

**USAF Scientific Advisory Board Study**  
**Non-Traditional Intelligence, Surveillance, and Reconnaissance**  
**for Contested Environments**

*Study Abstract*

As part of recent operations in Iraq and Afghanistan, the US Air Force has developed new Intelligence, Surveillance, and Reconnaissance (ISR) sensors and means of data exploitation and identified ISR challenges which need to be addressed. However, in the contested or denied environments which the USAF may encounter in the future, a different set of ISR capabilities may be needed and the challenges may be very different.

The Air Force Scientific Advisory Board (SAB) Non-Traditional Intelligence, Surveillance, and Reconnaissance for Contested Environments (NICE) Study was chartered by the Secretary of the Air Force to address concerns over the proliferation of advanced air defense systems which might force traditional ISR platforms beyond their effective ranges in potential future conflicts. While these platforms could be pushed beyond their effective limits, the Air Force has in its force structure a suite of low-observable platforms (e.g., B-2, F-22, and F-35) that carry sensors which, when operating in contested airspace, could potentially help to deliver a better picture of the battlespace than might otherwise be created through the use of traditional ISR systems. This Study evaluated the feasibility and utility of using advanced sensors on existing and planned air vehicles capable of operating in a denied environment to provide ISR. It also addressed the connectivity needed to provide this “non-traditional” ISR data to a variety of users.

The NICE Study was conducted between December 2011 and June 2012 by a team of SAB members and consultants from industry, Federally Funded Research and Development Centers (FFRDCs), and academia aided by inputs from the Air Force Research Laboratory and Air Combat Command. The Study Team visited numerous Air Force installations and the Washington, DC area and received briefings from industry, FFRDC, and government representatives; and utilized their meeting time to formulate the top-level findings and recommendations outlined below:

**Findings:**

1. Traditional ISR is severely degraded by anti-access/area-denial air defenses
2. B-2, F-22, and F-35 can provide significant ISR capability
3. Connectivity currently constrains non-traditional ISR (NTISR)
4. Effective NTISR requires changes to planning and tasking systems
5. Commitment to NTISR is lacking

**Recommendations:**

1. Take the “NT” out of “NTISR.” That is, change the construct of current ISR practices so that what was previously regarded as “non-traditional” becomes standard practice
2. Enable exploitation and dissemination of B-2, F-22, and F-35 ISR data

3. Add selected levels of connectivity to enable NTISR functionality
4. Start to unify air planning and tasking
5. Develop technology for NTISR
6. Demonstrate commitment to NTISR and monitor the implementation of all recommendations, planning, and programming