Gilmore Engineers

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CAPABILITY STATEMENT

FAILURE ANALYSIS

The Failure Analysis Division of Gilmore Engineers Pty Ltd complements e3k, the New Product Design and Development Division. It conducts failure analyses with in excess of 1,000 cases investigated and formally reported since 1984. Dr Duncan B Gilmore has been preparing reports for 30 years. These reports are used for the purposes of system design review, mediation and litigation. The reports are carefully compiled and written by experienced engineers of your choice, with PhD and Masters level qualifications. Those same senior personnel are available to verbally present this material in any forum required.

The "failures" investigated include machinery and system of work failures leading to property loss, loss of life, and personal injury. Further services include the analysis of motor vehicle accidents to establish the probable cause, forensic analyses to assist criminal investigations including arson and murder, intellectual property defence support (copyright and patents), and product liability reviews and experimental testing.

In most circumstances, examination of evidence in our office, on site or in a laboratory is required. Normally, measurements and photographs are necessary. A project typically begins with a briefing document, a contract outlining what will be performed for both a fixed or estimated cost; and an estimated timescale. Further discussions and meetings follow. Some projects require a desktop examination of evidence already collected or a critique of existing reports. The same analytical tools which we use in our New Product Division to design advanced products, are often put to work in reverse to probe possible failure modes. Advanced computer modelling and analysis is a specialty – Fluid mechanics, stress analysis, thermodynamics and dynamic behaviour.

The keys to hiring a good expert to examine a failure are:

- ***Well qualified, experienced, and professional***
- ***An enquiring and quick mind***
- ***Ability to communicate at a high level in both written and verbal forms***
- ***Track record of success and the ability to suggest suitable tests and lines of investigation***
- ***Well rounded personality, able to lead a team if required.***

The personnel offered by Gilmore Engineers have these qualities and maintain the support of the whole organisation i.e. other experienced associates are available to assist if required. The services are offered on a worldwide basis, with particular attention being paid to countries on the Pacific Rim.

Numerous successful cases in each failure analysis category have been performed, including typical examples below:

Machine Failure

Helicopter/aircraft failures
Construction Crane collapse
Mobile Crane collapse
Industrial equipment explosion
Heavy Transport Vehicle Cracking
Engine failures
Fracture Mechanics

Product Liability

Consumer Product analysis and testing
Furniture/equipment testing
Analysis of material stress
Supply of defective machinery
Motor vehicle compliance with standards
Swimming pool heating system
Analysis of fire spread and behaviour

Loss of Life

Portable industrial grinder
Industrial heavy equipment incident
Forensic murder evidence defence
Suffocation
Elevating Platforms
Arson investigations
Ergonomics

Motor Vehicle Accident Analysis

Passenger car head-on impacts/rollover/skids
Pedestrian impacts
Heavy vehicle roll-over, seat belts
Stopping distances, brake failure
Position of vehicle pre-impact
Bicycles/Motorcycles
Tyre, suspension, other component failure

Personal Injury

Cumulative trauma disorders
Slips and Falls, impact, friction
Back injuries
Noise and Vibration effects
System of work assessment.
Ladder failures
Motor Vehicle Injuries

Patent/Copyright defence Support

Fish harvesting machine patent
Industrial conveyor belt system
Heavy haul trailer design copyright
Heavy vehicle suspension performance patent
Building product patent infringement
Sunshade and playground products
Engineering comparisons of technology