



## Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-357



### **LAIRCM**

As of December 31, 2010

Defense Acquisition Management  
Information Retrieval  
(DAMIR)

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**UNCLASSIFIED**

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## Program Information

**Designation And Nomenclature (Popular Name)**

Large Aircraft Infrared Countermeasures (LAIRCM)

**DoD Component**

Air Force

## Responsible Office

**Responsible Office**

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## References

**SAR Baseline (Production Estimate)**

FY 2009 President's Budget dated February 2008

**Approved APB**

Air Force Acquisition Executive (AFAE) Approved Acquisition Program Baseline (APB) dated August 24, 2009

## Mission and Description

Large Aircraft Infrared Countermeasures (LAIRCM) provides defense for large aircraft from widespread and growing threat of man-portable air defense systems (MANPADs), shoulder fired and mobile launched infrared (IR) surface-to-air missiles. The LAIRCM system autonomously detects, declares, tracks, and jams infrared (IR) threat missiles to create a miss, resulting in aircrew and aircraft protection. The system has no interoperability requirements outside the platform on which it is installed. The LAIRCM system consists primarily of four subsystem components: a System Processor (SP), a Control Indicator Unit (CIU), an AAR-54 Missile Warning System (MWS) and a laser transmitter assembly. Initially the program used the Small Laser Transmitter Assembly (SLTA); however, most new installations incorporate the improved transmitter assembly termed the Guardian Laser Transmitter Assembly (GLTA). The GLTA has the following advantages over the SLTA: reduced turret procurement cost; significant reliability improvement; increased energy on target; and weight and drag reductions.

The LAIRCM program is a Research, Development, Test and Evaluation effort only. Major Defense Acquisition Program (MDAP) funding ends in FY 2012. Production funding is provided by the platforms and is not included in this Selected Acquisition Report. Minor systems upgrades to maintain currency with threats, increase operational capability, and increase Reliability, Availability and Maintainability will continue beyond FY 2012.

## Executive Summary

As of December 2010, the LAIRCM system is installed on 243 Mobility Air Force (MAF) and Air Force Special Operations Command (AFSOC) aircraft. Depending on platform modification schedules, an average of five aircraft are modified per month. Delivered first Head-Of-State Foreign Military Sales case LAIRCM modified Boeing 747-400 aircraft to the King of Bahrain in September 2010.

The LAIRCM program office has completed all component development efforts identified in the Acquisition Program Baseline (APB) with the completion of the Next Generation (NexGen) Missile Warning System (MWS) Developmental Test/Operational Test (DT/OT) in December 4, 2010.

The LAIRCM program office is working to improve the overall system sustainment strategy by improving reliability, affordability, and maintainability (RAM). The organization implemented several actions to improve all system components. Examples are reliability and maintainability meetings, Failure Reporting Analysis and Corrective Action System (FRACAS) trend analysis and human factor working groups. For the year 2010, the LAIRCM System, with the Small Laser Transmitter Assembly (SLTA), Mean Time Between Removal (MTBR) was 352 hours and for the LAIRCM System, with the Guardian Laser Transmitter Assembly (GLTA), MTBR was 566 hours. The MTBR for the SLTA was down from 394 hours in 2009 due to: (1) more fielded systems; (2) more operating hours, and (3) false Built in Test (BIT) indications. The LAIRCM program office is actively working to fix the false BIT indication which leads to unnecessary component removal from the aircraft resulting in lower reliability indications in the SLTA system. No data was available for GLTA in 2009. These numbers are based on the actual field data for the "lite" C-17 configuration, i.e. only one SLTA or GLTA installed per aircraft.

There are no significant software issues with the program at this time.

