMO techniques, Defect Elimination, and developing / teaching R&M Training Programs, for a variety of industries. Kenneth has worked in several countries and cultures including Angola, Nigeria, Norway, Oman, Saudi Arabia, South Korea, Kazakhstan and USA. A founding member of Shell's Centre of Excellence in Maintenance & Reliability and represented the C of E in a Joint Industry Project (OREDA). Pragmatic, problem solving, results-oriented and 'hands on' approach with a continuous improvement and simplification mindset. His ability to deliver measurable change is illustrated in a track record of safe and effective performance improvement in demanding operating environments. He combines a strong technical background in Maintenance & Integrity Management with a positive approach that motivates and stretches those working with him.

CAPABILITIES INCLUDE:

- Maintenance Strategy Development and Reliability Performance Improvement for new and existing facilities.
- Developing and conducting Maintenance and Reliability Best Practices Training.
- Project Management and co-ordination of related activities.
- Maintenance Evaluation using techniques such as Reliability Centred Maintenance, Failure Mode and Effects Analysis, Risk Based Inspection, Safety Integrity Levels and Root Cause Analysis.
- Education and facilitation of groups in RCM/RCA/RBI/SIL analysis and similar methodologies.
- Criticality Analysis at system and component level.
- Critical Spares Analysis to determine inventory and calculation of optimum stock levels.
- Implementation of Computerised Maintenance Management Systems (SAP PM, JD Edwards, etc).
- Development and improvement of PM (Preventive Maintenance) and CBM (Condition Based Maintenance) Programs
- Developing of Business Reporting Processes and Improvement (including KPI's).
- Defining roles and responsibilities and developing organisational structures.
- Conduct approx. 4 (four) M&R Training Courses per year, primarily in the Middle and Far East including M&R Best Practices; Practical Reliability Engineering: Cost Effective Maintenance Management; RCM (Reliability-Centred Maintenance) and Investing in Effective Maintenance

EXPERIENCE & ACHIEVEMENTS

Shell UK Exploration & Production

Sept 2017 – Present

Maintenance & Integrity Focal point - Nelson Facility

Sept 2017 – Present

Accountabilities:

- Lead Maintenance team in achieving business goals for Maintenance and Integrity:
 - Reduction in Workload to <10 weeks work as measured by BW (Business Warehouse).
 - Reduction in Backlog via Risk Assessment and Z6 to zero.
 - Compliance with ME (Maintenance Execution) KPIs as per AMS (Asset Management System) Standard and relevant Recommended Practices.
 - Reduction of WPSE E2E (End to End) cycle time to <100 days.
- Engage onshore and offshore workforce to embed an effective and efficient E2E WPSE (Work Preparation, Scheduling & Execution) process.
- Drive MTO (Manage Threats and Opportunities) and RCA / 5Ys (proactive and reactive processes).
- Champion CRV (Cumulative Risk Visualisation) Tool - 8 Risk Barriers - to identify and mitigate integrity threats.
- Lead PMO (Preventive Maintenance Optimisation) reviews across all disciplines to optimise PM efficiency with the aim reducing the CM to PM ratio (i.e. less CM work).
- Provide input into the Maintenance Reference Plan and act as focal point for MRP updates.

Key Achievements:

- Maintenance Function key to Production Availability increase from 65% in 2017 to 84% in 2018 through focus on ME (compliance) and reducing reactive maintenance.
- Nelson Facility currently achieved 1290 days without an LTI (Lost Time Injury).
- Ownership of CRV tool and CRV gap closure plan to ensure delivery from relevant onshore action parties in maintaining green barriers at all time.
- Rollout of effective Causal Learning Program to staff (ongoing) to eliminate repeat failures.
- Delivered backlog reduction through vendor discrete campaigns, up-man of M, E & I plus Fabric Maintenance core crews, and TAR / Pitstop scopes.

