

RELIABILITY DEMONSTRATION TEST (RDT)

- ✓ Discover product weaknesses and failure modes that occur over time
- ✓ Verify product MTBF at a desired statistical confidence level
- ✓ Accelerate the future

RDTs are long duration physical stress tests which measure product reliability and accelerate failure mechanisms. Product performance is monitored and data is statistically analyzed to determine if it meets its goal. Accelerated environments (elevated stresses) and multiple samples are used to reduce test time - accelerating the future!

- ✓ Demonstrate and quantify product reliability
- ✓ Ensure confidence prior to initial shipments
- ✓ Plan warranty costs and spares strategy
- ✓ Satisfy your customer's requirements

TEST PLAN

A comprehensive Test Plan is crucial to ensuring timely success and maximum Return On Investment. After establishing the reliability goal, Ops A La Carte works closely with the client to create the plan. A demonstration model is selected then all factors (fixed and variable) to be considered are identified. A 3-D matrix of options (acceleration factor parameters, number of samples, length of test, confidence levels, etc.) is typically assembled and reviewed with the client to select the best set of options which balance cost and value. The deliverable is an RDT Plan document with detailed test setup, test protocols, failure criteria definitions, the amount and type of test articles, test equipment required, and total time. Typically requires 5-10 business days to complete.

- Product in Benign End Environment ~\$ 2-3K
- Product under Stress in End Environment (end environment consists of stresses such as temp. cycling, vibration, and humidity) ~\$ 3-10K

TEST EXECUTION

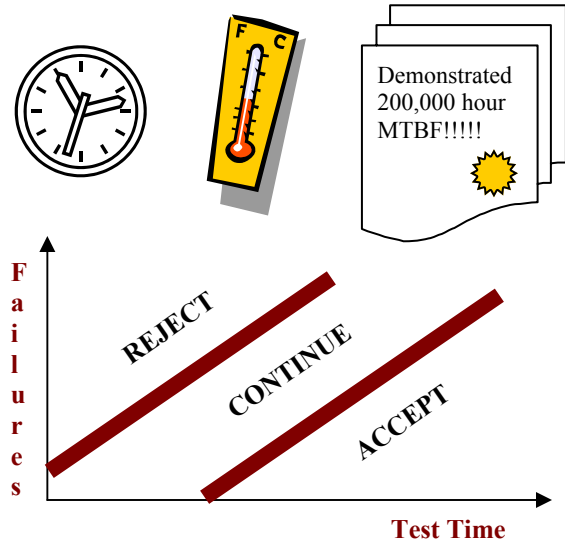
Using the RDT Plan document, the test can be executed at any location with the required facilities and equipment (e.g. at the client's site or an independent test lab).

- Typical Product TBD

MONITORING OF TEST DATA

During RDT execution, recorded results are reviewed on a regular basis to guide decisions on declaring it successful, continuing, modifying, or abandoning the test. Ops A La Carte's engineering experience can ensure that product behavior will be reviewed and interpreted appropriately in its context. Deliverables are regular updates of progress status via plots (using Weibull analysis methods) and brief Summary Worksheet with plots on completion.

- Product in Benign End Environment ~\$ 2-3K
- Product under Stress in End Environment ~\$ 3-5K



REPORT AND PRESENTATION

Final Analysis and Detailed Report ~\$ 1-2K

Executive Summary format explains:

- ✓ The methods used
- ✓ Analysis of the product performance (failures)
- ✓ The results achieved compared with the goal
- ✓ Significance of the results
- ✓ Recommended product improvements

On-Site Presentation ~\$ 1-2K

One to two hour review of results/recommendations, with analysis of the effects of changes to the product.

OTHER RELATED SERVICES

- ✓ Estimate product Failure Rate (MTBF) with Reliability Predictions at Component Level and System Level
- ✓ Establish risks associated with failures via Failure Modes Effects and Criticality Analysis (FMECA)
- ✓ Maximize product robustness with Accelerated Stress Testing (HALT)
- ✓ Eliminate infant mortalities with production screening (HASS)

TERMS

Expedited (rush) service available at nominal fee
 Formal quotes: Fixed Price or Time and Materials basis
 Invoicing: On progress basis
 Payment due: Net 15 days after invoice