## Threshold Breaches

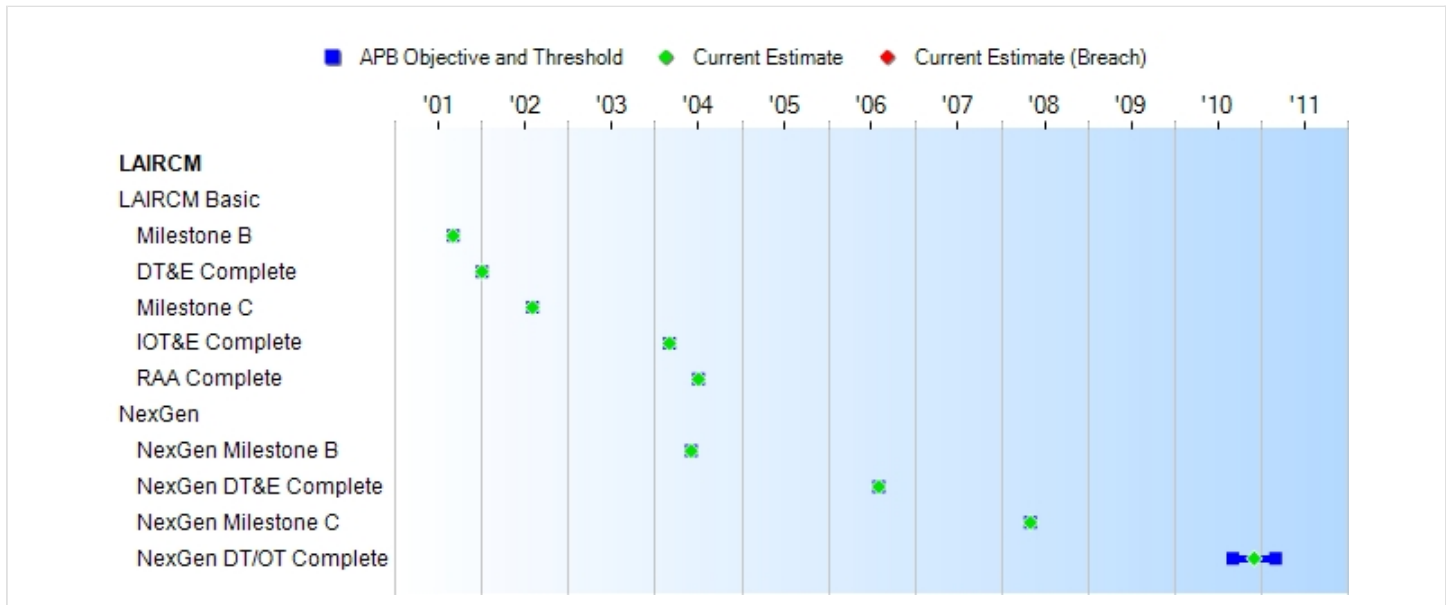
### APB Breaches

<b>Schedule</b>		<input type="checkbox"/>
<b>Performance</b>		<input type="checkbox"/>
<b>Cost</b>	RDT&E	<input type="checkbox"/>
	Procurement	<input type="checkbox"/>
	MILCON	<input type="checkbox"/>
	Acq O&M	<input type="checkbox"/>
<b>Unit Cost</b>	PAUC	<input type="checkbox"/>
	APUC	<input type="checkbox"/>

### Nunn-McCurdy Breaches

<b>Current UCR Baseline</b>		
	PAUC	None
	APUC	None
<b>Original UCR Baseline</b>		
	PAUC	None
	APUC	None

**Schedule**



Milestones	SAR Baseline Prod Est	Current APB Production Objective/Threshold		Current Estimate
LAIRCM Basic				
Milestone B	SEP 2001	SEP 2001	SEP 2001	SEP 2001
DT&E Complete	JAN 2002	JAN 2002	JAN 2002	JAN 2002
Milestone C	AUG 2002	AUG 2002	AUG 2002	AUG 2002
IOT&E Complete	MAR 2004	MAR 2004	MAR 2004	MAR 2004
RAA Complete	JUL 2004	JUL 2004	JUL 2004	JUL 2004
NexGen				
NexGen Milestone B	N/A	JUN 2004	JUN 2004	JUN 2004
NexGen DT&E Complete	N/A	AUG 2006	AUG 2006	AUG 2006
NexGen Milestone C	N/A	MAY 2008	MAY 2008	MAY 2008
NexGen DT/OT Complete	N/A	SEP 2010	MAR 2011	DEC 2010 (Ch-1)

**Acronyms And Abbreviations**

DT&E - Developmental Test and Evaluation  
 DT/OT - Developmental Test/Operational Test  
 IOT&E - Initial Operational Test and Evaluation  
 NexGen - Next Generation missile warning system  
 RAA - Required Assets Available

**Change Explanations**

(Ch-1) NexGen DT/OT Complete changed from September 2010 to December 2010 to reflect actual completion

date.

