

ARCHIVED REPORT

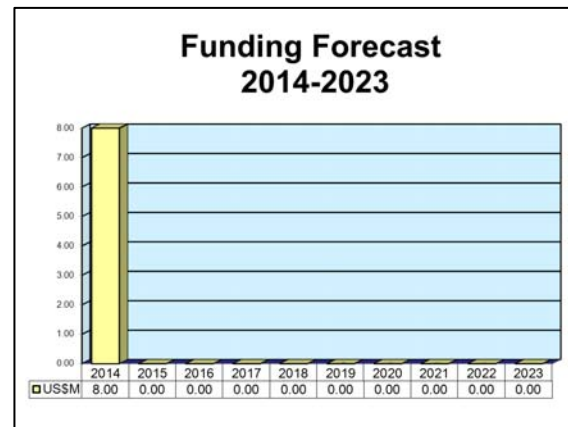
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FAAD C2I

Outlook

- Forecast International projects that the U.S. Army will spend about \$8 million in 2014 on FAAD C2I research, development, and procurement activities
- U.S. Army budget documents suggest that the unclassified portion of the FAAD C2I program will end at the completion of FY14
- Barring further activity, this report will be archived in June 2015



Orientation

Description. The U.S. Army's Forward Area Air Defense Command, Control and Intelligence (FAAD C2I) system ties together the sensors and weapons of the Army's short-range air defense (SHORAD) battalions.

Note: *The FAAD C2I system is composed of multiple systems. The focus of this report is on the Forward Area Air Defense Command, Control and Intelligence system as a whole rather than the individual systems that it comprises.*

Sponsor

United States Army
 1500 Army Pentagon
 Washington, DC 20310-1500
 Website: <http://www.army.mil>

Status. Operational, with ongoing technological research and development.

Application. Command, control, communications, and intelligence.

Contractors

Prime

Northrop Grumman Corp	http://www.northropgrumman.com , 2980 Fairview Park Dr, Falls Church, VA 22042 United States, Tel: + 1 (703) 280-2900, Email: onewebmaster@ngc.com , Prime (Ongoing RDT&E)
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FAAD C2I

Technical Data

General. The Forward Area Air Defense Command, Control and Intelligence system will collect and digitally process real-time target cueing and tracking information and disseminate it to a variety of U.S. Army weapons systems. The FAAD C2I system will also provide alerting data to air defense gunners and air space battle management, thereby enhancing force protection against air and missile attack.

Design Specifications. The FAAD C2I architecture consists of three tiers.

Tier 1 is the tie-in of the FAAD C2I network with other battlefield management information systems, such as the Joint Tactical Information Distribution System (JTIDS) and the Airborne Warning and Command System (AWACS).

Tier 2 includes functions such as identification friend or foe (IFF) and the coordination of data gathered from a network of both active and passive air defense sensors (airborne and ground-based). The FAAD C2I equipment at this level also ties into the Army Tactical Command and Control System. The ATCCS includes automated data processing and communications equipment to satisfy the Army's command and control needs.

Tier 3 delivers the data gathered at the highest level to the specific fire units located at forward areas near the front line and in the rear. These data include the direction, location, speed, and range of hostile aircraft.

Four Subsystems. FAAD C2I consists of four interrelated subsystems. The C2 hardware and software supply the functional capabilities, the ground-based sensors provide aircraft tracking, and the masked target sensor (or aerial sensor) tracks at (and forward of) the forward line of troops, especially low-flying and hovering helicopters behind terrain mask. The IFF function discriminates between friendly and hostile aircraft and provides for situational awareness, force altering, and the engagement of hostile aircraft at the maximum range and effectiveness of FAAD C2I weapons.

FAAD C2I System Structure. The FAAD C2I uses the division as its base unit, with the principal control element being the Air Battle Management Operations

Center. The ABMOC will be located at the FAAD C2I battalion command post. This is supplemented at division headquarters by the Airspace Management Element Liaison Officer.

The operational procedure is as follows: aircraft-tracking information supplied by C2 systems and sensors external to the division (e.g., long-range surveillance radars, AWACS, HAWK, and Patriot unit sensors) is routed via a JTIDS net to the ABMOC for display. The information is then automatically routed over the net to each of the six system sensor nodes located in the division.

Each of these sensor nodes consists of a ground sensor and a track processing system. The nodes correlate the air track data and automatically dispatch the appropriate information to the concerned FAAD C2I battery and platoon/section command posts and fire units by means of Enhanced Position Location Reporting System (EPLRS) units. The node supplies precise cueing data to allow air defense weapons to be pointed in the right direction.

Operational Characteristics. Specific performance requirements as originally set up include the following:

1. Ability to operate in an electronic countermeasures environment and be survivable against anti-radiation missiles.
2. Ability to attain an 84 percent system operational availability rate.
3. Ability to provide continuous, all-weather, low-altitude surveillance over the division area and 20 kilometers beyond the forward line of troops.
4. Transportability by air, rail, surface, and water without disassembly from the carrier.
5. Ability to withstand the effects of nuclear, biological, and chemical contamination and decontamination.
6. Ability to alert and cue FAAD C2I fire units within 12 seconds of the track acquisition of a target, with the dissemination of weapon control orders to fire units within 60 seconds.

Program Review

FAAD C2 Engineering Development. PE#0604741A, Project 126 (FAAD C2 Engineering Development) funds development and demonstration of the FAAD C2I system. Namely, Project 126 develops systems that tie together the sensors and weapons of the U.S. Army short-range air defense (SHORAD) battalions.

