

NASA Supplier Assessment Experience

Ken Sivcovich
Director of Operations
DRS Sensors & Targeting Systems – Cypress, CA

October 20, 2010

U.S. STATE DEPARTMENT EXPORT AUTHORIZATION REQUIRED FOR DISTRIBUTION TO FOREIGN DESTINATIONS OR FOREIGN PERSONS
This document contains Technical Data controlled under the U.S. International Traffic in Arms Regulations (ITAR), 22 CFR 120-130, and may not be exported or transferred to any Foreign Person, foreign country or foreign entity, by any means, without prior written approval from the U.S. Department of State, Directorate of Defense Trade Controls ("DDTC") and DRS Technologies, Inc.

Who is DRS?



- DRS Defense Solutions provides products, services and systems integration in the areas of intelligence and sensor technologies, security, cyber warfare, sonar, communications, electronic warfare, training systems, satellite communications, control systems and unmanned technologies.

- The various companies that compose DRS Defense Solutions in support of U.S. military forces and prime contractors:
 - ✓ Corporate Headquarters - Bethesda, MD
 - ✓ DRS Signal Solutions - Gaithersburg, MD
 - ✓ DRS ICAS, LLC - Beavercreek, OH
 - ✓ DRS Technical Services - Herndon, VA
 - ✓ **DRS Sensors & Targeting Systems - Cypress, CA**
 - ✓ DRS Consolidated Controls - Danbury, CT
 - ✓ DRS Training & Control Systems - Ft. Walton Beach, FL
 - ✓ DRS Sonar Systems - Gaithersburg, MD



DRS–STS Cypress CA Facility



- 90,000 sq ft Facility / 200 + Employees
- ISO 9001-2008 Certificate of Registration
- Best Managed Companies Award 2006
- Gov't Property Annual Certification
 - Precision Optics Assembly
 - Electronic & Mechanical Assembly
 - Integration & Test Function
 - Product Characterization Lab
 - Environmental Screening Lab
 - Supply Chain/Purchasing Function
 - Shipping/Receiving Area
 - Production Stockroom
 - Security & Facilities Function
 - Safety & Environmental Health



Strategic Space Systems

- Sensors for Space Remote Sensing and Space Science Missions
- Wide range of technologies ranging from visible to very long wavelengths
- Discrete, scanning & staring Focal Plane Arrays
- Primary Customers: NASA, NPOESS, and weather satellite prime contractors



NPOESS



GOES

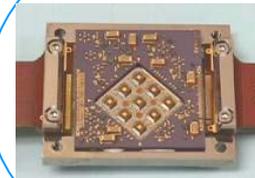


Wide Field
Infrared Explorer
(WISE)

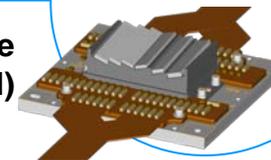
Wide Field
Infrared Explorer
(WISE)



Cross-Track
Infrared
Sounder (CrIS)



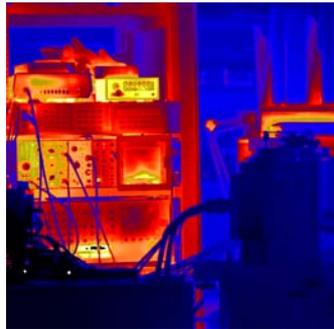
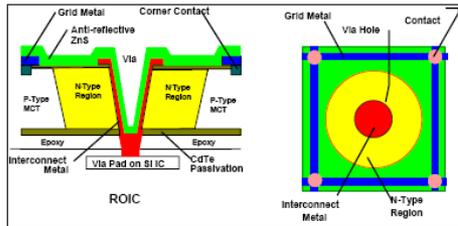
Advanced Baseline
Imager (ABI)



FPA Business Products

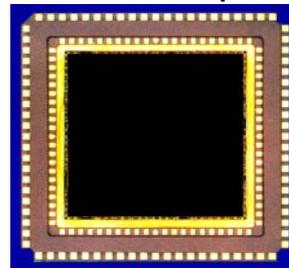
Hg_{1-x}Cd_xTe Technology

- λ_c to $\sim 17 \mu\text{m}$
- Internal & External Sources



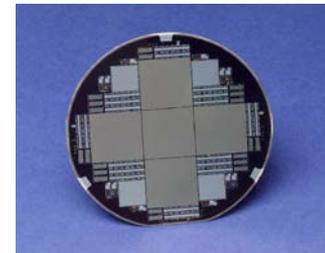
Large FPAs

- ≥ 1024 in all technologies
- Multicolor (visible and IR)
- Large assemblies
 - Linear and 2D
 - Multichip



Silicon Technology

- BIB Detectors: $\lambda_c = 18 \mu\text{m}$ to $>50 \mu\text{m}$
- *pin*-diode arrays: visible & NIR



