

# LANGE TECHNICAL SERVICES, LTD.

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Investigative and Forensic Engineering Services

[www.LangeTech.net](http://www.LangeTech.net)

Since 1979, **Lange Technical Services, Ltd.** has provided expert vehicle analysis services for accident reconstruction, products liability and insurance claims assistance.

Our services have been utilized by the insurance industry, law enforcement, local government, industry and private individuals. We have performed services for plaintiffs and defendants in civil matters, and prosecution and defense in criminal matters.

Our staff specializes in vehicle analysis and assisting customers in understanding the complexities of vehicle systems and related evaluations.

Assignments are accepted by telephone, mail, fax or e-mail. Inspections are generally performed in 5 to 7 business days from request and may be prioritized by geographic and physical location (i.e. in a repair shop vs. a salvage facility).  
Rush service is available.

Reports prepared are concise, relevant and understandable by non-technical readers. Photographs, diagrams and other demonstrative aids are utilized to explain complex concepts and support opinions.

Two categories of services are provided by Lange Technical Services, Ltd; **“Technical Services”** and **“Engineering Services”**. They are differentiated by the nature of analysis requested, and the expertise needed to perform the requested task. All services, regardless of the category, are overseen by a Licensed New York State Professional Engineer.

Thank you for considering Lange Technical Services, Ltd. for your Investigative and Forensic Engineering needs.

Please call to discuss the utilization of our services or any questions that remain.

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## Technical Services

*All Technical Services are performed by Forensic Technicians qualified in their specialized fields as defined by the Federal Rules of Evidence 702, Experience, Specialized Training, Professional Certification, State Licensure and/or Court recognition. A Curriculum Vitae for each staff member is available upon request.*

### Vehicle Systems Evaluation

*Lange Technical Services, Ltd. utilizes the most advanced equipment and the most stringent protocols to perform analysis of vehicle systems. For details regarding the specific protocols and methodologies utilized during the specific evaluation, please contact our office.*

- Engine malfunctions
- Fuel system contamination
- Undercarriage impacts
- Vandalism
- Flood related damage
- Transmission malfunctions
- Steering system failures
- Unintended/uncontrolled acceleration
- Brake system operation\*

*\* Brake systems can be evaluated in two ways depending on the allegation, and the type and condition of the vehicle (for tractor-trailers and heavy equipment, see "Engineering Services" below). "Brake system operation" evaluation includes (when conditions allow) physical inspection of the brake system components, electronic diagnostics, Vericom Brake Performance testing and test drive. Other than removal of the wheels, no destructive testing is performed.*

### Basic Fire Origin and Cause Determination\*\*

- Burn pattern analysis
- Fire Origin identification
- Fire Cause identification
- Technical research (NHTSA Safety Recalls, service bulletins, etc.)
- Sample collection and testing
- Method of Entry Determination (forced entry, etc.)
- Basic mechanical evaluation
  - Attempts at starting
  - Basic mechanical diagnostic tests (Cooling system integrity, compression)
  - Basic electronic diagnostic tests
  - Fluid sample collection and testing

*\*\* Opinions offered regarding vehicle design and/or defect are offered as part of the Forensic Engineering services due to the credentials required for such testimony. Often, a Basic Origin and Cause determination is followed by an Engineering Analysis to identify vehicle manufacturer or design issues.*

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## **Method of Theft Determination**

*This analysis involves the evaluation of a stolen and recovered vehicle to establish the manner in which the vehicle may have been operated, the general condition and the method in which the vehicle may have been entered. This analysis includes any or all of the following based, in part, on the condition of the vehicle. The following may be performed when possible and applicable:*

- Vehicle examination, analysis and full documentation
- Transponder identification and component examination
- Security systems examination and testing (mechanical and electronic)
- Method of Entry Determination
- Forced Entry Simulation
- Key wear pattern analysis
- Basic mechanical evaluation
  - Attempts at starting
  - Basic mechanical diagnostic tests as warranted (Start engine, cooling system integrity, transmission operation, etc)
  - Basic electronic diagnostic tests
  - Fluid sample collection and testing
- Fire Origin and Cause Determination
- Microscopic Lock Analysis (Performed by a certified Forensic Locksmith)
- Key generation by VIN

## **Collision Damage Analysis**

*This analysis focuses on the verification of collision related, vandalism and comprehensive claim damage to verify the relationship of the damage to an incident as claimed. This analysis is often performed when damage enhancements are suspected. The following may be performed when possible and applicable:*

- Vehicle examination(s) and full documentation
- Damage Pattern Analysis
- Comparative Severity Assessment
- Dimensional Analysis
- Basic mechanical systems evaluation (fluid sample removal, diagnostic OBD scan)
- Tool mark analysis
- Evidence collection (fluid samples, paint samples, etc)
- Photo and document review
- Onsite MiScope Microscope Technology and/or other digital microscopic imaging
- Coating thickness measurements utilizing Elcometer Technology
- Data base dimensions
- Light filament analysis
- Basic vector drawing and vehicle positioning diagrams
- Technical Research (internet, database and/or literature review)
- Technical report of findings and opinions including demonstrative photo pages
- Travel based on location as described above
- Laboratory analysis of collected sample
- Crash Data Retrieval (black box downloads)

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## **Quality of Repair Assessments**

*This analysis involves the post-repair evaluation of a vehicle to establish the quality of the repair, adherence to OEM repair protocol and comparison of repair invoices to actual repairs performed.*

*This assessment expands on typical post repair examinations performed by repair shops and insurance company re-inspectors. The procedures and processes used include many of those listed above under "Collision Damage Analysis" but expanded to include:*

- Structural integrity assessment
- Forensic audits of repair invoices and estimates
- Estimology review
- Destructive and non-destructive weld assessment
- State specific insurance law compliance
- OEM procedures, protocols and positions
- P-Page logic
- Compliance with industry standards

## **Forensic Engineering Services**

*These services are performed by a New York State Licensed Professional Engineer, Principle of the firm. Forensic Engineering is utilized in many of the following area:*

- Large losses
- Products liability
- Design or manufacturing defect identification
- Accident reconstruction
- Fire Origin and Cause Determination
- Restraint system analysis including Crash Data Retrieval ("black box" downloads)
- Occupant dynamics/kinematics studies and analysis
- Commercial Vehicles/Tractor-Trailers
- Heavy equipment
- Occupant Dynamics analysis

## **Expert Testimony**

The Technicians and Engineers of Lange Technical Services, Ltd. are qualified, trained and prepared to support their findings and opinions in any forum; arbitration, framed issue hearing, bench and jury trials; Federal, State, District, Supreme, Criminal, Civil, Superior and Small Claims courts.

## **Fees**

A fee schedule is available upon request.