Exhibit R-2a, RDT&E Project Justification					Date: February 2003		
Appropriation/Budget Activity RDT&E, D BA3				Project Name and Number Automatic Target Recognition PE 0603232D8Z			

Cost ($ in millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
ATR/P232	7.638	5.367	0	0	0	0	0	0

A. Mission Description and Budget Item Justification:

  (U)Automatic Target Recognition (ATR) systems improve the capabilities of our armed forces by enabling them to make better use of the information provided by such military sensor systems as radar, laser, infrared (IR), hyperspectral, identification friend or foe (IFF), and electronic signal measurement (ESM). ATR enhances the combat capabilities of our forces by increasing the lethality and survivability of our weapon systems and decreasing the time required to acquire and identify potential targets. ATR technology reduces our risk of fratricide by augmenting combat identification systems to improve our ability to distinguish between friend, foe, or neutral forces under high stress conditions. ATR technology provides significant workload reduction for the intelligence forces by aiding the image analyst to exploit imagery rapidly and accurately. In an era of decreasing military manpower, improved ATR will enable our forces to handle an ever increasing load of sensory information in the complex situations to be encountered in the military missions of the future. ATR capabilities are becoming essential to the Warfighter, as the Services pursue `network-centric` concepts for exploiting sensor imagery and information acquired through large arrays of sensors at all echelons. Probability of target detection, recognition, and identification can be siginifcantly increased while significantly reducing false alarm rates by exploiting multi-sensor fusion concepts for ATR algorithms.

(U) Increasing ATR operational effectiveness requires research and development to enhance sensors and algorithmic image processing. Additionally, improved, more efficient procedures must be developed for measuring and demonstrating ATR effectiveness. This is very important as the utility of ATR is highly dependent on the quality of the information provided by the sensor system(s) and the ability to process that information effectively to provide reliable decisions with operationally acceptable false alarm rates. Service and Agency ATR efforts have concentrated on algorithm development for conducting post-processing comparison and decision making which exploit improved digital computational capability. This program will focus on determining effectiveness of ATR, establishing benchmark metrics, and conducting and collecting single and multi-sensor data for potential reuse in Service and Agency algorithm development and objective evaluation. Consistent with the 1997 report of the Defense Science Board Task Force on ATR, this program will establish standard tests and procedures to provide an `honest broker` assessment of current leading candidate ATR's, as well as emerging ATR technology for the next generation of ATR systems.

(U) The ATR program funds the integration and demonstration of advanced technology for field experimentation and assessment. The result of the ATR program efforts is the integration of the demonstrated technological capabilities and the capability to assess algorithms and various technologies. This leads to greatly improved understanding of the Joint Warfighting utility when assessed in realistic operational contexts. The Military Services provide air, land, and naval technological superiority, respectively, and ACTDs rapidly prototype and transition technological solutions to specific threat scenarios. This program provides timely resources and flexibility to horizontally integrate technology solutions across Services and Agencies and identify new and emerging ATR systems with confidence so that this critical technology can be fielded more quickly.

B. Accomplishments/Planned Program:

	FY 2002	FY 2003	FY 2004	FY 2005
Automatic Target Recognition	7.638	5.367	0	0

(U)   FY 2002 Accomplishment:

(U) Built on the database from sensor data collected during FY 2002, algorithms were benchmarked for detection and false alarm performance. A major new data collect, involving the Services, DARPA, and NASA, was pursued. This data collected took place over a 2-year period and was conducted in a variety of terrains, seasons and weather conditions, involving fielded and advanced developmental sensors covering the broad electromagnetic spectrum (RF, Vis/NIR/MIR/FIR, LADAR, multi and Hyperpectral) for a wide variety of targets employing the latest CCD technicques. New Problem Sets for EO/IR, LADAR, and Hyperspectral sensor data was created andsubmitted for evaluation by the ATR community. Continuing with the sensor fusion initiative, technical emphasis was continued to be focused on assessment of emerging ATR algorithms based on multi-sensor inputs. Using the nodes established in FY 2001 at AFRL and NVESD, performance results and raw data were distributed and analyzed using the Virtual Distributed Laboratory (VDL). High Performance Computing assets were incorporated to allow faster access and shorter algorithm processing cycles. The role of synthetic and hybrid data were expanded in FY 2002 by comparing ATR algorithm performance for measured vs inserted targets. Hyperspectral databases were expanded and enhanced using Forest Radiance II and Desert Radiance III data. Hyperspectral ATR performance predictions were demonstrated. In the ATR transition area, additional IR problem sets were collected and scoring and analysis methods for moving vehicles were completed for LRAS3. LADAR algorithms was demonstrated and evaluated. Mid-wave IR tests were also conducted.

(U)   FY 2003 Plans:

(U) The Automatic Target Recognition (ATR) program is in its final year and focuses on three different areas. The first area is the closeout of prior   efforts. Prior year efforts provided DoD-wide collaborative environment for ATR algorithm development and evaluation, focused on providing DoD-wide standard problem sets/realistic scenarios. Closeout efforts include Hyperspectral Assessment, creation of DoD-wide standards, procedures, metrics and common evaluation tools for realistic ATR evaluations, and the distribution of standardized Data Sets using realistic scenarios (targets in clutter) for algorithm development, testing and training. The second focus area provides a coordinate multi-service/agency data collection to further ATR technology development and assessment and allow for evaluation of multispectral sensor fusion ATR technology.   The three focus area develops a transition plan of the ATR program to the Services/Agencies for FY04 and establishes the process for continued OSD oversight.

    C.   Other Program Funding Summary: None
    D.   Acquisition Strategy: NA
    E.   Major Performers: None