Among recent activity, in FY06, Project 126 developed software for Single Integrated Air Picture (SIAP) Block 0 & 1 implementation. The project also supported the development of FAAD C2 software for new air and missile defense composite battalions, including unique software enhancements in support of homeland defense and security accreditation upgrades.

In FY07, Project 126 began designing Joint Tactical Radio System (JTRS) interfaces. This work continued into FY08. Also in FY08, the project continued implementation of beyond-line-of-sight / non-line-of-sight systems, SINCGARS data looping, Sentinel IFF Mode 5/S, and the SIAP Block 0 & 1.

In FY09, the project continued implementing software modifications necessary for Internet Protocol version 6.

From FY10 through FY13, Project 126 continued to develop FAAD C2 software. This work includes developing unique software enhancements in support of homeland defense.

In FY10 and FY11, the project supported FAAD C2 software development for new air and missile defense composite battalions.

From FY12 through FY13, Project 126 supported FAAD C2 software development that includes unique software enhancements in support of homeland defense, software solutions for host-based software security (HBSS) and common operating environment (COE) mandates, and security accreditation updates. This work is continuing in FY14.

According to an FY15 U.S. Army budget document, no work is scheduled for Project 126 in FY15.

Funding

U.S. FUNDING

			FY13 <u>QTY</u>	FY13 <u>AMT</u>	FY14 <u>QTY</u>	FY14 <u>AMT</u>	FY15 <u>QTY</u>	FY15 <u>AMT</u>
RDT&E (U.S. Army)								
PE#0604741A								
Project 126			-	3.41	-	3.41	-	-
	FY16 <u>QTY</u>	FY16 <u>AMT</u>	FY17 <u>QTY</u>	FY17 <u>AMT</u>	FY18 <u>QTY</u>	FY18 <u>AMT</u>	FY19 <u>QTY</u>	FY19 <u>AMT</u>
RDT&E (U.S. Army)								
PE#0604741A								
Project 126	-	-	-	-	-	-	-	-
			FY13 <u>QTY</u>	FY13 <u>AMT</u>	FY14 <u>QTY</u>	FY14 <u>AMT</u>	FY15 <u>QTY</u>	FY15 <u>AMT</u>
Procurement (U.S. Army)								
FAAD C2 (AD5050)			-	5.02	-	4.61	-	-
	FY16 <u>QTY</u>	FY16 <u>AMT</u>	FY17 <u>QTY</u>	FY17 <u>AMT</u>	FY18 <u>QTY</u>	FY18 <u>AMT</u>	FY19 <u>QTY</u>	FY19 <u>AMT</u>
Procurement (U.S. Army)								
FAAD C2 (AD5050)	-	-	-	-	-	-	-	-

All \$ are in millions.

Source: U.S. Department of the Army FY15 RDT&E and procurement budget documents

FAAD C2I

Contracts/Orders & Options

No recent contracts have been announced.

Timetable

Year	Major Development
FY84	RFP issued for original FAAD C2I concept
FY86	FAAD C2I concept approved by U.S. Secretary of Defense and Joint Resource Management Board; TRW (now Northrop Grumman) awarded \$58 million contract for C2I network
FY87	Aerial sensor definition initiated; design review of initial FAAD C2I software
FY00	Project 126 conducts small business innovation research
FY03	Project 126 completes system engineering and integration for Army Battle Command Systems
FY04	Project 126 continues FAAD C2 Block III software development and engineering work
FY05	Project 126 develops unique software enhancements in support of U.S. homeland defense
FY06	Project 126 continues FAAD C2 Block III software development and engineering
FY07	Project 126 designs JTRS interfaces
FY08	Project 126 continues implementation of beyond-line-of-sight/non-line-of-sight systems and SINCGARS data looping, among other efforts
FY09	Project 126 continues implementing software modifications necessary for Internet Protocol version 6
FY10-FY11	Project 126 supports FAAD C2 software development for new air and missile defense composite battalions
FY12-13	Project 126 supports FAAD C2 software development, including unique software enhancements in support of homeland defense, software solutions for host-based software security and common operating environment mandates, and security accreditation updates

Worldwide Distribution/Inventories

Forward Area Air Defense Command, Control and Intelligence (FAAD C2I) is a **United States Army** system.

Forecast Rationale

Forward Area Air Defense Command, Control and Intelligence (FAAD C2I) is a U.S. Army system that ties together the sensors and weapons of the U.S. Army short-range air defense (SHORAD) battalions. The FAAD C2I system is composed of multiple systems (a "system of systems").

Forecast International projects that the Army will spend about \$8 million in 2014 on FAAD C2I research, development, and procurement activities. The Army's

need to provide its SHORAD battalions with a nonstop, near real-time command and control capability is driving this funding stream.

A good portion of the FAAD C2I program is classified. According to FY15 U.S. Army budget documents, the unclassified portion of the FAAD C2I program will end at the completion of FY14. Barring further activity, this report will be archived in June 2015.

Ten-Year Outlook

ESTIMATED CALENDAR YEAR RDT&E FUNDING (in millions \$)												
Designation or Program	High Confidence					Good Confidence			Speculative			Total
	Thru 2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	
Northrop Grumman Corp (Prime)												
FAAD C2I - RDT&E Military <> United States <> Army												
	251.16	3.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	3.00
Total	251.16	3.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	3.00
ESTIMATED CALENDAR YEAR PROCUREMENT FUNDING (in millions \$)												
Designation or Program	High Confidence					Good Confidence			Speculative			Total
	Thru 2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	
FAAD C2I - Procurement Military <> United States <> Army												
	112.36	5.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	5.00
Total	112.36	5.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	5.00