



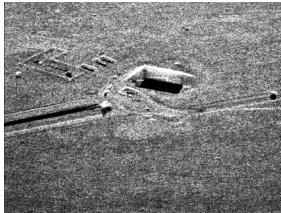
## SAR

## FACT SHEET

### Synthetic Aperture Radar

Synthetic aperture radar provides fine-resolution images of terrain and ground-based natural and cultural targets, day or night, in adverse weather. Modern airborne SARs can produce detailed ground images at resolutions of 4" in range and azimuth dimensions. Maps and images covering large geographic areas can be produced on-board the aircraft in real-time. Applications include military

and intelligence systems, earth resource mapping, and environmental monitoring.



### Mission

**Sandia's SAR work emphasizes the following technical areas:**

- Imaging-radar research and development
- Intelligence, surveillance and reconnaissance applications
- Precision guidance and targeting
- Radar data collections



### Experience

Sandia's radar experience has its roots in weapon radar fuzes developed for the Department of Energy beginning in the 1950s. Sandia's SAR work began in the early 1980s. Since that time, we have developed state-of-the-art SARs for numerous customers and flight platforms in UHF, L, S, X, Ku, and Ka frequency bands. Sandia-developed SARs are first flight-tested aboard our Twin Otter Testbed aircraft and later integrated into the customer's host aircraft. Fielded Sandia SAR systems have operated under every United States Military command.



**Sandia  
National  
Laboratories**

Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy under contract DE-AC04-94AL85000.



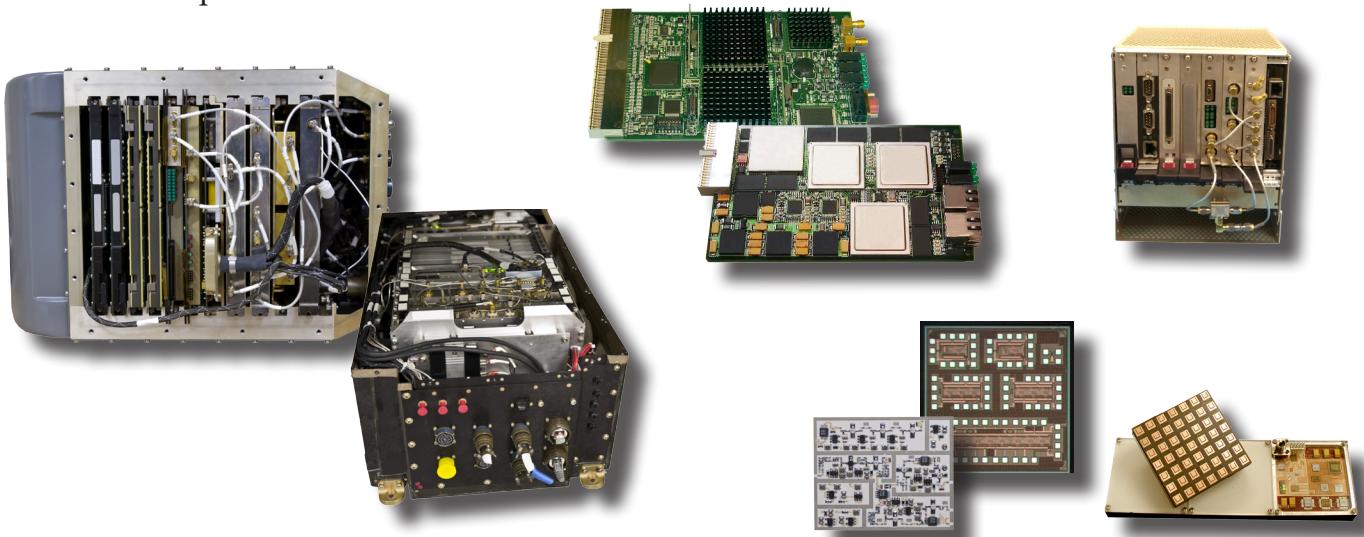
**NASA**  
National Nuclear Security Administration

05/14/2008



## Development Capability

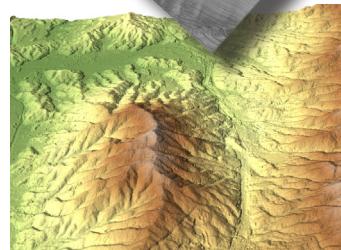
Sandia designs and develops all major component assemblies of each SAR system. We have significant design capabilities in antennas, gimbals, RF front ends, embedded processing, miniaturization, transmitters, microwave modules, high-speed digital circuitry, digital waveform synthesis, digital receivers, motion measurement, motion compensation, and multi-node flight computer software. We integrate, laboratory-test, and flight-test each system to assure that it meets performance requirements.



## Innovation in SAR

**Sandia continues to lead the state-of-the-art in a number of radar technologies:**

- Miniaturization
- Bistatics
- Real-time:
  - Fine-resolution SAR image processing and exploitation
  - High-accuracy interferometric SAR (IFSAR) and terrain mapping
  - Algorithms for image formation, autofocus, coherent change detection (CCD), ATR, and GMTI/vibrometry



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### Sandia SAR Web Site:

[www.sandia.gov/RADAR.html](http://www.sandia.gov/RADAR.html)