Petroleum Development Oman

Sept 2013 – Sept '17

Oil South Directorate Maintenance Coordinator (Marmul); Reliability Supervisor

Sept 2013 – Sept '17

Accountabilities:

- Coordinate and manage execution of all maintenance activities in line with the IAP (Integrated Activity Plan) for 6 Facilities and 100 direct staff, along with 4000 contractors.
- Manage, coach and lead multi-discipline teams (Mechanical, Electrical, Instrument, Inspection & SCADA) to drive up Equipment Availability, while assuring Technical Integrity at Optimal Cost.
- Drive ORIP (Operational Reliability Improvement Process) and TR-MIE (Total Reliability, Maintenance Integrity Execution) programs.
- Monitor and drive Planned and Corrective Maintenance Compliance to Directorate targets.
- Assess and report TI (Technical Integrity) status of SCEs (Safety Critical Elements) through HBA (Hardware Barrier Analysis) and CRV (Cumulative Risk Visualisation).
- PTW (Permit to Work) Coordinator and CSR (Contractor Site Representative).
- Shutdown Co-ordinator and LEBC (Local Emergency Base Controller).
- Ensuring Maintenance input into Projects.

- Mentor new GDP (Graduate Development Program) Engineers for Maintenance & Integrity, Operations Readiness & Assurance, Integrated Activity Planning & HSSE Risk Management.

Key Achievements:

- Full compliance with Corporate HSE policy in Critical Sour and Sour Environments.
- Consistently met average of scheduled / unscheduled deferment targets, namely 1.1% & 4.4% respectively.
- Achieved and sustained 'Calculative' for TR-MIE and ORIP.
- Maintenance Function commended for level of support to Production, Programming and Engineering in achieving production targets throughout 2016/17.
- Successfully assisted with Major Shutdowns.
- Championed Lean Processes to eliminate non- value adding activities and Visual Management to improve visibility and communication.
- Rollout of effective RCA / Failure Avoidance Program.

Shell Global Solutions / Shell Projects & Technology

May 2007 – Aug. '13

Maintenance & Integrity Lead

May 2007 – Aug. '13

Accountabilities:

- Provide Maintenance Engineering & Reliability expertise principally to Shell European EP Facilities.
- Maintenance & Integrity Lead during evaluation of selected ventures, projects and farm-ins.
- RCA (Root Cause Analysis) leader.
- Compliance with corporate HSE policy.
- Provide RAM Modelling expertise to a number of projects including NLNG T7, Antar, Ormen Lange TLP, Draugen, Nyhamna, Hasselmus to calculate production efficiency, optimise maintenance / sparing requirements and identify critical items to production downtime.
- Provide an auditable RAM (Reliability, Availability, Maintainability) demonstration for timely qualification and selection of the pioneering Subsea Compression concept for Ormen Lange. Demonstrate the business case by assessing and quantifying the uncertainty regarding the concept through RAM modelling and Technical Authority endorsement.
- Develop the Availability Assurance in Operations and Projects process.
- Mentoring & development of less experienced staff.
- Project Manager and Shell Representative to OREDA (Offshore Reliability Database) Steering Committee (long term International JIP on reliability of E&P process and safeguarding equipment).

Key Achievements:

- Advisor to Shell UK and Maintenance Leadership team.
- Presented to Technical Steering Committees (Shell) and Joint Venture partners (external) on RAM Assurance, Reliability Improvement and Maintenance Optimisation.
- Implemented RCM and PMO at key installations including LNG supply plant and export terminal to improve Maintenance and Integrity at key gathering / export installations
- Successfully integrated availability modelling and RAM Assurance into the development of the Ormen Lange Subsea Compression Project, supporting and guiding the definition and optimisation of the concept design, layout, modularisation philosophy, and sparing, maintenance and intervention philosophies.
- Set up and chaired RAM Expert Team (TA1s from key disciplines) that provided assurance for the system availability and performance assessments for Subsea Compression and ultimately endorsed the availability and through-life performance inputs.

- Co-author of technical standard on integrity compliance.
- Availability Assurance has become a key resource for the majority of Shell managed Project Development.
- Reduced Shell's (3-year) OREDA data provision backlog in 11 months. Elected Steering Committee Chairman.

Maintenance 2000 (M2K) Limited

Oct. 1992 – April '07

Managing Director & Independent Consultant

Oct. 1992 – April '07

Accountabilities:

