Overview

• Project Objectives
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Project Objective

• Understand the changes in high explosives (HE) due to loading during hard target impact

• Develop an experimental characterization protocol for understanding structural changes and sensitivity correlations in HE

• Enhance the modeling and simulation capabilities to capture the damage-sensitivity correlations in HE
Challenges

- Develop a characterization protocol, including modeling and simulation, for damaging and quantifying the effects of damage in HE
- Quantifying the microstructure associated with pristine and damaged HE
- Perform sub-scale tests on HE to validate protocol and models
Status of the Project Agreement

• PA has been in progress for one year.
• Testing of representative HE materials is underway.
• Next interchange meeting is May 2011.
Roadmap

• Numerical analysis of loading conditions – complete
• Support of test design by numerical simulation – complete
• Selection of mechanical and thermal loading methods – complete
• Laboratory experiments with defined HE samples – underway
• Microstructural analysis and sensitivity tests – underway
• Numerical simulation of laboratory experiments – underway
• Numerical simulation of detonation process
• Correlation of thermo-mechanical loading with structural changes
• Correlation of micro-mechanical changes with changes in sensitivity
• Sub-scale impact tests
Summary

• Project Objectives / Challenges

• Project Agreement (PA) Status – PA underway

• Roadmap

  – Technical progress being made on characterizing HE and supporting modeling and simulation