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Testing and Modeling Capabilities

Brief introduction to our capabilities.

Systems Concepts and Integration (SCI) Panel
SCI-179/RTG-044 on Utilization/Dynamic Control of
Adaptive Camouflage Materials

14 February 2006 – 17 February 2006

Overview

Modeling Capabilities
• Visual: CAMEO-SIM
• Thermal: MuSES

Data Collection capabilities
• Sensors

Test capabilities
• Panels
**Testing and Modeling Capabilities**

The original document contains color images.
CAMEO-SIM Capabilities

- Predictive software
- Creates and renders physics based synthetic scenes
  - High fidelity spectral imagery
  - Optimized for high polygon scenes and parallel processing
- Has been developed specifically for military applications
- Renders thermal reflections and thermal shadows
  - However, limited thermal prediction capability
- Bi-directional reflectance (BRDF) and directional emittance
- Spectral reflectivity, refractivity, absorptivity, and transmissivity
Thermal Modeling with MuSES

Model Build
- MuSES-CAD interface
- Mesh file import
- GUI-based model editing

Rendering
- Infinite multi-bounce reflections with BRDF
- User-supplied multi-lobed and anisotropic BRDF
- MODTRAN structured sky

Exhaust plume radiance
Sensor model

CAD Geometry
Thermal Model
IR Rendering

Thermal Analysis
- Conduction, convection, & radiation
- Internal heat sources
- Pre-computed CFD convection
- Weather effects
- Specialized parts (engine, etc.)

Terrain Model
- Physics-based model
- Complete Tgl-Bkg Interactions
- Weather effects
- Structured sea model with ship wakes

Sensors

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<tr>
<th>Wavelength</th>
<th>Manufacture</th>
<th>Model</th>
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<tbody>
<tr>
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Panel Test (cont.)

Review

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