## Performance

Characteristics	SAR Baseline Prod Est	Current APB Production Objective/Threshold		Demonstrated Performance	Current Estimate
Operability	N/A	System shall not interfere with flight characteristics or mission requirements	System shall not interfere with flight characteristics or mission requirements	TBD	System shall not interfere with flight characteristics or mission requirements

### Requirements Source:

- USAF and AMC Mission Need Statements for Advanced Infrared Countermeasures (IRCM) 014-92, March 26, 1993
- USAF Multi-Command (Air Mobility Command (AMC), Air Combat Command (ACC), Air Force Special Operations - Command [AFSOC]) Operational Requirements Document (ORD) 314-92, August 3, 1998
- AMC LAIRCM Phase I ORD Annex validated by the Air Force Requirements Oversight Council (AFROC) on January 25, 2001
- AMC Combat Mission Needs Statement (CMNS) IRCM capability November 2, 2002

### Acronyms And Abbreviations

MANPADS - Man-Portable Air Defense Systems

### Change Explanations

(Ch-0) Cockpit controls and/or operator interfaces such as control panels, status indicators, threat displays, heads-up displays, and flat panel displays shall be designed in compliance with aircraft interior lighting for night vision imaging system compatibility in accordance with MIL-L-85762A, Lighting, Aircraft, Interior, Night Vision Imaging System Compatible.

Classified Performance information is provided in the classified annex to this submission.



**Track To Budget****RDT&E**

APPN 3600	BA 07	PE 0401134F	(Air Force)
	Project 674942	LAIRCM	(Shared)

LAIRCM funding for the Major Defense Acquisition program ends in FY 2012. The funding past FY 2012 is for future upgrades to maintain the LAIRCM capability current with the threats.

## Cost and Funding

### Cost Summary

#### Total Acquisition Cost and Quantity

Appropriation	BY2008 \$M			BY2008 \$M	TY \$M		
	SAR Baseline Prod Est	Current APB Production Objective/Threshold		Current Estimate	SAR Baseline Prod Est	Current APB Production Objective	Current Estimate
RDT&E	383.6	457.0	500.6	436.7	366.0	438.6	413.2
Procurement	0.0	0.0	--	0.0	0.0	0.0	0.0
Flyaway	0.0	--	--	0.0	0.0	--	0.0
Recurring	0.0	--	--	0.0	0.0	--	0.0
Non Recurring	0.0	--	--	0.0	0.0	--	0.0
Support	0.0	--	--	0.0	0.0	--	0.0
Other Support	0.0	--	--	0.0	0.0	--	0.0
Initial Spares	0.0	--	--	0.0	0.0	--	0.0
MILCON	0.0	0.0	--	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	--	0.0	0.0	0.0	0.0
<b>Total</b>	<b>383.6</b>	<b>457.0</b>	<b>N/A</b>	<b>436.7</b>	<b>366.0</b>	<b>438.6</b>	<b>413.2</b>

The LAIRCM Acquisition Program Baseline (APB) is based on the Independent Cost Estimate (ICE) completed by the Air Force Cost Analysis Agency (AFCAA) in 2009. Due to the maturity of the program, AFCAA recommended the mean 55% confidence level.

Quantity	SAR Baseline Prod Est	Current APB Production	Current Estimate
RDT&E		8	8
Procurement		0	0
<b>Total</b>		<b>8</b>	<b>8</b>

Unit of measure is one aircraft modified with the LAIRCM system. The eight (8) development deliveries consist of (2) C-17s, (1) C-130H, (1) C-5, (1) C-130J, (1) AC-130H, (2) additional Air Force Special Operations Command (AFSOC) C-130 variants.

