About DNV GL

DNV GL is the technical advisor to the oil and gas industry. From project initiation to decommissioning, we enhance safety, increase reliability and manage risks in projects and operations.

Our oil and gas experts offer local access to global best practice in every hydrocarbon-producing country. Driven by a curiosity for technical progress, we provide a neutral ground for collaboration: creating competence, sharing knowledge and setting industry standards.

Our independent advice enables companies to make the right choices. Together with our customers, we drive the industry forward towards a safe and sustainable future.

www.dnvgl.com
INCIDENT INVESTIGATION

Expertise and facilities to facilitate learning from events

The oil and gas industry is faced with increasing levels of complexity. Project delays and re-engineering are becoming more common, and incidents have more social and economic impacts. In the face of this challenge, regulators and operators are tightening their technical requirements for safe, reliable and efficient operations.

As the technical advisor to the oil and gas industry, DNV GL helps to enhance safety, increase reliability and manage risks in projects and operations from project initiation to decommissioning. Our worldwide network of experts is dedicated to achieving a safe and sustainable energy future. Combining theoretical knowledge with industry experience, we are on hand to increase reliability and manage costs wherever we are needed, from the fabrication yard to operations.

Incident Investigation
DNV GL has a long history of incident investigation support, either working as part of our customers’ teams or as an independent third party. The services we can provide include:

- Investigation organization - charter and scope, team composition, investigation strategy
- Site investigation support - evidence collection and preservation, interviews, photography
- Supporting technical analysis - accident HAZOPs, dispersion, fire and blast, CFD, etc.
- Lab analyses - failure analysis, metallurgical and elastomer failures, material tests and qualification
- Full scale test site at Spadeadam Testing and Research - fire and explosion trials, and electrical power labs globally
- Formal root cause methods - DNV GL loss causation model, SCAT™, MSCAT™ and BSCAT™
- Rapid response services for gas explosions - to attend customer sites and gather initial evidence
- Pipeline and corrosion failure investigations
- Investigation training including software
- Investigation procedure development for corporate programmes
- Expert witness and litigation support

World-class methods
DNV GL supports investigations no matter the requirements, from cause investigations to full root cause analysis.

Technical cause investigations tend to rely heavily on direct examination and laboratory analyses combined with a full understanding of fluids and construction materials, installation and operation details. Root cause investigations go deeper for lessons learned, including human factors and management system elements.

DNV GL’s root cause methodology (the systematic cause analysis technique or SCAT™) that has been employed on thousands of investigations by us and our customers. SCAT™ has been updated to include the barrier approach (DNV GL BSCAT™). A maritime version is available as MSCAT™.

Laboratory facilities
DNV GL operates 18 laboratories across three continents, offering a broad range of testing services. We combine advanced testing with technical expertise and our deep seated knowledge about industry standards to help our customers apply technology safely, efficiently and cost effectively. Our laboratory facilities include a range of material examination tools, including optical and scanning electron microscopy, spectroscopy and X-ray diffraction, plus a wide range of chemical analysis equipment for corrosion monitoring characterization.

These allow for detailed assessment and understanding of metallurgical and weld failures, and other material failures. Electrical power testing and certification laboratories are located globally. Please find more at: www.dnvgl.com/services/laboratories-and-test-sites-12858

Large scale test facilities
DNV GL maintains a large scale test facility at Spadeadam Testing and Research in northern England, with the capacity to conduct full-scale testing on more than 3,500 hectares of secure Ministry of Defense land. The facility can safely carry out large scale fire and explosion experiments, as well as providing fire training exercises.

The Spadeadam Testing and Research has carried out important explosion trials that have helped understand fire and vapor cloud explosion events in typical offshore installations and, more recently, provided experimental support to understand the possible detonation event at Buncefield.

Training
DNV GL can provide training in investigation fundamentals, as well as specific methods such as SCAT™, MSCAT™ and BSCAT™, suitable for technical and supervisor grade staff. We can assist with implementing these into corporate investigation programs and links to software such as DNV GL’s Synergi™.

CASE STUDIES

Macondo BOP Forensic Examination - This project, executed on behalf of the US Department of the Interior, involved a detailed examination of why the Deepwater Horizon blewout prevented (BOP) failed to seal the well. The work involved careful disassembly of the BOP and the mapping of the broken drill pipe segments back to their original location. Important general findings on specific BOP design issues were identified and shared with the industry.

Pipeline examples - DNV GL has carried out a large number of pipeline investigations worldwide. Our Columbus (US) and Loughborough (UK) offices specialize in pipeline projects, including support for investigation and remediation. DNV GL has carried out a number of investigations as required by PHMSA in the US for serious pipeline leak events.

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