

# Technical Services

## Providing Solutions to Your Problems

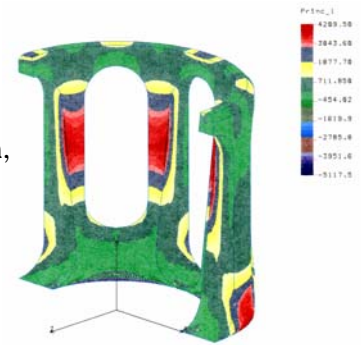
Power Generation ★ Nuclear ★ Aerospace ★ Transportation  
Petrochemical ★ Forensic Engineering

### Mechanical Engineering

APTECH's engineers use an array of advanced analytical tools, as well as hands-on experience with mechanical systems, to solve your analysis and design problems. We use COSMOS/M, ANSYS, Dyna, ABAQUS, NASA/FLAGRO, and our own proprietary in-house computer codes.

Areas of Expertise:

- Linear and nonlinear stress analysis
- Dynamic and vibration analysis
- Heat transfer and fluid mechanics
- Process thermochemistry
- Design evaluation, optimization, and recertification
- Fatigue and fracture mechanics
- Risk analysis



### Materials Engineering

APTECH's understanding of the science of materials is achieved through a comprehensive, scientific approach to the materials evaluation process. We can calculate the remaining useful life of existing equipment and aid in determining the root cause of component failure. If you are designing new structures with today's advanced materials, our engineers have the expertise to solve your design problems.

Areas of Expertise:

- Materials selection and evaluation
- Welding metallurgy
- Microstructural examination
- Fractography, failure analysis
- Identification of damage mechanisms
- Corrosion engineering
- Ignition and combustion testing



### Risk and Reliability Analysis

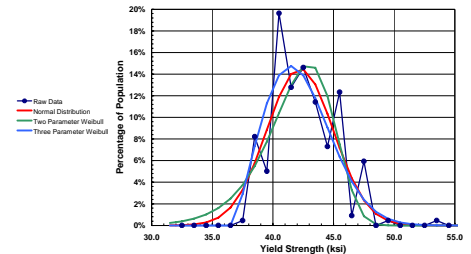
Using a combination of advanced statistical methods, Monte Carlo simulation techniques, and deterministic analyses, APTECH provides component and system level failure forecasting, economic consequence analyses, risk assessment, and risk-based inspection. Our analyses have provided justification for continued operation of fossil and nuclear power plants and have established safe operating envelopes for aerospace structures and aircraft engines.

# Technical Services

## Areas of Expertise:

- Risk and safety analysis
- Economic analysis and forecasting
- Monte Carlo simulation techniques
- Age-dependent failure rate analysis
- Systems reliability improvement
- Probabilistic failure forecasting
- Identification of damage mechanisms

Distribution of Yield Strength for A36 Steel



## About APTECH

APTECH Engineering Services, Inc. is an internationally recognized engineering consulting firm specializing in independent design and analysis, systems integration, materials engineering, reliability and risk analysis, and failure analysis and investigation. Since 1979, APTECH has been solving complex technical problems for a wide range of clients in the following areas:

- Stress analysis and fracture mechanics
- Materials evaluation and laboratory testing
- Failure analysis
- Equipment life optimization
- Thermal-hydraulic analysis
- Risk and reliability analysis

Our principal engineers average over 25 years experience in engineering analysis, project management, and research and development in their technical specialties. APTECH has successfully completed over 6,000 projects for more than 1,200 clients around the world.

## APTECH is applied technology.

Discover how our expertise and technical know-how can help solve your toughest engineering problems.

## Partial List of Clients

- Aero Adjusters
- Amoco Oil Company
- Arizona Public Service Company
- BP Exploration, Inc.
- CNA Insurance Companies
- Electric Power Research Institute
- Entergy
- Florida Power & Light Company
- Gates Energy Products, Inc.
- General Dynamics
- Kansas Gas & Electric Company
- Kemper Insurance Company
- Lawrence Livermore Laboratories
- NASA
- National Semiconductor
- Orbital Sciences Corporation
- Pacific Gas & Electric Company
- Southern California Edison Company
- Space Systems/Loral
- Texas Utilities Electric Company
- United States Department of Defense
- United States Sea Launch

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