## Cost and Funding

### Funding Summary

#### Appropriation and Quantity Summary FY2012 President's Budget / December 2010 SAR (TY\$ M)

Appropriation	Prior	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	To Complete	Total
RDT&E	388.5	17.2	7.5	0.0	0.0	0.0	0.0	0.0	413.2
Procurement	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2012 Total	388.5	17.2	7.5	0.0	0.0	0.0	0.0	0.0	413.2
PB 2011 Total	390.7	17.2	7.5	0.0	0.0	0.0	0.0	0.0	415.4
Delta	-2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.2

The LAIRCM program is a Research, Development, Test and Evaluation effort only. Production funding is provided by the platforms and is not included in this Selected Acquisition Report.

Quantity	Undistributed	Prior	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	To Complete	Total
Development	8	0	0	0	0	0	0	0	0	8
Production	0	0	0	0	0	0	0	0	0	0
PB 2012 Total	8	0	0	0	0	0	0	0	0	8
PB 2011 Total	8	0	0	0	0	0	0	0	0	8
Delta	0	0	0	0	0	0	0	0	0	0

## Cost and Funding

### Annual Funding By Appropriation

#### Annual Funding TY\$

#### 3600 | RDT&E | Research, Development, Test, and Evaluation, Air Force

Fiscal Year	Quantity	End Item Recurring Flyaway TY \$M	Non End Item Recurring Flyaway TY \$M	Non Recurring Flyaway TY \$M	Total Flyaway TY \$M	Total Support TY \$M	Total Program TY \$M
2002	--	--	--	--	--	--	51.5
2003	--	--	--	--	--	--	42.5
2004	--	--	--	--	--	--	48.4
2005	--	--	--	--	--	--	85.7
2006	--	--	--	--	--	--	61.3
2007	--	--	--	--	--	--	37.2
2008	--	--	--	--	--	--	14.8
2009	--	--	--	--	--	--	21.4
2010	--	--	--	--	--	--	25.7
2011	--	--	--	--	--	--	17.2
2012	--	--	--	--	--	--	7.5
<b>Subtotal</b>	<b>8</b>	--	--	--	--	--	<b>413.2</b>

**Annual Funding BY\$****3600 | RDT&E | Research, Development, Test, and Evaluation, Air Force**

<b>Fiscal Year</b>	<b>Quantity</b>	<b>End Item Recurring Flyaway BY 2008 \$M</b>	<b>Non End Item Recurring Flyaway BY 2008 \$M</b>	<b>Non Recurring Flyaway BY 2008 \$M</b>	<b>Total Flyaway BY 2008 \$M</b>	<b>Total Support BY 2008 \$M</b>	<b>Total Program BY 2008 \$M</b>
2002	--	--	--	--	--	--	58.7
2003	--	--	--	--	--	--	47.8
2004	--	--	--	--	--	--	53.1
2005	--	--	--	--	--	--	91.7
2006	--	--	--	--	--	--	63.6
2007	--	--	--	--	--	--	37.6
2008	--	--	--	--	--	--	14.7
2009	--	--	--	--	--	--	21.0
2010	--	--	--	--	--	--	24.9
2011	--	--	--	--	--	--	16.5
2012	--	--	--	--	--	--	7.1
<b>Subtotal</b>	<b>8</b>	--	--	--	--	--	<b>436.7</b>

**Low Rate Initial Production**

LAIRCM is an Research, Development, Test, and Evaluation (RDT&E) program and, as such, has no Low Rate Initial Production (LRIP) activities, as those are the purview of the individual platforms.

**Foreign Military Sales**

<b>Country</b>	<b>Date of Sale</b>	<b>Quantity</b>	<b>Total Cost \$M</b>	<b>Memo</b>
Germany	4/24/2009	2	81.8	Will modify two Head-of-State (HoS) Airbus A340 aircraft.
Saudi Arabia	3/8/2007	1	56.3	Modification ongoing of one HoS Boeing 747 aircraft.
Bahrain	5/18/2004	1	43.3	Modified one HoS Boeing 747 aircraft, Interim Contractor Support ongoing.