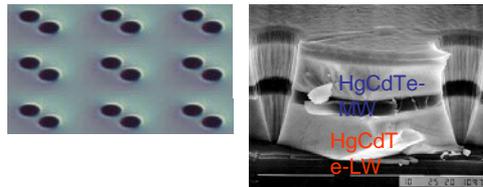
Microfilters



Uncooled Bolometers



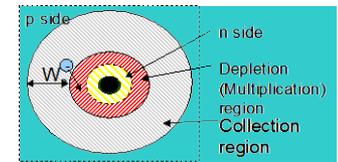
2-Color Hg_{1-x}Cd_xTe



Cryogenic Packaging



IR APDs

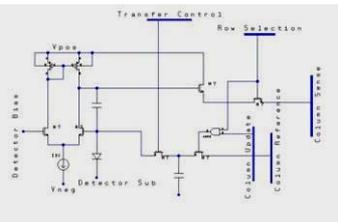
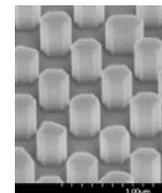
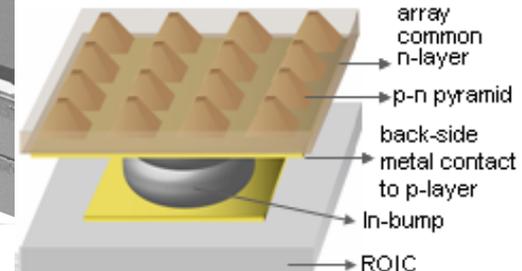
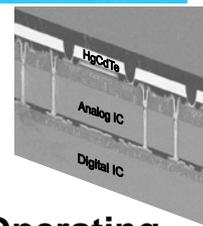


Advanced Readouts

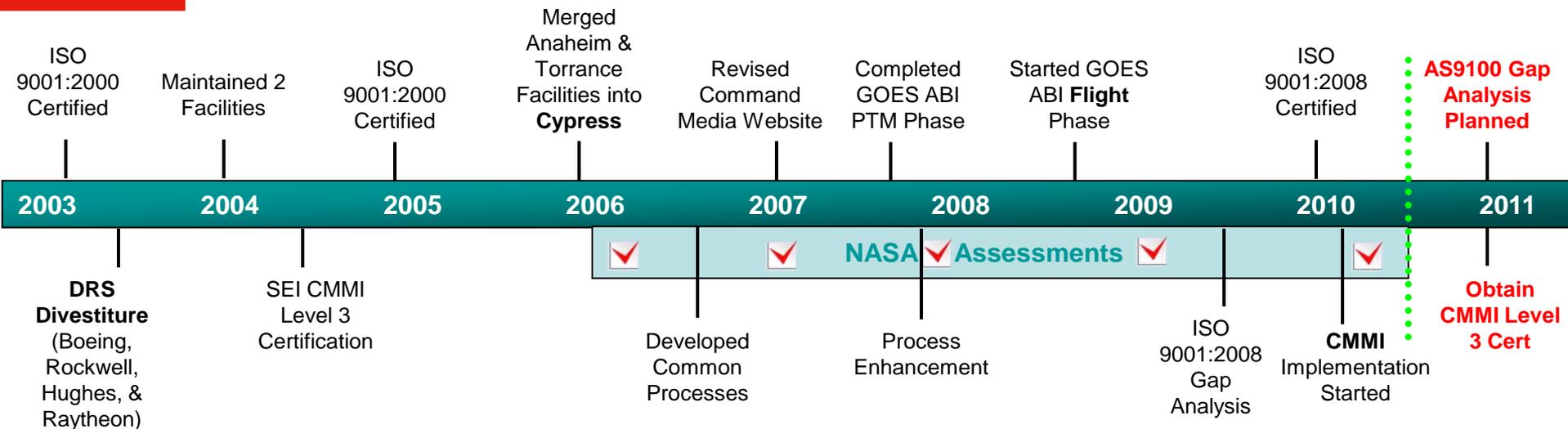
- Design/Layout
- LVS/DRC
- Per Pixel ADC

Advanced Technologies

- 3D Stacking
- Broadband/High Operating Temperature



NASA Helped To Shape Processes



- **NASA Assessment Influenced:**

- Shop Floor Disciplines & Build Document Control
- Control of Calibrated Measuring Equipment
- Contract Requirements Flowdown
- Employee Training Matrices
- Material Shelf Life Control
- ESD Control Plan



Assessments are a tool for measuring how well we are meeting or exceeding our customer expectations.

Summary of Findings/Observations

- **Shop Floor Disciplines**
 - Housekeeping issues
 - Temp and Humidity charts not completed
 - Logs with corrections not signed/dated
- **Build Document Control**
 - Kitting Sheet not signed/dated
 - Operations missing sign off
 - Corrections/Deletions not signed/dated
- **Calibrated Measuring Equipment**
 - Equipment Calibration Dates Expired
 - Calibration Supplier Contract Inadequate
 - Record Retention not flowed to Supplier
- **Purchasing**
 - Obsolete Procedures referenced in T&C's
- **Material Shelf Life Control**
 - Shelf Life expired or not items not marked
- **ESD Control**
 - Continuous Monitoring of Workstation
 - Workstation Certification Logs not accurate
- **Environmental Health and Safety**
 - Mishap Reporting for GOES not accurate
- **Configuration Management**
 - Contract Documents not latest revision



Corrective &
Preventative
Actions
Implemented

Overall Assessment Perspective



Positives	The Challenges
Top Management Commitment	Implementing Lasting Change
Expected Accountability / Ownership	Root Cause and Corrective Actions
Proactive Thinking As a Way of Life	Consistency with IRAD Projects
Continuous Process Improvement	Cost of Training for Employees
Clear Goals and Objectives	Timely Process & Procedure Reviews
Improved Customer Satisfaction	Embracing Change as a way of life
Consistent and Repeatable Processes	Old Habits are Hard to Break
Team Independence / Commitment	Process Commonality
Sustaining Success & Moving Forward	Various Lines of Business

THE REALITY

A better understanding of our capabilities and the process based workflow