- Delivery of maintenance management strategy, reliability assessment & uptime improvement, availability modelling and RCM, principally on petroleum production & transport facilities and ranging from new projects, through producing facilities to decommissioning & divestment.
- Development of maintenance management strategy, integrity, integrated HSE and associated risk based services for companies including; BP, Camom (Bouyges Offshore), Conoco, Korea Power Plant Service Co (KPS), SBM (Single Buoy Moorings), Shell International, Shell UK and Sonangol (Chevron JV).
- As a joint owner, operational, account and financial management of the SME providing these services.
- Provided Asset Integrity Assurance Services to AgipKCO. Managed, on behalf of Integrity Assurance team; audits, reviews such as HAZOP's, SIL Assessments and design change processes. Performed detailed FMEA to determine consequences of failures and developed maintenance strategies. (Kashagan Project)
- Specification and delivery of key risk based element of a corporate integrity and uptime improvement program, including RCM, RBI & SIL maintenance methods for process systems, static equipment and safeguarding systems. (SPDC)
- Author of Company standards on Maintenance Strategy and Availability Assessment. Co-author of Company standards on Operations Integration in Projects (OIP), and Safeguarding System Integrity. (Shell UK)
- Development of SPRP (Spare Parts Review Procedure) in conjunction with Kværner AM
- Implement TPM (Total Productive Maintenance) program to include assessment of plant efficiency by establishing OEE (Overall Equipment Effectiveness) measure and execute CI (Continuous Improvement) process. (Johnson & Johnson)
- Conducted RAM Modelling (MAROS) for a number of projects whose total value exceeded £1.6bn.
- Set up and ran an integrated team to restore & sustain compressor performance to increase sales and lift gas volumes.
- M2K were responsible for the successful delivery of an RCM driven maintenance strategy review that employed a structured approach in analysing and reviewing maintenance activities carried out on the Terminals Plant & Equipment systems. A full Criticality Assessment was performed on all systems & equipment, with subsequent RCM / FMEA analyses being incorporated to establish the effective maintenance strategies that would be applied to the plant. In addition a full suite of revised PM routines was compiled and scheduled into an integrated 5-year asset plan within the BG Maximo Maintenance system. (British Gas).

Key Achievements:

- Long term, sequential assignments with Shell UK Exploration & Production, enabling Shell Expro to establish a recognised "Centre of Excellence" for Maintenance & Integrity.
- Administered implementation of £15M MSR (Maintenance Strategy Review) project to establish improved maintenance tasks and strategies for 22 Expro installations. Facilitated 5 external contracting companies providing day-to-day technical assistance, project management and support,

development of performance indicators, work implementation, extraction and analysis of reliability data. (Shell Expro)

- Maintenance Lead in NOC review of JV operated assets identifying annual operating cost savings of US\$35M and a 4% annual uptime improvement. (Sonangol)
- Ensured all necessary strategies and controls were demonstrably in place to assure that the integrity risks for Kashagan facilities were properly mitigated on the basis of sound RCM and IPF methodologies and complied with RoK Legislation and SDK (Shell Development Kazakhstan) HSSE control framework
- Lead availability appraisal and uptime improvements saving £40M CAPEX by eliminating the need for a new separation train to process satellite well fluids across an existing installation. (Shell Expro)
- Availability Modelling achieved reduction in redundancy equivalent to a CAPEX saving of US\$20 million and topsides weight reduction of 1000 tonnes (Malampaya).
- Spare Parts Review pilot project in Brent identified savings of £750K.
- Reviewed safety systems (F&G, ESD, H₂S and HIPPS) for Al-Ahmadi Refinery to determine the performance requirements of the IPF (Instrumented Protective Functions) at defined function test frequencies and compare with 'best in class' performance. Followed up with appropriate recommendations i.e. system upgrade, diversity of equipment and improved reliability data collection. (Kuwait National Petroleum Company.)
- Applied OIP to a number of projects (Kingfisher, ETAP, Shearwater); successfully developing maintenance and operating strategies for topsides & subsea equipment.
- Implemented CI to increase OEE by +25% with the ultimate goal of attaining world class measure (i.e. 85% or better). This entailed measuring and analysing losses, evaluating equipment, material and methods, formulating improvement plans and establishing autonomous maintenance.
- Raised average annual compressor uptime by 21% providing an additional ~120 mmscf/d compression capacity from previously unavailable machines.
- Founded, grew and successfully sold a maintenance strategy consultancy business. Developed and promoted service to the upstream sector notably in Europe, Scandinavia and Africa.
- Instructed RCM (Reliability Centred Maintenance) Facilitator course (2 weeks) and facilitated pilot study (Waukesha Gas Engine Driver - Compressor Station) for Shell Petroleum Development Co. (SPDC - Nigeria).
- During this time I became an experienced RCA (Root Cause Analysis) specialist and lead and supported a number of Incident Investigations.