**Nuclear Cost**

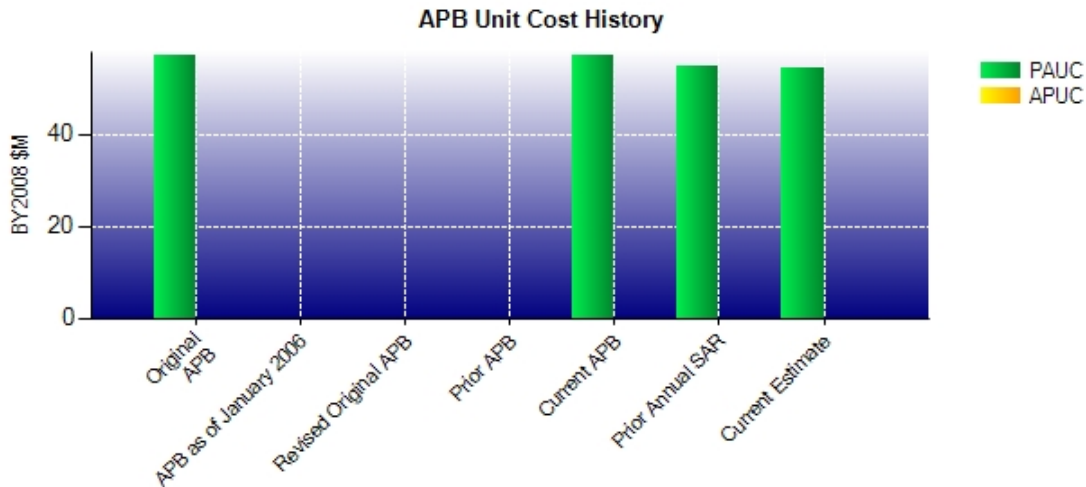
There are no Nuclear Cost data to display.

**Unit Cost****Unit Cost Report**

	BY2008 \$M	BY2008 \$M	
Unit Cost	Current UCR Baseline (AUG 2009 APB)	Current Estimate (DEC 2010 SAR)	BY % Change
Program Acquisition Unit Cost (PAUC)			
Cost	457.0	436.7	
Quantity	8	8	
Unit Cost	57.125	54.588	-4.44
Average Procurement Unit Cost (APUC)			
Cost	0.0	0.0	
Quantity	0	0	
Unit Cost	--	--	--

	BY2008 \$M	BY2008 \$M	
Unit Cost	Original UCR Baseline (AUG 2009 APB)	Current Estimate (DEC 2010 SAR)	BY % Change
Program Acquisition Unit Cost (PAUC)			
Cost	457.0	436.7	
Quantity	8	8	
Unit Cost	57.125	54.588	-4.44
Average Procurement Unit Cost (APUC)			
Cost	0.0	0.0	
Quantity	0	0	
Unit Cost	--	--	--

### Unit Cost History



	Date	BY2008 \$M		TY \$M	
		PAUC	APUC	PAUC	APUC
Original APB	AUG 2009	57.125	N/A	54.825	N/A
APB as of January 2006	N/A	N/A	N/A	N/A	N/A
Revised Original APB	N/A	N/A	N/A	N/A	N/A
Prior APB	N/A	N/A	N/A	N/A	N/A
Current APB	AUG 2009	57.125	N/A	54.825	N/A
Prior Annual SAR	DEC 2009	54.850	N/A	51.925	N/A
Current Estimate	DEC 2010	54.588	N/A	51.650	N/A

### SAR Unit Cost History

#### Current SAR Baseline to Current Estimate (TY \$M)

Initial PAUC Prod Est	Changes								PAUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
45.750	-0.338	0.000	0.000	0.000	6.238	0.000	0.000	5.900	51.650

#### Current SAR Baseline to Current Estimate (TY \$M)

Initial APUC Prod Est	Changes								APUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

