

## Improving Products Through Deeper Knowledge of Customer Usage

### Challenge

Reduce time required to perform validation testing for vehicles at the proving ground while replicating field failure modes.

### Solution

Process that validated measured customer vehicle field usage data and generated an accelerated proving ground test schedule to match equivalent damage for key components and systems.

### Results

Significant reduction in vehicle validation test time and costs while accurately replicating critical field failure modes throughout the vehicle.

Realistic accelerated product testing requires replicating the representative mix of conditions encountered during real-world customer field usage. Prenscia Solutions leverages this proven approach to develop optimum accelerated validation test schedules – increasing confidence in design and development decisions for our clients.



Image courtesy of Millbrook Proving Ground

**nCode**

**ReliaSoft**

**OMNICON**

## The Challenge

To avoid failures, rigorous test programs are required for vehicles to replicate real customer usage over a wide range of field applications and environments.

Developers of vehicle platforms also need to reduce program costs and schedules which requires optimized, accelerated proving ground test schedules that accurately replicate realistic customer operations without subjecting the vehicle to unrealistic loading conditions.



Image courtesy of Millbrook Proving Ground



## The Solution

Prencia Solutions configured and implemented analytical process that enabled the client to validate, categorize, and analyze measured customer field data in order to create targets that represent the range of all intended customer usage conditions.

An optimization process was used to identify the combination of proving ground events that best reproduces damage content for key vehicle components and systems. Correlation measurements were also used to verify that the results were realistic throughout the vehicle to replicate field experience.

## The Results

The processes greatly accelerated validation testing at the proving ground. Analysis identified the "mix" of proving ground events required to accelerate the replication of field damage encountered by the vehicle while using a minimum number of repeats to save time. The analysis also provided a deeper understanding of the level of correlation between an accelerated proving ground test schedule and real world customer usage; thus helping to develop better and faster validation test programs.



Image courtesy of Millbrook Proving Ground

## About HBM Prencia Solutions

HBM Prencia Solutions ensures customer success through value-driven solutions for product and process development, and operational monitoring. We are a multi-disciplinary team with expertise in failure analysis; predictive analytics and modeling for reliability, durability, and deterioration; asset health and usage monitoring; prognostics; development and testing of embedded software and electronics to deliver robust solutions to our global clients. Our team of engineers, analysts, software developers, data scientists, and program managers, many holding United States Government security clearance, are readily available to provide technical expertise and deliver value-driven solutions. For more information, please visit [www.hbmprencia.com/solutions](http://www.hbmprencia.com/solutions)