## SAR Baseline History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone A	N/A	N/A	N/A	N/A
Milestone B	N/A	N/A	SEP 2001	SEP 2001
Milestone C	N/A	N/A	AUG 2002	AUG 2002
IOC	N/A	N/A	JUL 2004	JUL 2004
Total Cost (TY \$M)	N/A	N/A	366.0	413.2
Total Quantity	N/A	N/A	8	8
Prog. Acq. Unit Cost (PAUC)	N/A	N/A	45.750	51.650



**Cost Variance****Cost Variance Summary**

<b>Summary Then Year \$M</b>				
	<b>RDT&amp;E</b>	<b>Proc</b>	<b>MILCON</b>	<b>Total</b>
SAR Baseline (Prod Est)	366.0	--	--	366.0
Previous Changes				
Economic	-2.7	--	--	-2.7
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+52.1	--	--	+52.1
Other	--	--	--	--
Support	--	--	--	--
<b>Subtotal</b>	<b>+49.4</b>	<b>--</b>	<b>--</b>	<b>+49.4</b>
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	-2.2	--	--	-2.2
Other	--	--	--	--
Support	--	--	--	--
<b>Subtotal</b>	<b>-2.2</b>	<b>--</b>	<b>--</b>	<b>-2.2</b>
<b>Total Changes</b>	<b>+47.2</b>	<b>--</b>	<b>--</b>	<b>+47.2</b>
CE - Cost Variance	413.2	--	--	413.2
CE - Cost & Funding	413.2	--	--	413.2

<b>Summary Base Year 2008 \$M</b>				
	<b>RDT&amp;E</b>	<b>Proc</b>	<b>MILCON</b>	<b>Total</b>
SAR Baseline (Prod Est)	383.6	--	--	383.6
Previous Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+55.2	--	--	+55.2
Other	--	--	--	--
Support	--	--	--	--
<b>Subtotal</b>	<b>+55.2</b>	<b>--</b>	<b>--</b>	<b>+55.2</b>
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	-2.1	--	--	-2.1
Other	--	--	--	--
Support	--	--	--	--
<b>Subtotal</b>	<b>-2.1</b>	<b>--</b>	<b>--</b>	<b>-2.1</b>
<b>Total Changes</b>	<b>+53.1</b>	<b>--</b>	<b>--</b>	<b>+53.1</b>
CE - Cost Variance	436.7	--	--	436.7
CE - Cost & Funding	436.7	--	--	436.7

Previous Estimate: December 2009

RDT&E	\$M	
	Base Year	Then Year
<b>Current Change Explanations</b>		
Decrease due to Congressional general rescissions in FY 2009 and FY 2010. (Estimating)	-2.1	-2.2
RDT&E Subtotal	-2.1	-2.2

## **Contracts**

There are no Contracts data to display.

## Deliveries and Expenditures

Deliveries To Date	Plan To Date	Actual To Date	Total Quantity	Percent Delivered
Development	4	5	8	62.50%
Production	0	0	0	--
Total Program Quantities Delivered	4	5	8	62.50%

Expenditures and Appropriations (TY \$M)			
Total Acquisition Cost	413.2	Years Appropriated	10
Expenditures To Date	365.5	Percent Years Appropriated	90.91%
Percent Expended	88.46%	Appropriated to Date	405.7
Total Funding Years	11	Percent Appropriated	98.18%

Unit of measure is one aircraft modified with the LAIRCM system. The eight (8) development deliveries consist of (2) C-17s, (1) C-130H, (1) C-5, (1) C-130J, (1) AC-130H, (2) additional Air Force Special Operations Command (AFSOC) C-130 variants.

## Operating and Support Cost

### Assumptions And Ground Rules

LAIRCM is a Research, Development, Test and Evaluation program only. The host platform bases pay Operating and Support costs based on usage and depot repair rates. There is no antecedent system for LAIRCM.

Costs BY2008 \$K		
Cost Element	LAIRCM	No Antecedent
Unit-Level Manpower	--	--
Unit Operations	--	--
Maintenance	--	--
Sustaining Support	--	--
Continuing System Improvements	--	--
Indirect Support	--	--
Other	--	--
Total Unitized Cost (Base Year 2008 \$)	--	--

Total O&S Costs \$M	LAIRCM	No Antecedent
Base Year	--	--
Then Year	--	--